Coastal Public Safety Risk Assessment

Main Report - Risk Assessment and Treatment Plan
Ballina Local Government Area
July 2013

AUSTRALIAN COASTSAFE

NSW GOVERNMENT watersafety.nsw.gov.au
A NSW Government water safety initiative

SURF LIFE SAVING NEW SOUTH WALES

© Surf Life Saving New South Wales, Belrose, 2013

All Rights Reserved.

Disclaimer

While Surf Life Saving New South Wales endeavours to provide reliable analysis and believes the contents of this report to be accurate, it will not be liable for any claim by any party acting on such information. All rights are reserved and no part of this publication covered by copyright may be reproduced or copied in any form or by any means except with the written permission of Surf Life Saving New South Wales. We accept no duty of care or liability to you or any third party for any loss suffered in connection with the use of this document.

Table of Contents

EXECUTIVE SUMMARY **5**
SUMMARY OF RECOMMENDATIONS 7

1. INTRODUCTION, SCOPE & CONTEXT **11**
1.1 INTRODUCTION 11
1.2 SCOPE AND CONTEXT 12
1.3 LIMITATIONS 13
1.4 DEFINITION OF TERMS 13
1.5 PROJECT TEAM 15

2. ASSESSMENT METHODOLOGY **16**
2.1 INTRODUCTION 16
2.2 ASSESSMENT AREA/PARAMETERS 16
2.3 SITE INSPECTION 18
2.4 HAZARD IDENTIFICATION AND RISK ASSESSMENT 18
2.5 DATA ANALYSIS 19
2.6 BEACH HAZARD RATINGS AND OVERVIEW 20
2.7 BEACH TYPES AND HAZARD RATINGS 21
2.8 ABSAMP BEACH TYPE CHARACTERISTIC OVERVIEW AND HAZARDS 22
2.9 FACILITY VISITATION RATES (FVR) 23
2.10 FACILITIES 26
2.11 BEACH USAGE AND INCIDENT STATISTICS 27
2.12 COMMUNICATION AND CONSULTATION 34

3. RISK ASSESSMENT FINDINGS **37**
3.1 ACTION PLANNING PRIORITY (GROSS RISK) 37
3.1.1 ACTION PLANNING PRIORITY INDEX 37
3.1.2 AUSTRALIAN BEACH SAFETY & MANAGEMENT PROGRAM RATING (ABSAMP RATING) 38
3.1.3 LOCAL POPULATION RATING 39
3.1.4 HUMAN/ACTIVITY INTERACTION RATING 40
3.1.5 ACCESS RATING 41
3.1.6 ACTION PLANNING PRIORITY SCORE 42
3.2 OVERVIEW OF PRINCIPAL RISK TREATMENTS 44
3.2.1 INTRODUCTION 44
3.2.2 HIERARCHY OF RISK TREATMENTS (CONTROLS) 44
3.2.3 EDUCATION AND AWARENESS PROGRAMMES 45
3.2.4 SAFETY SIGNAGE 48
3.2.5 EMERGENCY MARKER SYSTEM 53
3.2.6 ACCESS INFRASTRUCTURE AND ONGOING CAPITAL WORKS/MAINTENANCE PROGRAMMES 55
3.2.7 PUBLIC RESCUE EQUIPMENT 57
3.2.8 SYSTEM OF SUPERVISION 59

4. EMERGENCY RESPONSE **68**
4.1 EMERGENCY COMMUNICATIONS/REPORTING (000) 68
4.2 EMERGENCY RESPONSE BEACONS 68
4.3 EMERGENCY SERVICE RESPONSE 70
4.4 BALLINA EMERGENCY TASKING DETAILS 72

5 MONITOR AND REVIEW **74**

REFERENCES **75**

APPENDIX A: ACCESS AND SIGNAGE SCHEDULE

APPENDIX B: RISK REGISTER AND TREATMENT PLAN

APPENDIX C: PUBLIC RESCUE EQUIPMENT

APPENDIX D: COVERAGE MAPS

APPENDIX E: SURVEY RESULTS

Executive Summary

This report contains findings and recommendations which align with current International and Australian standards, guidelines and best practice risk management processes. The report contains information specific to locations under the authority of Ballina Shire Council and the National Parks and Wildlife Service (NPWS) - Office of Environment and Heritage.

These locations include (north to south):

1. Seven Mile Beach/Lennox Head
2. Boulder North
3. Boulder South
4. Skennars Head Rock Platforms
5. Sharpes
6. Flat Rocks
7. Angels North
8. Angels South
9. Black Head
10. Shelly
11. Ballina Head
12. Lighthouse
13. South Ballina
14. Beswicks
15. Robins
16. Patches

Activities/Facilities

The Ballina Local Government Area (LGA) is a popular destination and sees year round public usage and recreational activity, including swimming, surfing (inc. all surf craft), fishing, snorkelling/diving, boating, and walking.

A number of facilities support coastal usage and activities including well maintained car parks and key beach access, holiday accommodation options, a number of public toilets/changing rooms, BBQ's and picnic tables.

Hazards/Risks

Though outlined in more detail within the report and appendices, the Ballina LGA has a number of consistent hazards due to the geography and high energy nature of the area.

Based on the risk assessment in Appendix B, these are the hazards that have been rated with the greatest inherent risk for the Ballina LGA:

Strong ocean currents/rip currents:	As a result of wave action and beach type
Strong tidal current/river mouth:	As a result of wave action and tidal conditions
Waves/waves overwashing:	As a result of model wave height and exposure to ocean swells
Inshore holes/deep water:	As a result of coastal processes, wave action and beach type
Slippery rocks:	As a result of coastal geography/break walls and wave action
Shallow sandbanks/shore dump:	As a result of coastal process, wave action and beach type
Submerged rocks:	As a result of coastal geography and sand movement
Stingers/sharks:	As a result of marine life
Cliffs:	As a result of coastal geography
Rock shelves/platforms:	As a result of coastal geography
Boating traffic:	As a result of human interaction

Based on the risk analysis of these hazards, it has been identified that they pose risk to the following types of recreational users:

Strong ocean currents:	Swimmers, surf craft users, fishermen, rock platform users
Strong tidal current/river mouth:	Swimmers, surf craft users, fishermen, break wall users, boaters
Waves/waves overwashing:	Swimmers, surf craft users, fishermen, rock platform users
Inshore holes/deep water:	Swimmers, fishermen
Slippery rocks:	Fishermen, rock platform users
Shallow sandbanks/shore dump:	Swimmers, surf craft users
Submerged rocks:	Swimmers, surf craft users, fishermen
Stingers/sharks:	Swimmers, surf craft users
Cliffs:	Fishermen, walkers, sight seers

Rock shelves/platforms:	Surf craft users, fishermen, rock platform users
Boating traffic:	Swimmers, surf craft users, boaters

Existing Risk Treatments

Land Managers in partnership with a number of other organisations have implemented the below risk treatment initiatives within the Ballina Local Government Area. These include:

- Safety Signage
- Public rescue Equipment
- System of Supervision (Lifeguarding and Lifesaving services)
- Education Programmes

Summary of Recommendations

Please note:

- *The below recommendations are provided as options for guidance only and will not be binding to the Land Manager*
- *The below recommendations are in no particular order in regards to prioritisation*
- *Further explanation to the recommendations should also be referenced and can be found on the corresponding pages*

Recommendation 1
Ballina Shire Council should consider implementing the following risk treatment options:

Strategic Coordination:

1.1 Beach usage and incident data (e.g. drowning incidents, emergency callouts, lifesaving and lifeguards statistics) should be used when making informed decisions about the implementation of risk treatments for coastal safety. (p.33)

1.2 There is the opportunity for a local beach safety liaison committee to be developed. This committee would be an effective forum which raises coastal safety issues and implements drowning prevention strategies in the Ballina Local Government Area. It is recommended that the committee have a standing item on all future meeting agendas titled 'coastal risk management – status and issues', or similar. Recommendations found in this report can be addressed in this agenda item. (p.36)

1.3 Treatment options in this report should be implemented using a staged/prioritisation approach, based on evidence. (p.43)

Education:

1.4 Existing education and awareness programmes within and around the Ballina Local Government Area should continue to be implemented and reviewed. (p.47)

1.5 Education and awareness programmes should include standardised key safety messages which are recognised by the aquatic industry (e.g. NSW Water Safety website, 'watersafety.nsw.gov.au'). (p.47)

1.6 Display safety information (e.g. posters) which promotes key water safety messages, at amenity blocks and visitor information displays directly located around coastal beach access. (p.47)

1.7 Peak coastal water safety agencies currently provide surf education to local schools and community groups upon request. The Ballina Shire Council should work with these agencies to promote these programmes and encourage enhanced participation at a local level. (p.47)

Signage:

1.8 Standardised water safety signage that aligns to Australian standards and best-practice 'style' should be implemented at the locations listed in 'Appendix C'. This may include the maintenance and upgrade of existing signage through planned works schedules, the consolidation of multiple existing signs into a single sign (less signs) or the removal of unnecessary signage. (p.52)

1.9 Temporary signage should be used at locations where there is a higher risk of injury due to temporary hazards such as dangerous access/beach erosion and debris. (p.52)

Access:

1.10 Formal access paths identified in 'Appendix A' should continue to be regularly maintained through ongoing infrastructure and capital works programmes. This will encourage formal access use (rather than informal), enhance the effectiveness of water safety signage and minimise the quantity of signage needed. (p.56)

1.11 Informal access paths identified in 'Appendix A' should be considered for redirection or consolidation, in order to promote/facilitate the use of formal access. (p.56)

Surveillance and Supervision:

1.12 Explore the means to fund the lifeguard service at Lighthouse and Seven Mile Beach/Lennox Head to cover both the New South Wales and Queensland School Holiday periods. (p.67)

1.13 When the volunteer lifesaving service returns to Lighthouse Beach, Ballina Shire Council should explore the means to fund the expansion of the lifeguard services at Shelly Beach to cover 7 days a week during the spring, summer and autumn school holidays. (p.67)

1.14 When the volunteer lifesaving service returns to Lighthouse Beach, Ballina Shire Council should explore the means to fund a 7 month lifeguard service at Lighthouse Beach, to reflect the same patrol periods and hours covered by the service at Seven Mile Beach/Lennox Head. (p.67)

Emergency Response:

1.15 The Ballina Local Emergency Management Committee to coordinate the relevant emergency services and local surf life saving assets to conduct annual training scenarios at the Ballina Bar. (p.70)

Monitor and Review:

1.16 In consultation with relevant stakeholders this document should be reviewed annually to measure the effectiveness of any risk mitigation strategies and drowning prevention initiatives that have been implemented. (p.74)

1.17 All drowning prevention strategies should be documented and incorporated into the relevant strategic and management plans. This will ensure consistency throughout the management area and a structured approach to maintenance. (p.74)

Recommendation 2

The National Parks and Wildlife Service – Office of Environment and Heritage should consider implementing the following risk treatment options:

Strategic Coordination:

2.1 Beach usage and incident data (e.g. drowning incidents, emergency callouts, lifesaving and lifeguards statistics) should be used when making informed decisions about the implementation of risk treatments for coastal safety. (p.33)

2.2 There is the opportunity for a local beach safety liaison committee to be developed. This committee would be an effective forum which raises coastal safety issues and implements drowning prevention strategies in the Ballina Local Government Area. It is recommended that the committee have a standing item on all future meeting agendas titled 'coastal risk management – status and issues', or similar. Recommendations found in this report can be addressed in this agenda item. (p.36)

2.3 Treatment options in this report should be implemented using a staged/prioritisation approach, based on evidence. (p.43)

Education:

2.4 Existing education and awareness programmes within and around the Ballina Local Government Area should continue to be implemented and reviewed. (p.47)

2.5 Education and awareness programmes should include standardised key safety messages which are recognised by the aquatic industry (e.g. NSW Water Safety website, 'watersafety.nsw.gov.au'). (p.47)

2.6 Display safety information (e.g. posters) which promotes key water safety messages, at amenity blocks and visitor information displays directly located around coastal beach access. (p.47)

Signage:

2.7 Standardised water safety signage that aligns to Australian standards and best-practice 'style' should be implemented at the locations listed in 'Appendix C'. This may include the maintenance and upgrade of existing signage through planned works schedules, the consolidation of multiple existing signs into a single sign (less signs) or the removal of unnecessary signage. (p.52)

2.8 Temporary signage should be used at locations where there is a higher risk of injury due to temporary hazards such as dangerous access/beach erosion and debris. (p.52)

Access:

2.9 Formal access paths identified in 'Appendix A' should continue to be regularly maintained through ongoing infrastructure and capital works programmes. This will encourage formal access use (rather than informal), enhance the effectiveness of water safety signage and minimise the quantity of signage needed. (p.56)

2.10 Informal access paths identified in 'Appendix A' should be considered for redirection or consolidation, in order to promote/facilitate the use of formal access. (p.56)

Monitor and Review:

2.11 In consultation with relevant stakeholders this document should be reviewed annually to measure the effectiveness of any risk mitigation strategies and drowning prevention initiatives that have been implemented. (p.74)

2.12 All drowning prevention strategies should be documented and incorporated into the relevant strategic and management plans. This would ensure consistency throughout the management area and a structured approach to maintenance. (p.74)

Recommendation 3
The Water Safety Advisory Council should consider implementing the following risk treatment options:

Strategic Coordination:

3.1 A review be commissioned to analyse the historical environmental conditions at the time of recorded drowning deaths where the Bureau of Meteorology is able to supply data. Such a report should identify the relevant trends and causal factors. (p.33)

Education:

3.2 Develop relationships with tourism agencies to expand on the coastal accommodation network program with the aim of distributing standardised surf safety collateral (e.g. brochures, flyers, and pamphlets) to all coastal accommodation providers in the Ballina Local Government Area. (p.47)

Signage:

3.3 Coastal accommodation providers (e.g. resorts, caravan parks and motels) that have direct beach access should investigate the use of temporary signage at the main entry points during dangerous surf warnings issued by the Bureau of Meteorology (BOM) – warning the public of large/hazardous waves. (p.52)

3.4 With guidance from the NSW Ministry for Police and Emergency Services and Land and Property Information a state-aligned emergency marker program at all identified access locations should be implemented once such a program is established. (p.53)

Public Rescue Equipment:

3.5 The New South Wales Water Safety Advisory Council should explore the means to fund the expansion and continued maintenance of the 'Angel Ring Project' in consultation with the Australian National Sports Fishing Association (NSW Branch) and the Recreational Fishing Alliance of NSW at the locations outlined in Appendix C. Final positioning should be determined by ANSA NSW. (p.58)

Recommendation 4
Surf Life Saving Far North Coast Branch should consider implementing the following risk treatment options:

Strategic Coordination:

4.1 There is the opportunity for a local beach safety liaison committee to be developed. This committee would be an effective forum which raises coastal safety issues and implements drowning prevention strategies in the Ballina Local Government Area. It is recommended that the committee have a standing item on all future meeting agendas titled 'coastal risk management – status and issues', or similar. Recommendations found in this report can be addressed in this agenda item. (p.36)

Recommendation 5
Australian CoastSafe and Surf Life Saving New South Wales should consider implementing the following risk treatment options:

5.1 Research currently being conducted by the University of Melbourne, University of Wollongong and Surf Life Saving Australia into a rocky coast classification model and hazard rating system for rocky coast should be commended and supported. Once this research is completed the calculations related to rocky coasts in this report should be reviewed. (p.22)

5.2 To reduce the likelihood of confusion which may lead to delays in an emergency response, Australian CoastSafe will supply the Emergency Information Coordination Unit (EICU) (NSW LPI) with data and information collected referencing the existing localised marker system for inclusion in the Spatial Information and Mapping System (SIMS). (p.54)

5.3 A mobile emergency response beacon should be installed at Seven Mile Beach (800m south of surf club) when the lifeguard service is not operating. (p.69)

1. Introduction, Scope & Context

1.1 Introduction

This document is a coastal public safety risk assessment and treatment plan specific to water safety related issues identified at every beach/rock platform/break wall located on the coast of the Ballina LGA. The Land Managers of this area include the Ballina Shire Council, NWPS - Office of Environment and Heritage and Crown Lands.

Tragically, NSW accounts for 50% of the national coastal drowning toll annually. As of 30 June 2013, there have been 338 coastal drowning deaths in NSW since 1 July 2004[1]. The vast majority of these can be attributed to swimming/rip-currents and rock-fishing, with almost all occurring at unpatrolled locations/times, where no expert assistance is immediately available.

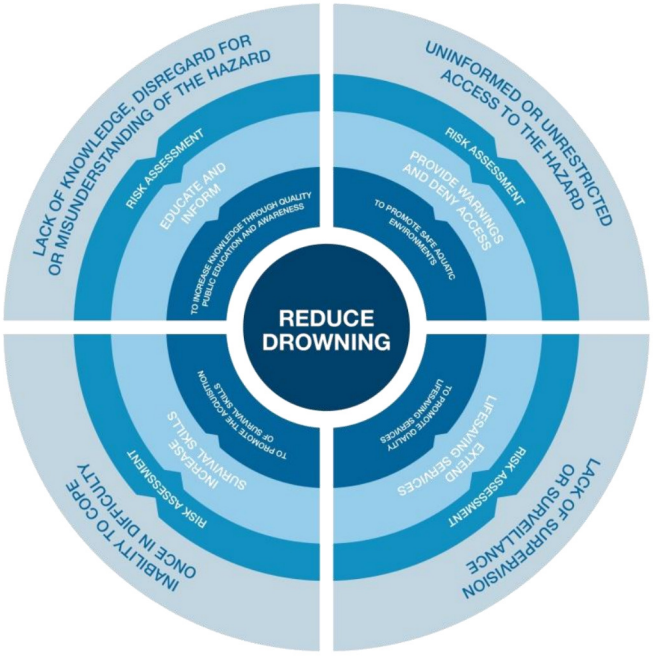
Accidental drowning deaths in the coastal aquatic environment can be accounted for through a number of factors known as the 'drowning chain'. These are:

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

The strategies that have been identified to address the drowning chain are:

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

Figure 1.1.1: The International Life Saving Federation Drowning Chain
(Source: ILSF Drowning Prevention Strategies, 2008)



[1] Surf Life Saving Incident Reporting Database

This report will be fundamental in addressing the coastal drowning issue in NSW both in the short, mid and long term. The report will do this by providing a long-term, sustainable and effective drowning prevention strategy with clear evidence/data, engagement of relevant stakeholders and the application of effective risk mitigation and drowning prevention initiatives where and when they are required.

It is acknowledged that land managers have many competing priorities and limited resources. Land managers should balance their water safety land management activities within the context of their broader role to provide services and facilities to meet the current future needs of their local communities as a whole, all within a limited budget.

This report recognises that there are many inherent risks associated with the NSW coastline and that in most instances these risks associated with the NSW coastline cannot be eliminated and can only be managed within the operations contexts of the land manager, taking into account all of their responsibilities and available resources. This report also recognises that visitors to these areas also have a personal responsibility for their own safety and those they are responsible for.

The recommendations found in the report are representative of Australian CoastSafe's opinion in relation to risk management at the locations assessed.

1.2 Scope and Context

Surf Life Saving New South Wales recently received funding as part of a NSW Government water safety initiative through the Water Safety Black Spot Fund to commence coastal public safety risk assessments on the NSW coastline (all accessible beaches, rock platforms and break walls). The program will be staged over several years with phase one to include the top ten drowning locations by Local Government Area in NSW.

The report provides risk treatment recommendations about how to improve risk and safety management in line with current industry compliance standards:

- AS/NZS ISO 31000:2009 Risk management – Principles and Guidelines
- AS2416 – 2010 Water Safety Signs and Beach Safety Flags
- AS 2899(.1&.2) – 1986 Public Information Symbols Part 1 and 2
- ISO 7001:2007 Graphical symbols - Public information symbols
- AS2342 – 1992 Development, Testing and Implementing of Information and Safety Symbols and Symbolic Signs
- ISO 9001:2000 Quality Management Systems

This coastal public safety risk assessment and treatment plan has been prepared following an on-site risk assessment undertaken by Australian CoastSafe of the Ballina LGA which commenced on Monday 20 August 2012 and concluded on Thursday 24 August 2012. The assessment covered all coastal locations within the area.

Aquatic areas which are excluded from this assessment include all bodies of water which are not 'coastal' in nature under SLSA definitions, and all hazards not directly associated with the use and immediate access to the coastal aquatic environment. While recreational and commercial boating may occur in these waters the detailed assessment of hazards and their treatments specific to boating activities falls outside the scope of this report. Boat ramps and bars at river mouths that fall within the assessed areas identified in Appendix D have been assessed within the framework of the coastal public safety risk assessment process.

Information on boating safety can be found at www.maritime.nsw.gov.au.

The engagement of Land Managers and other key local stakeholders was also a vital part of this risk assessment.

Australian CoastSafe assessed the following in detail:

- Access locations, classifying these as formal or informal access tracks and recommending treatment options. Signage that should be implemented, in conjunction with an audit of current signage **Appendix A.**
- Hazards, their potential risks, risk groups, risk scores and treatment options **Appendix B**.
- Public rescue equipment that should be implemented, in conjunction with an audit of current public rescue equipment **Appendix C.**

Other appendices include:

- Coverage maps of assessed locations **Appendix D.**
- Survey Results **Appendix E.**

At no time during the inspection was the water entered, they were performed from the land, along the edges of the water, along rocky outcrops, headlands, access tracks and car park access points.

1.3 Limitations

The following are acknowledged as limitations of this coastal public safety risk assessment.

- The absence of an agreed and recognised methodology for rating the hazardousness of rock platforms.
- Difficulty in gaining feedback from all identified stakeholders.
- Limited timeframes allowed for stakeholders to provide feedback on consultative draft versions of the report as a result of the project timeframes.

1.4 Definition of Terms

Table 1.4.1: The following is a summary of the definition of key terms used within this report.

ABSAMP	Australian Beach Safety And Management Program
Attendance	A snapshot of the on-beach and in-water attendance taken every two hours on a daily basis
ATV	All Terrain Vehicle used by lifeguards and lifesavers to patrol the beach
Coastal Waterway	A coastal body of water e.g. river/creek opening
Consequence	Outcome or impact of an event
Control	An existing process, policy, device, practice or other action that acts to minimise negative risk or enhance positive opportunities
Emergency Action Plan	A plan that outlines the procedures to be used in the event of an emergency
Frequency	A measure of the number of occurrences per unit of time
First Aid	A lifesaver/lifeguard treating either a minor or major first aid incident, which may require further assistance from NSW Ambulance e.g. broken bones or stings/bites
Formal Access	Formal, well maintained access ways are effective in promoting and facilitating the use of a generally safer 'track', effectively exposing people to the relevant safety signage/information, reducing the quality of signage required and enhancing emergency reporting/location identification.

Geomorphology	Is the scientific study of landforms and the processes that shape them
Hazards	A source of potential harm
Hazard Symbols	A graphical symbol used together with a safety colour and safety shape to form a safety sign
Informal Access	Informal access ways may create higher risk through use (uneven ground/hazards), may expose people to dangerous locations (cliffs/sink-holes), may require duplicate/multiple signage (inefficient/costly) and may make emergency location reporting difficult (location awareness).
Inherent Risk	The risk that an activity would pose if no controls or other mitigating factors were in place
Lifesaving Service	An organised and structured service comprised of paid lifeguards and/or volunteer lifesavers and appropriate rescue and first aid equipment supported by a coordinated backup team
Likelihood	Used as a general description of probability or frequency
Modal	The conditions that occur most frequently, or more often than other conditions.
Monitor	To check, supervise, observe critically or measure the progress of an activity, action or system on a regular basis in order to identify change from the performance level required or expected
Peak Water Safety Agencies	A peak body is defined as a state, territory or national non-profit organisation established to cater for the needs, interests and aspirations of its members. Members may include individuals or organisations, but they will all have a common interest. Peak bodies in the water safety sector may include agencies such as Surf Life Saving, Royal Life Saving, Surf Educators Australia, Austswim, Australian Professional Ocean Lifeguard Association, Surfing NSW and the Office of Boating Safety who represent the NSW Water Safety Advisory Council as a committee member.
PRE	Public Rescue Equipment (e.g. life rings)
Prevailing	The conditions existing in a particular place or at a particular time
Probability	A measure of the chance of occurrence expressed as a number
Preventative Action	A lifesaver/lifeguard simply providing proactive direction or advice to beachgoers in a 'preventative action' for the beachgoer to avoid finding themselves in a position beyond their capability
Rescue	A lifesaver/lifeguard rendering direct assistance to a beachgoer in difficulty in the water
Residual Risk	Risk remaining after implementation of risk treatments
Rip Current	Channelled currents of water flowing away from shore, typically extending from the shoreline, through the surf zone, and past the line of breaking waves
Risk	Standards Australia defines risk as the effect of uncertainty on objects (AS/NZS

	31000:2009)
Risk Analysis	Systematic process to understand the nature of and to the level of risk
Risk Assessment	Standards Australia defines a risk assessment as the overall process of risk identification, risk analysis and risk evaluation (AS/NZS 31000:2009)
Risk Evaluation	Process of comparing the level of risk against criteria
Risk Identification	The process of determining what, where, when, why and how something should happen
Risk Treatment	Process of selection and implementation of measures to modify risk
Risk Management	Standards Australia defines risk management as coordinated activities to direct and control and organisation with regard to risk (AS/NZS 31000:2009).
Risk Register	A table summarising the identified risks, the location, why it has been identified as a risk, and what current treatments are in place to lessen the risk and an overall hazard rating.
Risk Treatment Plan	A table summarising how to deal with the identified risks, including a list of potential risk treatments, the risk treatments currently and any residual risk.
RWC	Rescue Water Craft used by lifeguards and lifesavers. More commonly known as jet skis
Stakeholders	Those people and organisations who may affect, be affected, or perceive themselves to be affected by a decision, activity or risk

1.5 Project Team

Adam Weir – Coastal Risk Manager

Australian CoastSafe
Surf Life Saving NSW
Ph: 02-9471 8000 | F: 02-9471 8001 | M: 0419 444 003
E: aweir@coastsafe.org.au
W: www.coastsafe.org.au/blueprint

Coastal Risk Officers:
Stuart Massey, Coastal Risk Officer, 0406 353 344, smassey@coastsafe.org.au
Luke Stigter, Coastal Risk Officer, 0409 075 620, lstigter@coastsafe.org.au

2. Assessment Methodology

2.1 Introduction

The methodology included site identification and inspection, hazard identification and risk assessment, beach identification and detailed risk assessments, beach usage and incident data and communication and consultation.

2.2 Assessment Area/Parameters

The map below provides an overview of the coastal locations within the Ballina Local Government Area subject to this coastal risk assessment. The specific site locations can be referenced in **Appendix D.**

The area includes locations and/or facilities under the administration of:

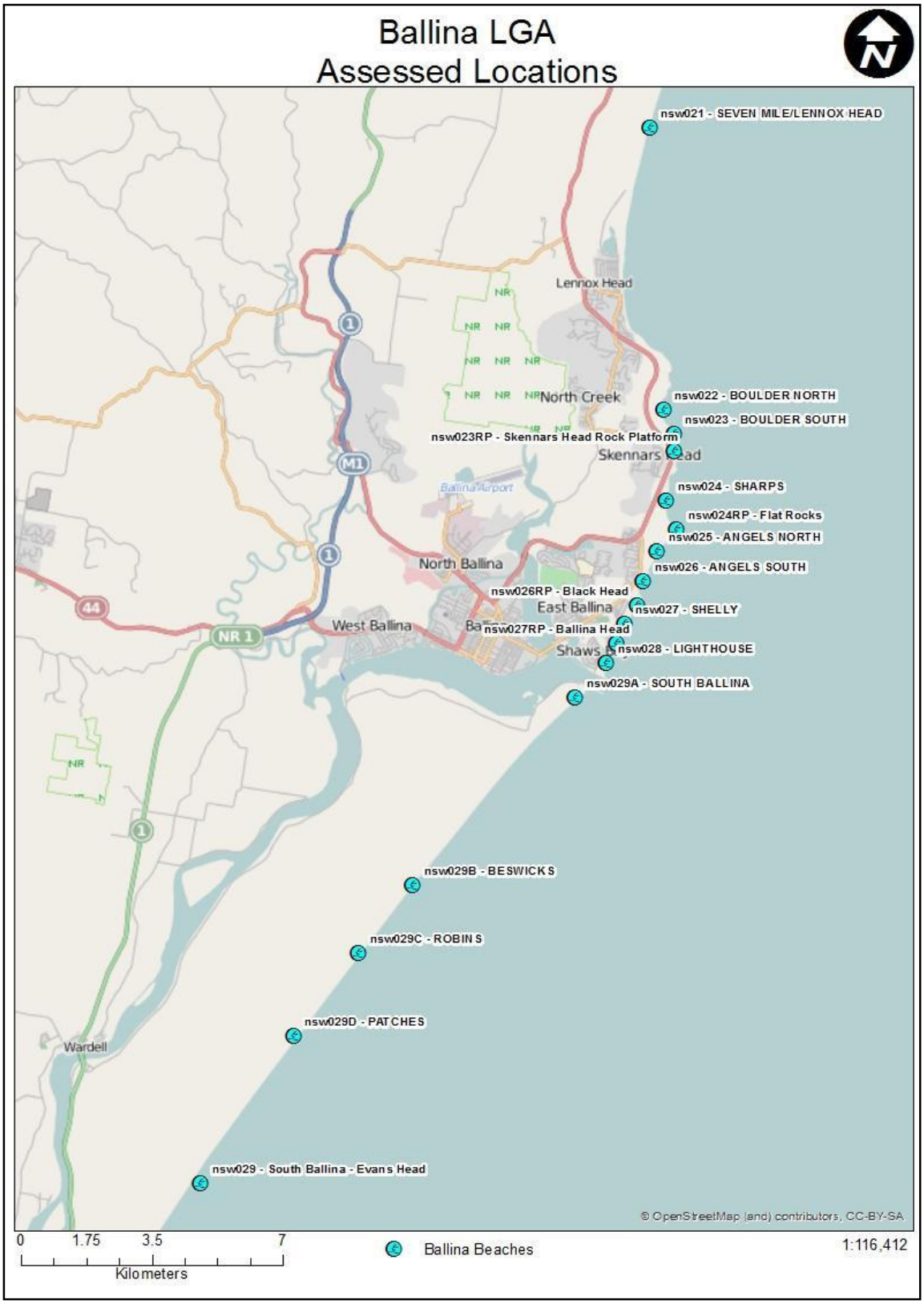
- Ballina Shire Council
- NPWS
  - Richmond River Nature Reserve
- Crown Lands

The assessment identifies hazards and the associated risks of the coastal environment and is not limited to signage, car parks, access tracks, service provision, geographical hazards, geological hazards, user groups, conflicting activities and usage. The report also identifies facilities and activities that encourage people to visit the location.

The geographical constraints of the assessment are determined by the areas constituting the Ballina Shire Council, including accesses to coastal aquatic venues within the area that may fall under differing Land Manager jurisdiction. Specific geographic constraints may be determined for individual venues as part of project preparation and be represented within the report.

Aquatic areas which are excluded from this assessment include all bodies of water which are not 'coastal' in nature under SLSA definitions, and all hazards not directly associated with the use and immediate access to the coastal aquatic environment.

Figure 2.2.1: Ballina Local Government Area overview of beach locations



2.3 Site Inspection

Site inspections were completed on the following dates:

Table 2.3.1: Assessed locations and the dates of their assessment

Location	Land Management Authority	Date
Seven Mile/Lennox Head	Ballina Shire Council	Monday 20 August 2012
Boulder North	Ballina Shire Council	Tuesday 21 August 2012
Boulder South	Ballina Shire Council	Tuesday 21 August 2012
Skennars Head Rock Platforms	Ballina Shire Council	Tuesday 21 August 2012
Sharpes	Ballina Shire Council	Tuesday 21 August 2012
Flat Rocks	Ballina Shire Council	Tuesday 21 August 2012
Angels North	Ballina Shire Council	Wednesday 22 August 2012
Angels South	Ballina Shire Council	Wednesday 22 August 2012
Black Head	Ballina Shire Council	Wednesday 22 August 2012
Shelly	Ballina Shire Council	Wednesday 22 August 2012
Ballina Head	Ballina Shire Council	Wednesday 22 August 2012
Lighthouse	Ballina Shire Council	Thursday 23 August 2012
South Ballina	Ballina Shire Council & National Parks and Wildlife Service	Thursday 23 August 2012
Beswicks	Ballina Shire Council	Thursday 23 August 2012
Robins	Ballina Shire Council	Thursday 23 August 2012
Patches	Ballina Shire Council	Thursday 23 August 2012

2.4 Hazard Identification and Risk Assessment

During the site inspection hazards were identified within the area inspected and assessed in terms of their individual risk to public safety (extreme, high, medium, low) using a risk assessment matrix **Appendix B**.

The risk assessment matrix considers both the type of harm that could be sustained as a result of an individual hazard and the likelihood of this harm actually occurring.

Hazards/Risks

Though outlined in more detail within the report and appendices, the Ballina LGA has a number of consistent hazards due to the geography and high energy nature of the area.

Based on the risk assessment in Appendix B, these are the hazards that have been rated with the greatest inherent risk for the Ballina LGA:

Strong ocean currents/rip currents:	As a result of wave action and beach type
Strong tidal current/river mouth:	As a result of wave action and tidal conditions
Waves/waves overwashing:	As a result of model wave height and exposure to ocean swells
Inshore holes/deep water:	As a result of coastal processes, wave action and beach type
Slippery rocks:	As a result of coastal geography/break walls and wave action
Shallow sandbanks/shore dump:	As a result of coastal process, wave action and beach type
Submerged rocks:	As a result of coastal geography and sand movement
Stingers/sharks:	As a result of marine life
Cliffs:	As a result of coastal geography
Rock shelves/platforms:	As a result of coastal geography
Boating traffic:	As a result of human interaction

Based on the risk analysis of these hazards, it has been identified that they pose risk to the following types of recreational users:

Strong ocean currents:	Swimmers, surf craft users, fishermen, rock platform users
Strong tidal current/river mouth:	Swimmers, surf craft users, fishermen, break wall users, boaters
Waves/waves overwashing:	Swimmers, surf craft users, fishermen, rock platform users
Inshore holes/deep water:	Swimmers, fishermen
Slippery rocks:	Fishermen, rock platform users
Shallow sandbanks/shore dump:	Swimmers, surf craft users
Submerged rocks:	Swimmers, surf craft users, fishermen
Stingers/sharks:	Swimmers, surf craft users
Cliffs:	Fishermen, walkers, sight seers
Rock shelves/platforms:	Surf craft users, fishermen, rock platform users
Boating traffic:	Swimmers, surf craft users, boaters

2.5 Data Analysis

Data relevant to this risk assessment has been considered in the production of the report. These include:

- Australian Beach Safety and Management Programme (ABSAMP)
- Australian Bureau of Statistics – 2010 Census data
- Australian Lifeguard Service Statistics
- BeachSafe (2012) www.beachsafe.org.au
- NSW Tourism Statistics
- Rock Fishing Review - Bradstreet et al, (2012) – *Research Review of Rock Fishing in New South Wales.* Surf Life Saving Australia: Sydney).
- SLSA Incident Reporting Database (IRD)

2.6 Beach Hazard Ratings and Overview

The ABSAMP (Australian Beach Safety and Management Programme) was developed by Professor Andrew Short from the University of Sydney Coastal Studies Unit in conjunction with Surf Life Saving Australia. The programme has identified coastal hazards that affect bathers and rates the safety of the beach on a scale of one to ten, where one (1) is the least hazardous and ten (10) is the most hazardous.

The beach hazard ratings and definitions are provided in the following table.

Table 2.6.1: ABSAMP Beach Hazard Ratings

Hazard Rating	Details
1 - 3	Least Hazardous: Low danger posed by water depth and/or weak currents; however, supervision still required, in particular for children and poor swimmers.
4 - 6	Moderately Hazardous: The level of hazard depends on wave and weather conditions, with the possibility of strong rips and currents posing a moderate risk.
7 - 8	Highly Hazardous: Experience in strong surf, rips and currents required, with beaches in this category considered dangerous.
9 - 10	Extremely Hazardous: Identifies beaches that are considered extremely dangerous due to strong rips and currents, and large breakers.

The beach hazard rating is calculated by determining the beach type and wave height. This can be done under either modal (average) or prevailing (current) conditions. The beach hazard rating is then calculated by using the following table:

Table 2.6.2: Beach hazard rating calculation matrices for wave dominate beaches

Wave Height / Beach Type	< 0.5 (m)	0.5 (m)	1.0 (m)	1.5 (m)	2.0 (m)	2.5 (m)	3.0 (m)	> 3.0 (m)
Dissipative	4	5	6	7	8	9	10	10
Long Shore Bar Trough	4	5	6	7	7	8	9	10
Rhythmic Bar Beach	4	5	6	6	7	8	9	10
Transverse Bar Rip	4	4	5	6	7	8	9	10
Low Tide Terrace	3	3	4	5	6	7	8	10
Reflective	2	3	4	5	6	7	8	10

The beach hazard ratings presented in this report relate to modal beach conditions and as such the hazard rating of a beach may increase when conditions alter e.g. with increasing wave height, winds, strong tides and high tide. Furthermore, a hazard rating is also applied to an average person and therefore depending upon an individual's own skill, understanding and competence in relation to a certain area the hazard may in fact be greater or less. The ABSAMP hazard ratings for the inspected areas of the Ballina LGA are detailed within the next section of the report.

2.7 Beach Types and Hazard Ratings

The hazard rating for the assessed locations is listed in Table 2.7.1. The table provides the hazard rating and descriptive label/name type for each specific beach location.

Table 2.7.1: Hazard Ratings – Ballina Local Government Area

Location Name	ABSAMP no.	ABSAMP Rating	ABSAMP Type
Seven Mile/Lennox Head	nsw021	6	Longshore bar and trough
Boulder North	nsw022	6	Transverse Bar and Rip
Boulder South	nsw023	5	Reflective
Skennars Head Rock Platforms	nsw023RP	6*	Rock Platform
Sharpes	nsw024	6	Transverse Bar and Rip
Flat Rocks	nsw024RP	6*	Rock Platform
Angels North	nsw025	6	Transverse Bar and Rip
Angels South	nsw026	6	Transverse Bar and Rip
Black Head	nsw026RP	6*	Rock Platform
Shelly	nsw027	6	Transverse Bar and Rip
Ballina Head	nsw027RP	6*	Rock Platform
Lighthouse	nsw028	6	Transverse Bar and Rip
South Ballina	nsw029A	6	Transverse Bar and Rip
Beswicks	nsw029B	6	Transverse Bar and Rip
Robins	nsw029C	6	Transverse Bar and Rip
Patches	nsw029D	6	Transverse Bar and Rip

***Rocky coast & rock platform ratings**

Currently there is no method of rating the hazardousness of the rocky coast, in an equivalent manner to the ABSAMP beach hazard rating system for sandy beaches. Research is currently underway; Dr. David Kennedy has utilised a grant from Melbourne University to pilot the methods for the development of a risk classification study on rocky coasts. This research has now received funding under an Australian Research Council linkage grant. Prof. Colin Woodroffe (University of Wollongong) has recently presented the methodology for this project at the NSW Coastal Conference in Kiama (November, 2012).

As an interim method of providing an indication of the hazardousness of rock platforms the ABSAMP beach hazard ratings for the beaches on either side of the each rock platform have been averaged. Since the beaches on either side of a rock platform would be exposed to similar prevailing and modal wind, wave and weather conditions and these sandy beaches have a recognised and accepted method of rating the associated hazardousness taking the average of the beaches bordering a rock platform will provide an indication as to the potential hazard associated with the modal conditions affecting the rock platform.

It is a limitation of the report that there is no available method of calculating the specific hazard rating of a rock platform. However, in order to allow the risk based prioritisation calculations used in this report to be processed an interim solution has been applied which takes into account the local conditions and geomorphology.

Once the research being conducted by Dr. David Kennedy and Prof. Colin Woodroffe is completed then these calculations should be revisited.

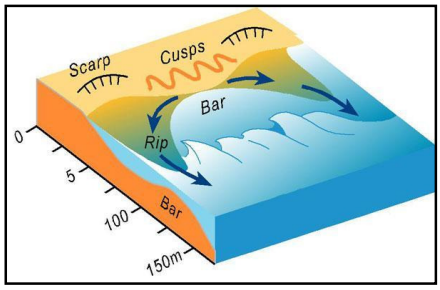
Treatment Option 5.1
Research currently being conducted by the University of Melbourne, University of Wollongong and Surf Life Saving Australia into a rocky coast classification model and hazard rating system for rocky coast should be commended and supported. Once this research is completed the calculations related to rocky coasts in this report should be reviewed

2.8 ABSAMP Beach Type Characteristic Overview and Hazards

Each location and their beach characteristics and associated hazards are as follows:

Transverse Bar and Rip
- Boulder North
- Sharpes
- Angels North
- Angels South
- Shelly Beach
- Lighthouse Beach
- South Ballina
- Beswicks
- Robins
- Patches

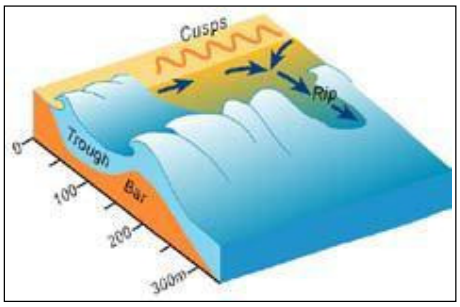
Figure 2.8.1: Transverse Bar & Rip



Transverse bar and rip type is the most common and extensive of Australia's wave-dominated beach types. They occur primarily on beaches composed of fine to medium sand (0.3 mm) and exposed to waves averaging 1.5m. This beach type received its name from the fact that the bars are transverse or perpendicular to and attached to the beach, separated by deeper rip channels. Waves tend to break more on the bars and move shoreward as wave bores. This water flows both directly into the adjacent rip channel and, closer to the beach, into the rip feeder channels located at the base of the beach. The water in the rip feeders converge and return seaward as a strong rip current.

Longshore Bar & Trough
- Seven Mile / Lennox Head

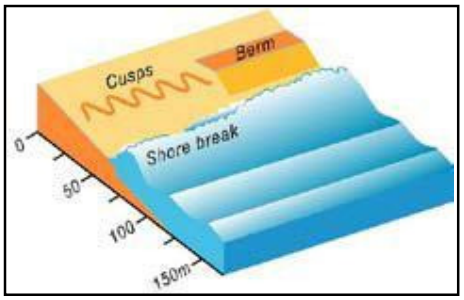
Figure 2.8.2: Longshore Bar and Trough



Longshore bar and trough beaches are characterised by waves averaging 1.5-2 m, which break over a near continuous longshore bar located between 100-150 m seaward of the beach, with a 50-100 m wide, 2-3 m deep longshore trough separating it from the beach. The beach face is straight alongshore and depending on sand size may have a low tide terrace (fine sand) and/or a reflective beach with beach cusps (medium sand). The bar is usually crossed by rips every 250-500 m. The deep trough and the presence rips make this a particularly hazardous swimming beach. In Australia longshore bar and trough more commonly occurs as an outer second bar.

Reflective
- Boulder South

Figure 2.8.2: Reflective



Reflective sandy beaches lie at the lower energy end of the wave-dominated beach spectrum. They are characterised by relatively steep, narrow beaches usually composed of coarser sand (0.4 mm). On the open Australian coast, sandy beaches require waves to be less than 0.5 m to be reflective. For this reason they are also found inside the entrance to bays, at the lower energy end of some ocean beaches and in lee of the reefs and islets that front many beaches. Reflective beaches are Australia's most common beach type occurring in every state though they are more common around the southern half of the continent. Reflective beach morphology consists of the steeper, narrow beach and swash zone, with beach cusps commonly present in the upper high tide swash zone. They have no bar or surf zone as waves move unbroken to the shore, where they collapse or surge up the beach face.

Rock Platform
- Skennars Head
- Flat Rocks
- Black Head
- Ballina Head

2.9 Facility Visitation Rates (FVR)

The Facility Visitation Rate (FVR) is a term, which has been developed to provide a quantitative assessment that can be used to determine the most appropriate signage schedule for a facility (venue or location). The FVR is calculated using data collected during the assessment process and includes (peak period) site population use, and frequency of use. As the FVR calculation is used to determine aquatic recreational warning signage requirements the figures used are those of the peak period of beach usage.

The following calculation is derived using:

1. Stakeholder observation, consultation and feedback relative to the table values outlined,
2. Historical statistical data, and,
3. Utilisation of the Facility Visitation Rate (FVR) formula, where:

Facility Visitation Rate = (Development rating x Population) + Frequency

Facility Visitation Rating (FVR) Reference Tables

Table 2.9.1: Typical Development and Natural Hazards Rating for Reserves – non beach environments

Rating	Development	Natural Hazards
1	Virginal bush, cleared land, no infrastructure	No hazardous features
2	Cleared land, static infrastructure e.g. grass area with tables and chairs, toilet block, lookout	Sloping ground; no natural water; walking track around reserve
3	Cleared land with mobile infrastructure e.g. grassed area with play equipment, cycle way, market, leash free dog areas	Reserve contains natural waterway that runs during wet weather, drops less than 1 metre
4	Land manager owned infrastructure with no artificial lighting e.g. golf course, football field, recreational ground, caravan park	Creeks, ponds and ledges between 1 metre and 3 metres
5	Extensively developed infrastructure with artificial lighting e.g. sporting complex, artificially lit courts	Contains rivers, dams and cliffs greater than 3 metres

Table 2.9.2: Typical development ratings for beaches.

Rating	Development
1	Beach hazard rating 1 and 2
2	Beach hazard rating 3 and 4
3	Beach hazard rating 5 and 6
4	Beach hazard rating 7 and 8
5	Beach hazard rating 9 and 10

Table 2.9.3: A typical population use within a facility provided by land manager. It is important that the land manager's table reflects as accurately as possible its actual situation.

Rating	Population Use
1	Less than 5 people at a time
2	5 to 50 people at a time
3	50 to 100 people at a time
4	100 to 500 people at a time
5	Greater than 500 people at a time

Table 2.9.4: Suggested Frequency of use rating for a Facility

Rating	Frequency of Use
1	An annual activity or event in held at the facility
2	An activity event takes place in the facility on a monthly basis
3	An activity event takes place in the facility on a weekly basis
4	An activity event takes place in the facility on a daily basis
5	The facility is in continuous use for the majority of the day

Table 2.8.1: Facility Visitation Rates – assessed locations within Ballina LGA

LOCATION NAME	DEVELOPMENT RATING	x	POPULATION	+	FREQUENCY	=	FVR
Seven Mile/Lennox Head	3	X	4	+	4	=	**16**
Boulder North	3	X	2	+	3	=	**9**
Boulder South	3	X	2	+	2	=	**8**
Skennars Head Rock Platform	3	X	2	+	3	=	**9**
Sharpes	3	X	3	+	3	=	**12**
Flat Rocks	3	X	3	+	3	=	**12**
Angels North	3	X	3	+	3	=	**12**
Angels South	3	X	3	+	3	=	**12**
Black Head	3	X	2	+	3	=	**9**
Shelly	3	X	4	+	4	=	**16**
Ballina Head	3	X	2	+	3	=	**9**
Lighthouse	3	X	4	+	4	=	**16**
South Ballina	3	X	4	+	3	=	**15**
Beswicks	3	X	2	+	2	=	**8**
Robins	3	X	2	+	2	=	**8**
Patches	3	X	2	+	2	=	**8**

Given the FVR scores, shown in the above table, listed below is an outline of the most appropriate sign characteristics pertinent to each location:

FVR Score between 7 and 10
Locations include:
- Boulder North
- Boulder South
- Skennars Head Rock Platform
- Black Head
- Ballina Head
- Beswicks
- Robins
- Patches

This score would generally indicate that *where access cannot be controlled*, entrances to the beach provided by land managers have signage and spaced no greater than 500 metres apart around the beach perimeter. Additionally the signage should contain the following:

- The name of the facility
- A general warning message
- All ordinances that apply to the facility should appear on the sign as prohibition pictograms
- All potential hazards identified within the facility that have a risk rating of HIGH should appear on the sign as warning symbols. If no highs then the top hazard should appear
- Any information symbols relevant to the facility

FVR Score between 11 and 15
Locations include:
- Sharpes
- Flat Rocks
- Angels North
- Angels South
- South Ballina

This score would generally indicate that *where access cannot be controlled*, entrances to the beach provided by land managers have signage and spaced no greater than 500 metres apart around the beach perimeter. Additionally the signage should contain the following:

- The name of the facility
- A general warning message
- All ordinances that apply to the facility should appear on the sign as prohibition pictograms
- All potential hazards identified within the facility that have a risk rating of HIGH should appear on the sign as warning symbols. If no highs then the top two hazards should appear
- Any information symbols relevant to the facility

FVR Score between 16 and 20
Locations include:
- Seven Mile/Lennox Head
- Shelly
- Lighthouse

This score would generally indicate that *where access cannot be controlled*, entrances to the beach provided by land managers have signage and spaced no greater than 250 metres apart around the beach perimeter.

- The name of the facility
- A general warning message
- All ordinances that apply to the facility should appear on the sign as prohibition pictograms
- All potential hazards identified within the facility that have a risk rating of HIGH should appear on the sign as warning symbols. If no highs then the top three hazards should appear
- Any information symbols relevant to the facility

FVR Score between 21 and 26

- No assessed area scored within this range

This score would generally indicate that *where access cannot be controlled*, entrances to the beach provided by land managers have signage and spaced no greater than 100 metres apart around the beach perimeter. Additionally the signage should contain the following:

- The name of the facility
- A general warning message
- All ordinances that apply to the facility should appear on the sign as prohibition pictograms
- All potential hazards identified within the facility that have a risk rating of HIGH should appear on the sign as warning symbols. If no highs then the top four hazards should appear
- Any information symbols relevant to the facility

2.10 Facilities

Facilities in the coastal risk management process are any item of infrastructure which is situated close to the beach/access points. These include but are not limited to:

- Picnic areas
- BBQ's
- Playgrounds
- Benches
- Showers/water taps
- Amenities
- Car parks
- Caravan parks
- Art infrastructure
- Rubbish bins

Why do we record facilities?

Facilities are recorded because it is important for the Land manager to recognise that by providing the above facilities it is expected that there will be an increase in people visiting these areas. This increase can correlate to the likelihood of a risk occurring in a coastal environment. Treatment plans identified in the report should be implemented in these areas to reduce the risk of a particular event occurring.

Facilities as well as other local attractions are included in risk management and while these facilities or local attractions may, in isolation, increase the likelihood of a particular risk occurring, they may be offset by other factors such as the type of visitor who is going to a particular location. All factors relating to a risk are assessed as a whole and not in isolation when determining the level of risk. It is the level of risk and not the type of facilities (in isolation to other factors) that is used when determining if a risk treatment is required

A breakdown of facilities at the assessed locations within the Ballina LGA can be requested by the Land Manager if required.

2.11 Beach Usage and Incident Statistics

Beach statistics

The following statistics have been recorded by the lifesaving/lifeguard services operating within Ballina LGA. All figures are the combined statistics from the last 3 patrolling seasons (2009/10, 2010/11, 2011/12). Statistics have been sourced from the Surf Life Saving internal management database known as 'SurfGuard'.

Table 2.11.1: Surf Life Saving Club statistics for 2009 to 2012 (SurfGuard, 2013)

Surf Life Saving Clubs	Attendance	Rescues	Preventions	First Aid
Seven Mile/Lennox Head	76906	54	2847	319
Ballina Lismore & Lighthouse	57614	148	3042	162
Totals	**134520**	**202**	**5889**	**481**

Table 2.11.2: Australian Lifeguard Service statistics for 2009 to 2012 (SurfGuard, 2013)

Australian Lifeguard Service	Attendance	Rescues	Preventions	First Aid
Seven Mile/Lennox Head	161525	30	9133	262
Sharpes	45104	21	4650	345
Shelly	42945	30	4030	112
Lighthouse	80694	42	8109	122
South Ballina	3896	0	775	7
Totals	**334164**	**123**	**26697**	**848**

Table 2.11.3: Combined patrolling statistics for 2009 to 2012 (SurfGuard, 2013)

Combined Attendance (Lifesavers & Lifeguards)			
Location	**Attendance**	**Patrolled Days**	**Average Attendance per Day**
Lennox Head	238,431	643	370
Sharpes	45104	176	256
Shelly	42945	159	270
Lighthouse	138,308	590	234
South Ballina	3896	37	105

The above tables demonstrate:

- Seven Mile/Lennox Head has the highest attendance, however more rescues occur at Lighthouse beach
- Sharpes had the highest first aid cases
- Seven Mile/Lennox Head has the highest average attendance per day with 370 people.

Population Statistics

This table shows the population in the Ballina LGA is 39,645. Population over the last 10 years has stayed relatively the same with the population increase of approximately 2,500.

Table 2.11.4: Ballina population data (ABS, 2011)

Ballina LGA – Population			
Year	Males	Females	Total
2011	19,039	20,606	39,645
2006	18,740	20,237	38,977
2001	18,065	19,153	37,218

This table provides a breakdown of the population living in the ***coastal*** towns of the Ballina LGA (Australian Bureau of Statistics 2011).

Table 2.11.5: Population living in coastal suburbs within the Ballina LGA (ABS, 2011)

Beach Suburb Population	
Beach Suburb	***Population***
Lennox Head	6,147
Skennars Head	1,194
East Ballina	5,320
Ballina	7,875
West Ballina	2,972
South Ballina	175
Empire Vale	395
Totals	**24,078**

Tourist Information

The below information has been sourced from the 'Destination NSW' website. All statistics are the average four year totals to September 2011.

Destination NSW breaks down the number of visitors into three categories and these include:
1. Domestic overnight travel
2. Domestic day trip travel
3. International overnight travel

Table 2.11.6: Tourism data and visitor information for Ballina LGA ('Destination NSW', 2013)

Overall Tourist Figures	('000)
Domestic Overnight	263
Domestic Day Trip	348
International Overnight	16

Domestic overnight travel

Table 2.11.7: Domestic overnight travel data and visitor information for Ballina LGA ('Destination NSW', 2013)

Top 5 Activities	('000)	%	NSW %
Eat out at restaurants	135	n/a	56.3
Visit Friends and Relatives	126	n/a	47.0
Go to the beach	88	n/a	22.4
General sight seeing	69	n/a	26.6
Pubs Clubs Discos etc.	67	n/a	22.0
Origin	**('000)**	**%**	**NSW %**
Regional NSW	203	24.3	35.5
Sydney	204	24.4	26.6
Victoria	49	5.9	13.9
Queensland	316	37.8	13.3
ACT	35	4.2	4.2
Other Interstate	27	3.2	6.4
Top 5 Accommodation	**('000)**	**%**	**NSW%**
Friends or relatives	364	43.9	39.1
Hotel, resort, motel	219	26.4	23.4
Caravan Park, Camping	143	17.2	12.4
Rented	58	7.0	9.9
Own Property	17	2.0	3.9

Age Group	('000)	%	NSW %
15 to 24 years	20	7.7	14.5
25 to 34 years	34	12.8	14.0
35 to 44 years	54	20.7	21.5
45 to 54 years	53	20.3	19.0
55 to 64 years	48	18.4	16.6
65 years and over	53	20.2	14.4

In summary, Ballina beaches are the third most popular attraction for domestic overnight travellers. 37.8% of these people live in Queensland and 43.9% are most likely to stay with friends or relatives. The age of visitors is largely the same over the 35 + years bracket.

Day Trip Travel

Table 2.11.8: Day trip travel data and visitor information for Ballina LGA ('Destination NSW', 2013)

Top 5 Activities	('000)	%	NSW %
Eat out at restaurants	142	40.8	43.9
Visit friends and relatives	125	36.0	34.6
Go Shopping for Pleasure	101	29.0	21.3
Go to the beach	73	20.9	10.2
General sight seeing	55	15.8	16.8
Age Group	**('000)**	**%**	**NSW %**
15 to 24 years	32	9.2	14.4
25 to 34 years	59	16.8	13.4
35 to 44 years	71	20.5	19.6
45 to 54 years	56	16.0	18.1
55 to 64 years	58	16.7	16.8
65 years and over	72	20.8	17.7
Origin	**('000)**	**%**	**NSW %**
Northern Rivers	208	59.7	4.3
Brisbane	42	12.1	1.6
Gold Coast	39	11.3	1.6
Sydney	29	8.2	42.0
Mid North Coast	15	4.2	6.9

In summary, the majority of day trippers eat out at restaurants rather than going to the beach. Going to the beach is the fourth most popular activity. The highest age bracket is the 35 to 44 and the 65 + age group. The large majority of visitors come from the Northern Rivers region.

International Overnight Travel

Table 2.11.9: International overnight travel data and visitor information for Ballina LGA ('Destination NSW', 2013)

Top 5 origin markets	('000)	%	NSW %
United Kingdom	4	24.9	13.3
New Zealand	3	19.1	13.3
Germany	2	10.3	3.8
USA	1	7.3	10.6
Canada	1	3.8	2.9

Age Group	('000)	%	NSW %
15 to 24 years	4	21.8	18.8
25 to 34 years	4	23.3	24.8
35 to 44 years	2	13.1	17.4
45 to 54 years	2	11.0	17.2
55 to 64 years	3	18.4	14.8
65 years and over	2	12.3	6.9
Top 3 Accommodation	**('000)**	**%**	**NSW %**
Friends or relatives	45	40.0	27.5
Backpacker / hostel	11	10.0	6.9
Homestay	13	11.3	5.0

The highest number of international tourist's holiday from the United Kingdom followed by New Zealand. The 15 to 24 and 25 to 34 are the highest age brackets. The majority stay at friends or relatives.

Drowning Incidents

Below are the 12 drowning incidents that have occurred in the Ballina LGA from 1 July 2004 to 30 June 2013.

Table 2.11.10: Drowning incidents within Ballina LGA from 2004 to 2012 (SLSA Incident Reporting Database, 2013)

Coastal Drowning Incidents - Ballina Local Government Area								
Date	**Location**	**Time**	**Day**	**Month**	**Age & Gender**	**Nationality**	**Residential Status**	**Activity**
28/09/2004	Shelly Beach	13:30	Tue	Sep	18 - M	Australian	Australian Resident	Swimming
9/03/2005	Seven Mile Beach	12:45	Wed	Mar	71 - M	Netherlands	Australian Resident	Swimming
9/03/2005	Seven Mile Beach	12:45	Wed	Mar	80 - F	Netherlands	International Tourist	Swimming
23/02/2006	Seven Mile Beach	11:30	Sat	Feb	27 - M	Canadian	International Tourist	Swimming
28/01/2007	Seven Mile Beach	16:30	Sun	Jan	34 - M	Germany	International Tourist	Surf craft
26/12/2009	Lighthouse Beach	11:45	Sat	Dec	54 - M	Australian	Australian Resident	Swimming
19/01/2010	South Ballina	18:30	Tue	Jan	42 - M	Greek	Australian Resident	Swimming
19/01/2010	South Ballina	18:30	Tue	Jan	44 - F	Greek	Australian Resident	Swimming
13/07/2010	Richmond River	14:00	Tue	Jul	63 - M	Australian	Australian Resident	Boating
21/01/2012	Richmond River	16:30	Sat	Jan	35 - M	Korean	Australian Resident	Swimming
10/10/2012	Flat Rock, Ballina	12:30	Wed	October	40/M	Australian	Australian Resident	Surfcraft (non powered)
25/12/2012	Shelly Ballina	7:35	Tue	December	M	Asian	Australian Resident	Rock Fishing

Notes to table:

- 70% of incidents occurred during the months of December, January, February and March
- The age bracket of 30+ years contributed to 70% of all incidents
- 70% of incidents occurred in the afternoon after 1200hrs
- 60% of incidents occurred from those people with a non Anglo-Saxon background/international tourist

While data surrounding incident location/time has been referenced, specific environmental conditions at the time of incidents have not been adequately assessed to identify causal factors and specific trends.

This information exists and is held in raw format by the Bureau of Meteorology (BOM), including wave height/direction, tides, wind speed/direction, temperature, and visibility.

Review and assessment of this data, may identify environmental trends which may encourage/discourage recreational activities, impact hazard/risk perception and risk taking behaviour, identify higher-risk conditions for types of localities and specific 'black spot' locations themselves. Improvements to Dangerous Surf Warnings and education/awareness programs may be improved as a result.

Emergency Callouts

There have been 52 emergency callouts through the Surf Rescue Emergency Response System (SRERS) from 1 January 2008 to 30 June 2012 in the Ballina LGA. The SRERS involves callout teams (lifesavers/lifeguards), including 'after hours' responding to emergencies that have been tasked by the Police. Of the 52 callouts, 30 patients have been rescued.

Note: The data below does not incorporate incidents from other emergency services where the SRERS may not have been activated e.g. Water Police, Ambulance and Marine Rescue data.

Table 2.11.11: SRERS call outs within Ballina LGA from 2004 to 2012 (SLSA Incident Reporting Database, 2013)

Surf Rescue Emergency Response System – Ballina Local Government Area							
Date	**Location**	**Month**	**Season**	**Day**	**Time**	**Activity**	**Outcome**
23/05/2008	Richmond River Mouth	May	Autumn	Fri	14:46	Surf Craft	1 patient rescued
14/06/2008	Flat Rock	June	Winter	Sat	16:14	Surf Craft	No Further action
14/07/2008	Lennox Point	July	Winter	Mon	14:58	Self Harm	Coastal Death
11/11/2008	Richmond River Mouth	Nov	Spring	Tue	15:22	Swimming	Stood down
4/01/2009	Seven Mile Beach	Jan	Summer	Sun	12:21	Swimming	1 patient rescued
11/01/2009	Seven Mile Beach	Jan	Summer	Sun	18:42	Swimming	3 patients rescued
5/09/2009	Shelly Beach	Sep	Spring	Sat	12:42	Swimming	No Further Action
19/08/2009	Skennars Head	Aug	Winter	Wed	8:38	Surf Craft	2 Patients Rescued
26/12/2009	Lighthouse Beach	Dec	Summer	Sat	11:43	Swimming	1 Patient Deceased
19/01/2010	South Ballina	Jan	Summer	Tue	18:58	Swimming	2 Patients Deceased
28/03/2010	Lighthouse Beach	Mar	Autumn	Sun	17:46	Swimming	No Further Action
5/04/2010	Flat Rock	Apr	Autumn	Mon	10:43	Surf Craft	No Further Action
15/08/2010	Seven Mile Beach	Aug	Winter	Sun	14:50	Surf Craft	No Further Action
22/10/2010	Boulders Beach	Oct	Spring	Fri	16:27	Swimming	2 patients rescued
26/02/2011	Lighthouse Beach	Feb	Summer	Sat	21:24	Swimming	No Further Action
19/05/2011	Richmond River Mouth	May	Autumn	Thu	13:43	Vessel	No Further Action
4/06/2011	Richmond River Mouth	Jun	Winter	Sat	15:36	Vessel	2 Patients Rescued
3/07/2011	Richmond River Mouth	Jul	Winter	Sun	16:45	Vessel	1 Patient Rescued
13/07/2011	Lighthouse Beach	Jul	Winter	Wed	12:22	Swimming	1 Patient Rescued
6/08/2011	Richmond River Mouth	Aug	Winter	Sat	9:03	Surf Craft	3 Patients Rescued
9/08/2011	Richmond River Mouth	Aug	Winter	Tue	18:50	Debris	No Further Action
17/09/2011	Richmond River Mouth	Sep	Spring	Sat	15:20	Vessel	No Further Action
27/11/2011	Richmond River Mouth	Nov	Spring	Sun	13:30	Vessel	No Further Action
29/12/2011	Richmond River Mouth	Dec	Summer	Thu	15:31	Vessel	4 Persons Rescued
16/01/2012	Richmond River Mouth	Jan	Summer	Mon	15:18	Vessel	2 Patients Rescued
10/02/2012	Lighthouse Beach	Feb	Summer	Fri	15:41	Surf Craft	No Further Action

Surf Rescue Emergency Response System – Ballina Local Government Area							
Date	**Location**	**Month**	**Season**	**Day**	**Time**	**Activity**	**Outcome**
12/02/2012	Boulder Beach	Feb	Summer	Sun	11:25	Rock fishing	1 Patient Rescued
20/03/2012	Lighthouse Beach	Mar	Summer	Tue	18:56	Swimming	No Further Action
1/04/2012	Sharpes Beach	Apr	Autumn	Sun	17:00	Surf Craft	1 Patient Rescued
14/04/2012	Richmond River Mouth	Apr	Autumn	Sat	7:15	Vessel	5 People Rescued
15/04/2012	Richmond River Mouth	Apr	Autumn	Sun	8:26	Vessel	1 Person Rescued
5/06/2012	Lennox Point	Jun	Winter	Tue	7:07	Surf Craft	1 Patient Found
18/08/2012	Ballina	#N/A	Winter	Sat	14:36	SurfCraft (non powered)	Rescued
27/08/2012	Ballina Harbour Wall	#N/A	Winter	Mon	16:00	Vessel	No Further Action
10/09/2012	Lennox Headland	#N/A	Spring	Mon	19:27	Suicide	Rescued
26/09/2012	Richmond River, Ballina	#N/A	Spring	Wed	9:18	Vessel	No Further Action
13/10/2012	Lennox Head	#N/A	Spring	Sat	10:57	Parachute/parasail	No Further Action
13/10/2012	Prospect Bridge Ballina	#N/A	Spring	Sat	12:33	Other	No Further Action
26/10/2012	Seven Mile Beach, Lennox Head	#N/A	Spring	Fri	17:38	SurfCraft (non powered)	No Further Action
27/10/2012	Ballina	#N/A	Spring	Sat	13:40	SurfCraft (non powered)	No Further Action
9/11/2012	Wardell Ballina	#N/A	Spring	Fri	14:44	Other	No Further Action
14/11/2012	Boulder Beach	#N/A	Spring	Wed	16:56	Other	No Further Action
15/11/2012	Ballina North Wall	#N/A	Spring	Thu	19:56	Suicide/Self Harm	No Further Action
4/12/2012	South Ballina	#N/A	Summer	Tue	14:58	Swimming	No Further Action
21/12/2012	Ballina Break Wall	#N/A	Summer	Fri	18:57	Suicide/Self Harm	Rescued
2/01/2013	Lighthouse Beach, Ballina	#N/A	Summer	Wed	17:27	Suicide/Self Harm	Rescued
26/01/2013	Ballina Break Wall	#N/A	Summer	Sat	12:07	SurfCraft (non powered)	No Further Action
9/02/2013	Missingham Bridge Ballina	#N/A	Summer	Sat	14:16	Parachute/parasail	No Further Action
13/03/2013	Richmond River, Ballina	#N/A	Autumn	Wed	18:30	Vessel	No Further Action
31/03/2013	Flat Rock, Ballina	March	Autumn	Sun	10:21	SurfCraft (non powered)	No Further Action
15/04/2013	Ballina Bar North Wall	April	Autumn	Mon	1:58	Vessel	Rescued
20/04/2013	Missingham Bridge Ballina	April	Autumn	Sat	20:47	Vessel	Other

Notes to table:

- 42% of all incidents occur on the Richmond River Mouth where the Ballina Jet Boat can respond
- 29% of incidents occur in Summer, 23% in Winter, 21% in Autumn and 27% in Spring
- Incidents are a result of a mixture of activities including swimming, surf craft, vessel, self-harm and rock fishing
- 77% of all incidents occur in the afternoon after 1200hrs

Environmental Risk Factors (Variable)

The nature of the coastal environment in the assessment area, combined with recreational activity types and locations has identified specific location 'black spots' for emergency incidents and drowning deaths.

While data surrounding incident location/time has been referenced, specific environmental conditions at the time of incidents have not been adequately assessed to identify causal factors and specific trends.

This information exists and is held in raw format by the Bureau of Meteorology (BOM), including wave height/direction, tides, wind speed/direction, temperature, and visibility.

Review and assessment of this data, may identify environmental trends which may encourage/discourage recreational activities, impact hazard/risk perception and risk taking behaviour, identify higher-risk conditions for types of localities and specific 'black spot' locations themselves. Improvements to Dangerous Surf Warnings and education/awareness programs may be improved as a result.

Treatment Options 1.1 & 2.1
Beach usage and incident data (e.g. drowning incidents, emergency callouts, lifesaving and lifeguards statistics) should be used when making informed decisions about the implementation of risk treatments for coastal safety.

Treatment Option 3.1
A review be commissioned to analyse the historical environmental conditions at the time of recorded drowning deaths where the Bureau of Meteorology is able to supply data. Such a report should identify the relevant trends and causal factors.

2.12 Communication and Consultation

Communicating with stakeholders about risk perception and tolerance is the heart of the risk management process.

Consultation with a number of stakeholders was formally undertaken to ensure Land Managers and other key stakeholders were given the opportunity to provide local input and knowledge i.e. validation of strategies in place, issues in regards to risk management and opportunities that may exist.

Local stakeholder meetings were conducted with:
- Jillian Pratten, Manager Open Spaces & Reserves, Ballina Shire Council
- Mark Pittavino, Park Manager – Richmond River Nature Reserve, NPWS
- Ballina Local Emergency Management Committee
- Bernard and Rikki Grinberg, Ballina Beach Village and Wilderness Camping Park
- Scott McCartney, Northern Region Lifeguard Supervisor, Australian Lifeguard Service
- Ben Redman, Director of Lifesaving, Surf Life Saving Far North Coast
- Jimmy Keough, Emergency Coordinator, Surf Life Saving Far North Coast

The consultation process has been aided in the following ways:
- Open community forums and workshops
- Print, Radio and Television media announcements of workshops and consultation
- Written and verbal follow ups post workshops
- Use of social media - Twitter
- Web based surveys
- Web based information submissions
- On-site communication and distribution of flyers
- On-site one-to-one surveying
- Draft reports circulated to the NSW Water Safety Advisory Council

Figure 2.12.1: Project Blueprint Flyer

Beach Safety Committee

One way to discuss coastal safety issues in the Ballina LGA is to develop a local beach safety liaison committee. This committee would be attended with a representative from the Ballina Shire Council, the NPWS, the Lifeguard service provider and the local surf life saving clubs. This committee has the opportunity to be an effective forum which raises coastal safety issues and implements drowning prevention strategies in the Ballina LGA. It is recommended that the committee have a standing item on all future meeting agendas titled 'coastal risk management – status and issues', or similar. Recommendations found in this report can be addressed in this agenda item.

ERROR: undefined
OFFENDING COMMAND: ‘~

STACK:

-savelevel-