



Tweed Shire Council

Coastal Risk Assessment and Treatment Plan Final Draft

15 August 2008

ASSESSED BEACHES:

(shown from North to South)

- Duranbah
- Fingal (including Dreamtime)
- Kingscliff
- Salt/ Casuarina
- Cabarita including North Beach
- Hastings Point including Cudgera Beach
- Pottsville to Mooball Creek (North)
- Mooball Creek (South) to Black Rocks
- Wooyung

Prepared for Tweed Shire Council by:



The national coastal safety management service of
Surf Life Saving Australia

www.slsa.com.au



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EXECUTIVE SUMMARY

The Tweed Shire has 37kms of natural coastline from the NSW/Queensland border in the north, to Wooyung Beach in the South. The following Coastal Risk Assessment and Treatment Plan pertains to aquatic related risks associated with selected beaches within its municipality boundaries.

Many beach visitors may not be aware of hazards and characteristics specific to the beaches. By commissioning Australian CoastSafe to undertake this coastal risk assessment and treatment plan, the Tweed Shire is taking a proactive approach to determining appropriate risk mitigation actions to help prevent foreseeable loss of life and injury to visitors (residents and tourists) recreating at its various beaches.

This report contains findings and recommendations specific to current standards, guidelines and best practice regarding risk management pertinent to the characteristics and designed applicative use of the assessed beaches. The report contains information specific to 9 different beach locations/ clusters within the Tweed Shire boundaries. They are as follows:

1. Duranbah
2. Fingal (including Dreamtime)
3. Kingscliff
4. Salt/ Casuarina
5. Cabarita including North Beach
6. Hastings Point including Cudgera Beach
7. Pottsville to Mooball Creek (North)
8. Mooball Creek (South) to Black Rocks
9. Wooyung

From the beach location risk assessments a set of risk treatments are proposed. The following risk treatments are representative of the key recommendations tabled:

1. Adopt safety signage system (see Section 3.2.4)
2. Develop and deliver education programmes (see Section 3.2.8)
3. Develop and implement Emergency Action Plan (EAP) (see Section 3.2.7)
4. Separate designated swimming and boating areas (see Section 3.2.5)
5. Control beach access with infrastructure works programme (e.g. Close undefined access points) (see Section 3.3) and;
6. Provision of system of supervision (see Section 3.2.6).

It is acknowledged that the Tweed Coast is undergoing significant levels of development through opening up of large tracts of coastal land for residential and hospitality based development that will attract many more people to the Tweed Coast and thereby changing over time the risk. Further, the enhancement to infrastructure, in particular that from the Gold Coast, will also attract increased visitation including day visitors thereby further increasing risk pressures on the Tweed Coast.

As a consequence it is the view of Australian CoastSafe that the Tweed Shire should periodically review this Coastal Risk Assessment and Treatment Plan, in particular when a milestone development occurs or is imminent.



OVERVIEW OF RECOMMENDATIONS

The following section summarises the recommendations made in this report. Explanations of how these recommendations were derived can be found within the relevant sections.

Beach Access

The provision of access to a beach is a major contributor to the creation of risk in that the access methods will guide people to the beach and to the hazard. Therefore, access treatment, or otherwise is a major contributor to coastal risk management.

The recommended beach access treatments are as outlined in the 'Access and Signage Schedule' in Section 3.3.

System of Safety Signage

The Access and Signage Schedule provided in Section 3.3 outlines the recommendations of the assessor for safety signage enhancements. The signage schedule has recommended the following types and quantities of signage:

Table 1: Signage totals for Tweed Shire assessed beaches,

BEACH	OPEN ACCESS	Open Access (Optional closure)	ACCESS DEFINED	Access Defined (Optional Closure)	ACCESS CLOSURE
Duranbah	0	0	8	0	2
Fingal	0	0	9	1	0
Kingscliff	1	0	33	8	2
Salt/Casuarina	2	0	24	0	2
Cabarita	2	0	12	3	0
Hastings Point	2	1	10	1	0
Pottsville	2	0	9	3	0
Mooball	5	0	14	6	0
Wooyung	2	1	1	1	0
	16	2	120	23	6

In total 120, Defined Level 3 Access and 16 Open Access signs have been recommended for the beaches outlined and assessed within the report. The option has been given to close some of these accesses which if done correctly would negate the signage requirement. If **all** optional access closures were implemented then a total of 14 Open Access signs and 97 Defined Access signs would be required for Tweed Shire beaches.

These signs are listed in detail within the 'Access and Signage Schedule' in Section 3.3 of the report.

Separate Designated Swimming and Boating Areas

Clearly defined areas for swimming and boating will greatly reduce the likelihood of a collision occurring between a swimmer and a boat and/or other small craft. During the course of the risk assessment there were a number of creek and river mouth locations identified where there may be a conflict between swimming and boating activities, in particular the northern Tweed River and Cudgen Creek.

These areas should be reinforced with appropriate visible signage, viewable and legible from both in and out of the water.

In addition, the separation of swimming and boating may necessitate the need for prohibition and/or warning signage advising that swimming is not advised. The strategic use of buoyage systems can also provide clear identification of areas or zones where activities are permitted or otherwise.

Additionally, any informal boat access points onto the beach/es should be closed in order to nullify the need for signage.

Further detail on these recommendations can be found in Section 3.2.5 of this report.

System of Supervision – Lifesaving Service Level Analysis

Initially a seasonal lifesaving service has been recommended at specific locations. These services will need periodic review as future urban developments and associated stage releases plus resort/hotel developments change the way in which areas of the Tweed Shire Coast are used. The following tables summarise the current recommended service.

For the purposes of lifesaving services, the stretch of beach including Salt and Casuarina has been split into two services. These services will need to cover a 5km length of coastline and will need to have operating procedures in place to ensure the best coverage is provided. These procedures will need to be developed in conjunction with the provider of lifesaving services.

It is further recommended that with the recent and short term opening of additional residential and tourist developments at Cotton Beach, the location of lifesaving services be reviewed along this stretch of coast to determine if an additional service should be provided. As part of this review, the range of potential lifesaving service provision methodologies should be explored with the Shire's lifesaving service provider.

Based on the Lifesaving Service Level Calculations from both SLSA's volunteer service logs and Australian Lifeguards Services statistics the following service levels should be implemented immediately.

Table 2: Peak season lifesaving service level recommendations

BEACH	START DATE	FINISH DATE	DAYS	LIFEGUARDS	SIGNAGE
Duranbah	20/12/2008	27/01/2009	SMTWTFS		2 YES
Fingal*	20/12/2008	27/01/2009	MTWTF		2 YES
Kingscliff*	20/12/2008	27/01/2009	MTWTF		3 YES
Salt*	20/12/2008	27/01/2009	MTWTF		2 YES
Casuarina	20/12/2008	27/01/2009	SMTWTFS		2 YES
Cabarita*	20/12/2008	27/01/2009	MTWTF		2 YES
Hastings Point	20/12/2008	27/01/2009	SMTWTFS		2 YES
Pottsville	20/12/2008	27/01/2009	SMTWTFS		2 YES
Mooball	20/12/2008	27/01/2009	SMTWTFS		2 YES
Wooyung	20/12/2008	27/01/2009	N/A	N/A	YES

*Note – lifesaving services provided by SLSC on Saturdays, Sundays and Public Holidays



The above service levels should also be implemented during the Autumn, Easter and Spring school holiday periods.

The Tweed Shire should also be providing a level of service across the fringe season, especially on those beaches not serviced by volunteer SLSC's. The four Surf Life Saving Clubs in the Tweed Shire provide services on weekends and public holidays. This usually occurs from late September through to late April each year. These dates do change each year, so continued consultation with local SLSC's to ensure optimal coverage is essential.

Table 3: Fringe season lifesaving service level recommendations

BEACH	START DATE	FINISH DATE	DAYS	LIFEGUARDS	SIGNAGE
Duranbah	27/01/2009	28/04/2009	SS	2	YES
Fingal	27/01/2009	28/04/2009	SLSC	SLSC	YES
Kingscliff	27/01/2009	28/04/2009	SLSC	SLSC	YES
Salt	27/01/2009	28/04/2009	SMTWTFS	2	YES
Casuarina	27/01/2009	28/04/2009	SS	2	YES
Cabarita	27/01/2009	28/04/2009	SLSC	SLSC	YES
Hastings Point	27/01/2009	28/04/2009	SS	2	YES
Pottsville	27/01/2009	28/04/2009	N/A	N/A	YES
Mooball	27/01/2009	28/04/2009	N/A	N/A	YES
Wooyung	27/01/2009	28/04/2009	N/A	N/A	YES

An off peak service is not essential at all beaches, provided other controls such as signage and access controls are in place. There should, however, be a centralised lifesaving service capable of responding to emergencies that occur over the off peak season, or special circumstances where beach attendance may determine.

During the course of the assessment it became apparent that there is a year round lifesaving service at Salt. Based on the available information this service may not be required throughout the off-peak / winter period. However, there is a high concentration of tourist beds at this location which present a level of uncertainty requiring further analysis. If the service level were to be removed during the off-peak season it should only be conducted in conjunction with an intensive education and awareness campaign targeted at residents and tourists. Alternatively, this service could be retained and provide the centralised lifesaving service as previously mentioned.

During the assessment it was also noted that there can be improvements in the collection and collation of beach usage data on all Tweed Shire beaches that will lead to more accurate assessment of lifesaving service needs into the future. As such, it is recommended the Tweed Shire engage Surf Life Saving New South Wales to assist in this area. Refer also the Monitor and Review section below.

Further detail regarding Lifesaving Service Levels and equipment can be found in Section 3.4 of this report.

Existence of Coastal/Beach Emergency Action Plans

The Tweed Shire should develop appropriate EAP for its key beaches, as prioritised previously.

Further detail on Emergency Action Plans can be found in Section 3.2.7



Education and Awareness Programmes

The Tweed Shire, in liaison with beach safety groups, tourism authorities and other coastal representative groups develop a coastal safety education and awareness programme, including rock and beach fishing safety.

This development activity will should consider those best practice programmes currently in use in different geographic areas in Australia and also those in the range of aquatic safety disciplines such as rip current safety, beach safety and rock fishing.

Surf Life Saving New South Wales is well placed to assist in this activity.

Further detail on Education and Awareness Programmes can be found in Section 3.2.8.

Monitor and review

The Tweed Shire should review and enhance its coast and beach related data and information collection, collation and analyses deemed necessary to underpin accurate risk assessment and effective risk treatment actions. This activity could be actioned on behalf of the Shire by lifesaving service providers such as that available through Surf Life Saving New South Wales.

Further detail on Monitor and Review can be found in Section 3.2.9.

SUMMARY OF KEY RECOMMENDATIONS

1. It is recommended the Tweed Shire should continue to support the beach safety liaison committee as a forum for bringing issues to the table as well as communicating Shire activities and position on beach safety to the grass roots.
2. It is further recommended that each meeting of the committee have a standing item on the Agenda papers titled “coastal risk management – status and issues”, or similar.
3. Further, there is an opportunity to engage broader input into beach safety issues along the coast through periodic inclusion of other representative groups such as Northern Rivers Tourism, Tweed and Coolangatta Tourism, Casuarina Residents Association and the like. This could be introduced on a rotation basis with each group appearing once per year, or more often as need dictates.
4. The recommended beach access treatments as outlined in the Access and Signage Schedule in Section 3.3 be implemented.
5. It is recommended the Tweed Shire review all playgrounds and picnic areas within close proximity of water areas, both coastal and estuary, and ensure appropriate risk treatments are in place.
6. The Tweed Shire implement the risk treatments outlined in the Access and Signage Schedule in Section 3.3.
7. It is recommended that the following emergency location signage identifier as shown in the NARSSM be used in the installation of any new emergency location indicator scheme within the Tweed Shire.



8. It is recommended that appropriate safety signs be provided at those beaches immediately inside the creek mouths where boat traffic and swimmers are likely to come in contact.; eg. Tweed River and Cudgen Creek mouths. Further, appropriate marker buoys be considered to warn boat operators of the potential for swimmers.

9. It is recommended the Tweed Shire implement lifesaving service levels as described in Section 3.4 of this report.

10. It is recommended the Tweed Shire should have in place appropriate EAPs for its key beaches and coastal areas.

11. It is recommended the Tweed Shire, in liaison with beach safety groups, tourism authorities and other coastal representative groups should develop a coastal, beach, fishing, boating and water safety education and awareness programme.

12. It is recommended the Tweed Shire should review and enhance its coast and beach related data and information collection, collation and analyses deemed necessary to underpin accurate risk assessment and effective risk treatment actions. This activity could be actioned on behalf of the Shire by the beach safety liaison committee.



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1 Introduction, Scope & Context

Tweed Shire Council

Assessed Beaches:

- Duranbah
- Fingal (including Dreamtime)
- Kingscliff
- Salt/ Casuarina
- Cabarita including North Beach
- Hastings Point including Cudgera Beach
- Pottsville to Mooball Creek
- Mooball Creek to Black Rocks
- Wooyung



1.1 Introduction

This document is a coastal risk assessment and treatment plan specific to water safety related issues identified at the specified beaches within the Tweed Shire by Surf Life Saving Australia's Australian CoastSafe.

This coastal risk assessment and treatment Plan has been prepared following a preliminary risk assessment completed in March 2008 and an on-site risk assessment undertaken by Australian CoastSafe for Tweed Shire in early April 2008.

The risk assessment was commissioned by the Tweed Shire who is primarily responsible for the management of the foreshore and adjacent reserves in addition to the recreational use of the beaches and water.

Mr Rob Andronaco and Steve Wills conducted the on-site risk assessment and compilation of the treatment plan in early April 2008. The coastal risk assessment and treatment plan was compiled using a consultative approach with Tweed Shire representatives. The principal representatives were:

- David Field - Kingscliff SLSC
- Andrew Mills - SLSNSW Volunteer Duty Officer
- Scott McCartney - SALT Lifeguards
- Stewart Brawley - Tweed Shire Council

The identified risks are rated against a semi-qualitative assessment matrix and given a numerical value between 1 and 49, with 49 representing the highest risk and 1 the lowest.

The assessment of risks and their potential treatments are detailed in the Risk Register and Risk Treatment Plan section. Risks and the potential risk treatments are grouped into one table for ease of understanding.

The risk register and risk treatment plan is a tabular summary of risks identified by Australian CoastSafe and how to possibly best deal with them. It includes a list of **potential** risk treatments as identified by Australian CoastSafe and what risk treatments were identified as already being in place.

The Access and Signage Schedule details Australian CoastSafe's recommendations for a coordinated system of access control and safety signage, which reflects current best practice. Although an effective risk treatment, signage should not be the only method used in minimizing the identified risks.

Finally, a lifesaving service level analysis has been completed for those beaches where the availability of data has been sufficient to determine an outcome. The supervision of beaches by trained personnel is often required to manage the risk of the location whether due to prevailing water conditions, the proximity to large populations of people or the attendance to the beach due to its proximity or attractiveness.

1.2 Scope and Context

Australian CoastSafe was commissioned to undertake this Coastal Risk Assessment and Treatment Plan in relation to the management and operation of Tweed Shire Beaches specific to water safety.

The risk assessment is based on available information and conditions as observed in the period March and April 2008.

This report provides treatment recommendations about how to improve risk and safety management in line with current industry aquatic risk management best practices and signage standards.

Risk treatments are guiding recommendations only and are representative on Australian CoastSafe's opinion in relation to water safety at the beaches listed/ identified within the report (9 location clusters in total).

Tweed Shire in consultation with its key stakeholders should determine which Risk Treatments are appropriate and feasibly implementable throughout the site/s in question.

Note: This report should be considered in conjunction with the information, data and recommendations as provided in the *"Aquatic Risk and Safety Services on Tweed Shire Beaches: Preliminary Assessment"* provided by Australian CoastSafe in March 2008.

1.3 Definition of Terms

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

ABSAMP, means the Australian Beach Safety and Management Program.

Emergency Action Plan, means a plan that outlines the procedures to be used in the event of an emergency.

Fringe, means the periods between the summer school holidays and both the Spring and Autumn school holidays, excluding the actual school holidays and Easter. The fringe season is usually characterised by periods of high level beach activity on weekends and public holidays and medium level beach activity on week days.

Hazard, means a potential to threaten human life, health, property or the environment.

Hazard symbols, means a graphical symbol used together with a safety colour and safety shape to form a safety sign.

Lifesaving Service, means an organised and structured service comprised of volunteer lifesavers and/or paid lifeguards and appropriate rescue and first aid equipment supported by a coordinated backup team.

Off peak, means the winter period generally from May through to August and which traditionally has low levels of beach activity.



Peak, means the Spring, Summer and Autumn school holiday periods, and Easter where not included within the Autumn school holiday period. The peak season is usually characterised by a high level of beach activity on all days.

Observation tower, means an elevated platform from which provides a lifesaver or lifeguard with an unobstructed view of an area of water and/or beach from either a seated or standing position.

Recreational waters, means those natural waters used not only swimming, windsurfing, and waterskiing, but also for boating and fishing.

Rescue, means to withdraw, remove, free, save or deliver from a state of exposure to a hazardous or potentially hazardous event.

Rescue watercraft, means a watercraft designed and used for rescue; in this instance the rescue of people.

Rip, (aka rip current) means 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 Register, means a table summarising the identified risks, the location, why it has been identified as a risk, what current treatments are in place to lessen the risk and an overall hazard rating.

Risk Treatment Plan, means 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.

1.4 Report Authors

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2 Assessment Methodology

Tweed Shire Council

Assessed Beaches:

- Duranbah
- Fingal (including Dreamtime)
- Kingscliff
- Salt/ Casuarina
- Cabarita including North Beach
- Hastings Point including Cudgera Beach
- Pottsville to Mooball Creek
- Mooball Creek to Black Rocks
- Wooyung



2.1 Background – Preliminary Assessment

In March 2008, Australian CoastSafe presented the Tweed Shire with a preliminary aquatic risk and safety assessment report titled *“Aquatic Risk and Safety Services on Tweed Shire Beaches: Preliminary Assessment”* that identified “significant local beaches” that required more detailed investigation in the short term because of particular hazards, significant current beach usage and/or potential for beach usage and adjacent urban population growth.

This preliminary assessment was segmented into the twelve (12) main beaches/stretchers of beach that comprise the Shire’s coastline from North to South, and to which the public, community and tourists have reasonable access. The Report also noted the risk mitigation strategy employed through the lifesaving services provided by the four volunteer surf lifesaving clubs and the complementary paid lifeguard services. The report listed the following recommendations.

1. Australian CoastSafe (Surf Life Saving Australia) recommends the Tweed Shire consider completing risk assessments on all its beaches to which people have access along the 37km coastline for which it is responsible.
2. The risk assessments should be conducted in priority of greatest risk given factors of likelihood and consequence.
3. Australian CoastSafe (Surf Life Saving Australia) has identified through a preliminary (“desk top”) assessment using available information that the following “significant local beaches” be given priority attention due to the hazards presented, the likelihood of injury and the consequence of the injury. They are as follows.

PRIORITY RANKING	BEACH NAME
1	Pottsville (aka Potts Point)
2	Salt/Casuarina
3	Cabarita
4	Duranbah
5	Kingscliff
6	Fingal (including Dreamtime)
7	Hastings Point
8	Norries Head
9	Black Rocks (Pottsville South)

4. The clustering of beaches for risk assessment should be considered to take advantage of proximity of assessors. In particular those beaches that are on the South side of Headlands, typically with beach attendance less than those beaches on the northern sides, but which are reasonably accessible. For example Dreamtime (Beach No. 3a) on the southern side of Fingal Head; North Beach (aka South Bogangar Beach) on the southern side of Norries Head, and Cudgera Beach on the southern side of Hastings Point
5. Wooyung (Beach No. 10) could be risk assessed while the assessment of the significant local beaches is being undertaken.
6. Other beaches should be risk assessed in a staged manner when resources are made available.
7. The risk evaluations should be re assessed as and when additional and new information becomes available.
8. Other aquatic risks not on ocean facing beaches, some of which have been identified should be risk assessed.



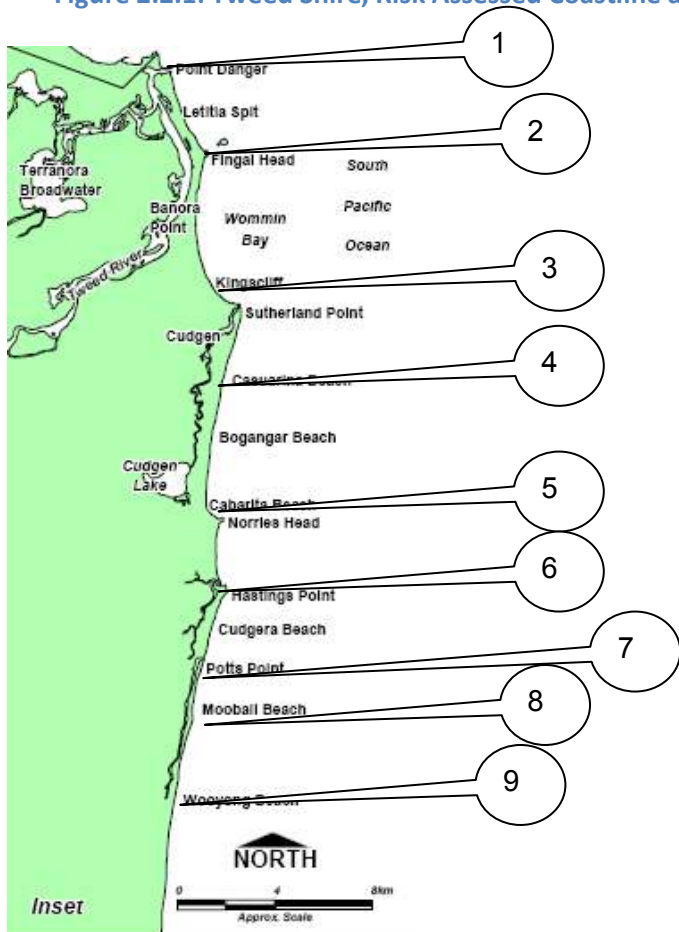
2.2 Site Identification

As mentioned above, the sites outlined within this report have been previously established within a preliminary assessment report tabled to the Tweed Shire in 2008. The following beach areas/ clusters outlined within the report are as a result of the above-mentioned report listed geographical from north to south are:

1. Duranbah (see Appendix C, Figure C.1)
2. Fingal (including Dreamtime) (see Appendix C, Figure C.2)
3. Kingscliff (see Appendix C, Figure C.3)
4. Salt/ Casuarina (see Appendix C, Figure C.4 & Figure C.5)
5. Cabarita including North Beach (see Appendix C, Figure C.6)
6. Hastings Point including Cudgera Beach (see Appendix C, Figure C.7)
7. Pottsville to Mooball Creek (North): (see Appendix C, Figure C.8)
8. Mooball Creek (South) to Black Rocks (see Appendix C, Figure C.9)
9. Wooyung (see Appendix C, Figure C.10)

The following figure 2.2.1 provides a diagrammatic overview of the 9 significant local beaches, and Appendix C, Figures C1 to C9 provide a more detailed representation of the assessed areas.

Figure 2.2.1: Tweed Shire, Risk Assessed Coastline as at April, 2008



This report systematically progresses through each of the risk management steps using the order outlined above. It commences from the northern most point; being Duranbah and concludes at Wooyung.

For further detailed and background information on each of the assessed sites refer to the preliminary assessment report.

2.3 Site Inspection

A site visit was conducted over a 5 day period in early April, 2008. At no time during the inspection was the water entered by foot or by boat. The inspection area was limited to the area outlined within the 'Site Identification' section of the report.

All inspections were performed from the beach, along the edges of the water, along the jetties and pertinent access tracks and car park access points.

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 (high, medium, low) using a risk assessment matrix. 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.

2.5 Data Analysis

The preliminary report tabled to the Tweed Shire in January 2008, provided a three year history of beach incidents using 'Australian Lifeguard Services Contract Report to Tweed Shire Council (2007)'. Additionally, discourse specific to the following areas was tabled:

- Population and Growth Trends
- Current Lifesaving Services
- Professional Lifeguarding Services
- High Tourist impact areas.

All of these areas, factors and associated data have been taken into consideration within the Risk Register and Risk Treatment Plans and Lifesaving Service Level calculations.

During the onsite inspection visit additional information and data was provided to aid further understanding of the risks and responses by local organisations such as surf lifesavers. This information included the call out history specific to after hour rescues or attempted rescues. This is tabled below:



Table 2.5.1: Call Out Register submitted by Andrew Mills; Volunteer Duty Officer - SLSNSW

Date	Estimated Time	Estimated Travel Duration	Beach Location	Incident Description	Beach Access Method	Water Access Method	Outcome of Call out
2-Feb-02	1pm		Kingscliff	Missing person	footpath and vehicle		Found
19-Apr-02	3.45pm	3Km	Nth Kingscliff	Jet ski Retrieval	Vehicle	4wd IRB	Recovered
8/07/2002	2.2pm		Kingscliff	Missing person	footpath and vehicle		Found
2/07/2002	6.30am	200m	Kingscliff	Spinal	Vehicle	4wd	Assist ambos
9/08/2002	12.30pm	500m	Kingscliff	Search	Vehicle	4wd	Search Recovered
8/09/2002			Kingscliff	Rescue		Tube	Rescue
14/01/2003	5.45pm		Kingscliff	Missing person	Vehicle	4wd	Found
31/01/2003	6.15pm	500m	Cudgen Creek	Swimmer in Difficulty			Rescue
19/04/2003	2.40pm	500m	Nth Kingscliff	Missing person			Found
25/05/2003	pm	500m	Nth Kingscliff	Swimmer in Difficulty		board	Rescue
20/04/2004	1.33pm	7km	Fingal	Swimmers in Rip	Vehicle	IRB	Nil action recovered by other
27/06/2004	11.57am	7/9km	Fingal	Boat on rocks on cook island	Vehicle	IRB	Recovered 2pax
1/10/2004	1.31pm	800m	Kingscliff	Boat adrift		IRB	Assist to Shore
30/11/2004	1.15pm	800m	Kingscliff	Kite surfer in difficulty	Vehicle	IRB	Assist to Shore
14/08/2005	4.10pm	1km	Kingscliff	Assist to vessel		IRB	assist to vessel
25/12/2005	4.30pm	800m	Cudgen Creek	assist to swimmers		IRB vehicle	Assist to Shore
18/01/2006		3km	Nth Kingscliff	fatality			Resuscitation / Fatality
Jul-05		2km	South Beach Kingscliff	Rescue		unassisted / boogie board	Rescue
24/04/2006	3.pm	10km	Cabarita headland	fatality	Vehicle	Jet ski /IRB	Fatality
22/06/2006	9.30am	3km	Nth Kingscliff	Swimmer in Difficulty	Vehicle	IRB	rescue
Jun-06	3.15pm	3km	South Beach Kingscliff	Board washed up 000 call	Vehicle	IRB	Search
29/07/2006	3.47pm	7km	Casuarina	Search	Vehicle	IRB	Search
29-Jun		7km	Fingal	Search	Vehicle	IRB	Search
10/08/2007	6.30pm		Kingscliff	Assist in search for catamaran	Vehicle		Search found safe off Brunswick heads
4/02/2007	5.30pm	8km	Casuarina	Plane Ditching in surf	vehicle and Foot path	IRB vehicle Paddle boards Helicopter	Recovered Fatality



Date	Estimated Time	Estimated Travel Duration	Beach Location	Incident Description	Beach Access Method	Water Access Method	Outcome of Call out
8/05/2007		400m	Nth Kingscliff	Fatality Drowning	Vehicle	IRB vehicle Paddle boards Helicopter	
21/07/2007		200m	Kingscliff	Assist VMR crew over board		IRB	Recovered crew and VMR Craft
21/10/2007		2km	Nth Kingscliff	Male 40s chest pain assist ambos	Vehicle	4wd	attend to patient assist ambos
16/10/2007		100m	Kingscliff	Board rider in trouble	footpath	board	Rescue assist ambos
Nov-07		7km	Kingscliff area	Missing person	Vehicle	Vehicle	Person found
12/12/2007	3.30pm	400m	Kingscliff	Shark sighting	Vehicle	Jet ski	Search all clear
5/01/2008	12.30am	20km	Murwillumbah	Assist SES with flood rescue		IRB	Tasked by SES
8/01/2008	5.15pm	15km	Hastings point	Sighting off point search	Vehicle	IRB / Jet Ski	Search called off by police nil found

As a general trend overview a majority of the callouts within the Tweed Shire boundaries tend to occur within the region of Kingscliff.

2.6 Beach Hazard Ratings and Overview

The hazards present at any given beach are very often determined by its geomorphology and the impact by water and weather conditions. Therefore it is important for land managers to understand the risks presented by these hazards. Since the late 1980s, Surf Life Saving Australia and the University of Sydney have partnered to identify the beach hazard ratings of every known beach in Australia.

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 and the State Associations. 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 scales are tabled below:

Table 2.6.1: ABSAMP Beach Hazard Ratings

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

Figure 2.6.2. Beach hazard rating calculation matrices

BEACH HAZARD RATING GUIDE

Impact of changing breaker wave height on hazard rating for each beach type

WAVE DOMINATED BEACHES

BEACH TYPE \ WAVE HEIGHT	<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

TIDE MODIFIED BEACHES


(at high tide - at low tide add 1)

BEACH TYPE \ WAVE HEIGHT	<0.5 (m)	0.5 (m)	1.0 (m)	1.5 (m)	2.0 (m)	2.5 (m)	>3.0 (m)
Ultradissipative	1	2	4	6	8	10	10
Bar & Rips	1	2	3	5	7	9	10
Beach & LTT	1	1	2	4	6	8	10

TIDE DOMINATED BEACHES

(at high tide - at low tide add 1)

BEACH TYPE \ WAVE HEIGHT	<0.5 (m)	0.5 (m)	1.0 (m)	Waves unlikely to exceed 0.5 - 1m
Beach + Sand Ridges	1	1	2	<i>Note: if adjacent to tidal channel, beware of deep water and strong tidal currents.</i>
Beach + Sand Flats	1	1		
Tidal Sand Flats	1			

BEACH HAZARD RATING Least hazardous: 1 - 3 Moderately hazardous: 4 - 6 Highly hazardous: 7 - 8 Extremely hazardous: 9 - 10	KEY TO HAZARDS  Water depth and/or weak currents  Shorebreak (high tide only)  Rips and surf zone currents  Rips, currents and large breakers
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NOTE: All hazard level ratings are based on a bather being in the surf zone and will increase with increasing wave height or with the presence of features such as inlet, headland or reef induced rips and currents. Rips also become stronger with falling tide.

BOLD gradings indicate the average wave height usually required to produce the beach type and its average hazard rating.



It should be noted that 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 in the Tweed Shire are detailed within the next section of the report.

3.2 ABSAMP Beach Types and Ratings for Tweed Shire

The beach clusters outlined within the site identification section of the report are listed in Table 2.7.1. It provides an ABSAMP rating and descriptive label/name type for each specific beach location/ cluster.

Table 2.7.1: ABSAMP Beach Hazard Ratings – Tweed Shire Beaches

Tweed Shire Beach Name	ABSAMP Rating	ABSAMP Type (Inner + Outer Bars)
Duranbah	7	Transverse Bar and Rip (TBR) + breakwater
Fingal (including Dreamtime)	6	Transverse Bar and Rip (TBR) + Rhythmic Bar and Beach (RBB)
Kingscliff	6	Transverse Bar and Rip (TBR) + Rhythmic Bar and Beach (RBB)
Salt/Casuarina	6	Transverse Bar and Rip (TBR) + Rhythmic Bar and Beach (RBB)
Cabarita (see Note 1) Beach	6	Transverse Bar and Rip (TBR) + Rhythmic Bar and Beach (RBB) (Cabarita)
Norries Head Beach	5	Low Tide Terrace (LTT) + Sand Waves (Norries Head)
North Beach (South Norries Head)	6	Transverse Bar and Rip (TBR) + Rhythmic Bar and Beach (RBB) (North Beach)
Hastings Point including Cudgera Beach (see Note 2)	3	Reflective and Inlet (Hastings Point)
Hastings Point	6	Transverse Bar and Rip (TBR) + Rhythmic Bar and Beach (RBB) (Cudgera)
Pottsville to Mooball Creek (North)	6	Transverse Bar and Rip (TBR) + Rhythmic Bar and Beach (RBB)
Mooball Creek (South) to Black Rocks	6	Transverse Bar and Rip (TBR) + Rhythmic Bar and Beach (RBB)
Wooyung	6	Transverse Bar and Rip (TBR) + Rhythmic Bar and Beach (RBB)

Note 1: Cabarita including North Beach has been given 3 hazard ratings as this report considers that there are three separate locations within the assessed area. The first location is that in front of Cabarita SLSC, the second location is the small beach on the northern side of Norries Head, and the third location is the beach to the south of Norries Head.

Note 2: Hastings point has been given two hazard ratings since the beach immediately inside the mouth of the river on the southern bank has been assessed as a hazard rating 3, and is included in the assessed area.

3.3 ABSAMP Beach Type Characteristic Overview and Hazards for Tweed Shire

Each of the beach locations and their beach characteristics and associated hazards are as follows.

Transverse Bar and Rip (Inner Bar) - (Duranbah, Kingscliff, Salt/ Casuarina, North Beach, Cudgera Beach, Pottsville Beach, Mooball Beach and Wooyung)

Characteristics – Wave dominated beach. It consists of attached bars, rip troughs and undulating beach, 1.0 – 1.5m breakers, distinct rip troughs separated by attached bars every 150 – 300 m



Hazards – It is relatively safe on the bars during low to moderate waves, but caution need be taken, as many hazards, particularly rips, lurk for the young and inexperienced. It is advisable to stay on the bar/s and well away from the rips and their side feeder currents.

Rhythmic Bar and Beach (Outer Bar) - (Duranbah, Kingscliff, Salt/ Casuarina, North Beach, Cudgera Beach, Pottsville Beach, Mooball Beach and Wooyung)

Characteristics – consists of rhythmic (undulating) bar trough and beach, 1.5m breakers, distinct rip troughs separated by detached bars.

Hazards – pronounced changes in depth and current between bars and rips, safest bathing is on or behind the bars during lower waves. Hazardous during high waves and high tide.

Low Tide Terrace - (Norries Head)

Characteristics – Shallow bar or terrace often exposed at low tide. 0.5-1.0m breakers.

Hazards – Safest bathing – safe at low tide, deeper water and weak rips at high tide.

Reflective - (Hastings Point Inlet)

Characteristics – waves tend to reflect back off the beach. 0-1m breakers, only occur on very low wave beaches and on harbour beaches.

Hazards – Safest bathing – safe apart from deep water close inshore and from shore break during higher waves. Steep beach and abrupt drop off to deeper water can make access difficult for elderly and children.

3.4 Facility Visitation Rates (FVR) for Tweed Shire

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 a calculated using data collected during the assessment process and includes site population use, and frequency of use. The following calculation is derived using:

- I. Stakeholder observation, consultation and feedback relative to the table values outlined , and;
- II. Utilisation of the Facility Visitation Rate (FVR) formula, where: **Facility Visitation Rate = (Development x Population) + Frequency**

The values and calculations are outlined as follows:

Table 2.9.1: Facility Visitation Rates – Tweed Shire Beaches

TWEED SHIRE BEACH NAME	DEVELOPMENT	*	POPULATION	+	FREQUENCY	=	FVR
Duranbah	4	*	5	+	5	=	25
Fingal (including Dreamtime)	3	*	4	+	4	=	16
Kingscliff	3	*	5	+	5	=	20
Salt/ Casuarina	3	*	4	+	5	=	17
Cabarita including North Beach	3	*	5	+	5	=	21
Hastings Point including Cudgera Beach	3	*	4	+	4	=	16
Pottsville to Mooball Creek (North)	3	*	4	+	4	=	16
Mooball Creek South to Black Rocks	3	*	3	+	4	=	13
Wooyung	3	*	3	+	4	=	13



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 11 and 15 – Mooball Creek (South) to Black Rocks and Wooyung

This score would generally indicate that *where access cannot be controlled*, entrances to the beach provided by council 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 beach.
- All council ordinances that apply to the venue should appear on the sign as prohibition pictograms.
- Hazards rated from medium to high should be identified on the sign and listed in order from highest to lowest hazardous.

FVR Score between 16 and 20 – Pottsville to Mooball Creek (North), Hastings Point including Cudgera Beach, Salt/ Casuarina and Fingal

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

- The name of the beach.
- All council ordinances that apply to the venue should appear on the sign as prohibition pictograms.
- Hazards rated from medium to high should be identified on the sign and listed in order from highest to lowest hazardous.

FVR Score between 21 and 25 – Duranbah, Kingscliff and Cabarita including North Beach

This score would generally indicate that *where access cannot be controlled*, entrances to the beach provided by council 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 beach.
- All council ordinances that apply to the venue should appear on the sign as prohibition pictograms.
- Hazards rated from medium to high should be identified on the sign and listed in order from highest to lowest hazardous.

3.5 Communication and consultation

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

The process of communicating risk estimates from the assessment process to decision-makers and ultimately to the public, sometimes referred to as risk education, is only one part of the communication process.



However, in getting those affected by risk to accept risk mitigation measures, and in providing decision-makers and communities with the information they need to tolerate and deal with risks, there needs to be two-way communications that includes those affected by risk, the public, into the decision-making process.

The Tweed Shire is fortunate to have the beach safety liaison committee as a forum for bringing issues to the table as well as communicating Shire activities and position on beach safety to the grass roots, in particular local safety groups such as surf lifesaving clubs.

During preparation of the preliminary report in mid February, Australian CoastSafe met the Beach Safety Liaison Committee consisting of management from the Tweed Shire, Chairperson of the Coastal Management Committee, one representative for the four local volunteer surf lifesaving clubs and one representative of Surf Life Saving NSW, head lifeguard, Mark Young.

During the onsite visit for the full assessment in early April, consultation with a number of stakeholders was undertaken to ensure the report process was transparent and to gain local knowledge, background and visitor statistics on the areas inspected. Stakeholder interviews were conducted with:

- Stewart Brawley - Tweed Shire Council
- David Field - Kingscliff SLSC
- Andrew Mills - SLSNSW Volunteer Duty Officer
- Scott McCartney - SALT Lifeguards

Andrew Mills, Volunteer Duty Officer – SLSNSW, additionally provided a register of all pertinent call out data from February, 2002. This table is outlined within the ‘*Situational Analysis Review*’ section of the report.

RECOMMENDATIONS

1. It is recommended the Tweed Shire should continue to support the beach safety liaison committee as a forum for bringing issues to the table as well as communicating Shire activities and position on beach safety to the grass roots.
2. It is further recommended that each meeting of the committee have a standing item on the Agenda papers titled “coastal risk management – status and issues”, or similar.
3. Further, there is an opportunity to engage broader input into beach safety issues along the coast through periodic inclusion of other representative groups such as Northern Rivers Tourism, Tweed and Coolangatta Tourism, Casuarina Residents Association and the like. This could be introduced on a rotation basis with each group appearing once per year, or more often as need dictates.



3 Risk Assessment Findings

Tweed Shire Council

3.1 Risk Register* and Risk Treatment Plan**

Assessed Beaches:

- Duranbah
- Fingal (including Dreamtime)
- Kingscliff
- Salt/ Casuarina
- Cabarita including North Beach
- Hastings Point including Cudgera Beach
- Pottsville to Mooball Creek
- Mooball Creek to Black Rocks
- Wooyung

* A risk register is a table summarising the identified risks. It includes information on the location, why it has been identified as a risk, what current measures (treatments) are in place to lessen the risk and an overall hazard rating.

** A risk treatment plan is a table summarising how to deal with the identified risks. It includes a list of potential risk treatments, what risk treatments are already in place, factors which will affect the choice of risk treatment and finally which risk treatments have been agreed upon by the relevant stakeholders / land managers.

3.1.1 Risk Register and Risk Treatment Plan – Duranbah

Hazard	Risk associated with hazard and target groups	Risk Matrix Score		Adequacy of Existing Controls	Risk and Rating	Proposed Risk Treatment	Residual Risk
		Consequence	Likelihood				
Dumping Surf	Risk: Injury / death as a result of being dumping wave. Target: Swimmers, surfers, inexperienced beach users, fishermen	A. Disastrous Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). Seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Water	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). Seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Drop Off	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). Seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Strong Currents	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). Seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Dangerous Current	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). Seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Separation of boating and swimming areas. f. Provision of system of supervision (p.57).	A. 6. 34/49 Medium
Steep Descent	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	B. Severe Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). Seasonal lifeguard service	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium



Risk Matrix Score		Risk	Impact	Risk	Mitigation	Priority
Severity	Frequency					
Shallow Water	Risk: Injury/Death caused by shallow water depth. Target: swimmers, surfers, fishermen, inexperienced beach users.	B. Severe Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). Seasonal lifeguard service	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Boat Traffic	Risk: Boating activities entering and existing river mouth and Jack Evans Boat Harbour on a continual basis. Potential for collision with other craft and swimmers. Target: Other craft users, all swimmers and surfers	B. Severe Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Undefined access from Letitia Road south of River Mouth.	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Separation of boating and swimming areas (p.54). f. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Boat Ramp/ Launch	Risk: Boating activities entering and existing river mouth and Jack Evans Boat Harbour on a continual basis. Potential for collision with other craft and swimmers. Target: Other craft users, all swimmers and surfers	B. Severe Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. (Note - Undefined access from Letitia Road south of River Mouth - however outside of formal assessed area.)	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Separation of boating and swimming areas (p.54). f. Provision of system of supervision (p.55).	B. 6. 22/49 Medium
Erosion	Risk: Injury/Death caused by changed or exposed surfaces Target: swimmers, surfers, fishermen, inexperienced beach users.	C. Serious Impact	4. Could Happen	Good - Engineered sand replacement programme in place.	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Unrestricted Access	Risk: Injury/Death from entering more dangerous areas than if access provided, also not warned or able to make an informed decision on where to swim. Target: swimmers, surfers, fishermen, inexperienced beach users.	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers).	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Sharks	Risk: Injury/Death as a result of being attacked by a shark Target: anyone entering water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium



Risk Matrix Score		Risk	Impact	Control Measures	Risk Rating	Control Measures	Risk Rating
4. Could Happen	C. Serious Impact						
Slippery Rocks	Risk: Injury as a result of slipping into water or on rocks. Target: Rock fishermen, anyone on breakwater.	4. Could Happen	C. Serious Impact	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). Access to uneven access areas still permissible.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Slippery Stairs	Risk: Injury as a result of slipping on steps Target: Anyone using steps	4. Could Happen	C. Serious Impact	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). Access to uneven access areas still permissible.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Slippery Surface	Risk: Injury as a result of slipping Target: All traffic	4. Could Happen	C. Serious Impact	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). Access to uneven access areas still permissible.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Uneven Ground	Risk: Injury as a result of tripping on uneven surface Target: All traffic	4. Could Happen	C. Serious Impact	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). Access to uneven access areas still permissible.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Stingers (Floating)	Risk: Injury as a result of being stung Target: Anyone entering the water	4. Could Happen	C. Serious Impact	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers). No EAP	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Outfall	Risk: Injury as a result submerged structure Target: Swimmers, surfers, craft, inexperienced beach users.	4. Could Happen	D. Moderate Impact	Poor - Some periodic advisory signage at time of assessment. No restricted barriers in place at pipe outlet.	27/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	D. 6. 13/49 Low
UV Exposure	Risk: Sunburn and potential for skin cancer. Target: All	4. Could Happen	D. Moderate Impact	Poor - limited shade and/or public awareness noted during time of assessment.	27/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provide shade and sun protection	D. 6. 13/49 Low



3.1.2 Risk Register and Risk Treatment Plan – Fingal (Including Dreamtime)

Hazard	Risk associated with hazard and target groups	Risk Matrix Score		Adequacy of Existing Controls	Risk and Rating	Proposed Risk Treatment	Residual Risk
		Consequence	Likelihood				
Dumping Surf	Risk: Injury / death as a result of being dumping wave. Target: Swimmers, surfers, inexperienced beach users, fishermen	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment. SLSC and seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Water	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment. SLSC and seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Drop Off	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment. SLSC and seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Strong Currents	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment. SLSC and seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Hole	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment. SLSC and seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Shallow Water	Risk: Injury/Death caused by shallow water depth. Target: swimmers, surfers, fishermen, inexperienced beach users.	B. Severe Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment. SLSC and seasonal lifeguard service	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium



		Risk Matrix Score					
		C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Rocks - Submerged and/or Slippery	Risk: Injury/Death due to collision with submerged rocks Target: Other craft users, all swimmers and surfers	C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Unrestricted Access	Risk: Injury/Death from entering more dangerous areas than if access provided, also not warned or able to make an informed decision on where to swim. Target: swimmers, surfers, fishermen, inexperienced beach users.	C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Sharks	Risk: Injury/Death as a result of being attacked by a shark Target: anyone entering water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
Uneven Ground	Risk: Injury as a result of tripping on uneven surface Target: All traffic	C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
Stingers (Floating)	Risk: Injury as a result of being stung Target: Anyone entering the water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
UV Exposure	Risk: Sunburn and potential for skin cancer. Target: All	D. Moderate Impact	4. Could Happen	Poor - Limited shade and/or public awareness noted during time of assessment.	27/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	D. 6. 13/49 Low



3.1.3 Risk Register and Risk Treatment Plan – Kingscliff

Hazard	Risk associated with hazard and target groups	Risk Matrix Score		Adequacy of Existing Controls	Risk and Rating	Proposed Risk Treatment	Residual Risk
		Consequence	Likelihood				
Dumping Surf	Risk: Injury / death as a result of being dumping wave. Target: Swimmers, surfers, inexperienced beach users, fishermen	A. Disastrous Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment. SLSC and seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Water	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment. SLSC and seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Drop Off	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment. SLSC and seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Strong Currents	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment. SLSC and seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Dangerous Current	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment. SLSC and seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	A. 6. 34/49 Medium
Steep Descent	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	B. Severe Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment. SLSC and seasonal lifeguard service	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	B. 6. 22/49 Medium



		Risk Matrix Score							
		B. Severe Impact	4. Could Happen						
Shallow Water	Risk: Injury/Death caused by shallow water depth. Target: swimmers, surfers, fishermen, inexperienced beach users.	B. Severe Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment. SLSC and seasonal lifeguard service	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium		
Boat Traffic	Risk: Boating activities entering and existing river mouth and Jack Evans Boat Harbour on a continual basis. Potential for collision with other craft and swimmers. Target: Other craft users, all swimmers and surfers	B. Severe Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Separate swimmers and boats with signs and buoyage (p. 54).	B. 6. 22/49 Medium		
Boat Ramp/Launch	Risk: Boating activities entering and existing river mouth and Jack Evans Boat Harbour on a continual basis. Potential for collision with other craft and swimmers. Target: Other craft users, all swimmers and surfers	B. Severe Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Separate swimmers and boats with signs and buoyage (p. 54).	B. 6. 22/49 Medium		
Unrestricted Access	Unrestricted Access throughout beach assessment and foreshore areas; including river mouth. After hours light provision not noted during time of assessment.	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium		
Sharks	Risk: Injury/Death as a result of being attacked by a shark Target: anyone entering water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium		
Slippery Rocks	Risk: Injury as a result of slipping into water or on rocks. Target: Rock fishermen, anyone on breakwater.	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers).	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium		
Slippery Surface	Risk: Injury as a result of slipping on steps Target: Anyone using steps	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Some engineering/ reduction solutions in place (e.g. Defined access and barriers).	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium		
Uneven Ground	Risk: Injury as a result of slipping Target: All traffic	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment. Some defined access in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium		



	Risk Matrix Score	Risk Matrix Score				
		C. Serious Impact	4. Could Happen			
Stingers (Floating)	Risk: Injury as a result of being stung Target: Anyone entering the water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	C. 6. 20/49 Medium
UV Exposure	Risk: Sunburn and potential for skin cancer. Target: All	D. Moderate Impact	4. Could Happen	Poor - Limited shade and/or public awareness noted during time of assessment.	27/49 Medium	D. 6. 13/49 Low



3.1.4 Risk Register and Risk Treatment Plan – Salt/ Casuarina

Hazard	Risk associated with hazard and target groups	Risk Matrix Score		Adequacy of Existing Controls	Risk and Rating	Proposed Risk Treatment	Residual Risk
		Consequence	Likelihood				
Dumping Surf	Risk: Injury/ death as a result of being dumping wave. Target: Swimmers, surfers, inexperienced beach users, fishermen	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access and path signage in place at time of assessment. Seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Water	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access and path signage in place at time of assessment. Seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Drop Off	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access and path signage in place at time of assessment. Seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Strong Currents	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access and path signage in place at time of assessment. Seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Hole	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access and path signage in place at time of assessment. Seasonal lifeguard service	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Shallow Water	Risk: Injury/Death caused by shallow water depth. Target: swimmers, surfers, fishermen, inexperienced beach users.	B. Severe Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access and path signage in place at time of assessment.	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium



		Risk Matrix Score					
		C. Serious Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access and path signage in place at time of assessment. Kick rails in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Unrestricted Access	Risk: Injury/Death from entering more dangerous areas than if access provided, also not warned or able to make an informed decision on where to swim. Target: swimmers, surfers, fishermen, inexperienced beach users.	C. Serious Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access and path signage in place at time of assessment. Kick rails in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Sharks	Risk: Injury/Death as a result of being attacked by a shark Target: anyone entering water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Slippery Surface	Risk: Injury as a result of slipping on steps Target: Anyone using steps	C. Serious Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access and path signage in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Uneven Ground	Risk: Injury as a result of slipping Target: All traffic	C. Serious Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access and path signage in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
Stingers (Floating)	Risk: Injury as a result of being stung Target: Anyone entering the water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
Mixed Usage	Risk: High volume pedestrian traffic within carpark and adjacent foreshore path network. Probability of collisions may occur between vehicles (e.g. Car, 4WD, bike, etc.) Target: pedestrians and drivers.	C. Serious Impact	5. Uncommon	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined (Shared) access and path signage in place at time of assessment.	28/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
UV Exposure	Risk: Sunburn and potential for skin cancer. Target: All	D. Moderate Impact	4. Could Happen	Poor - limited shade and/or public awareness noted during time of assessment.	27/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	D. 6. 13/49 Low



Risk Register and Risk Treatment Plan – Cabarita including North Beach

Hazard	Risk associated with hazard and target groups	Risk Matrix Score		Adequacy of Existing Controls	Risk and Rating	Proposed Risk Treatment	Residual Risk
		Consequence	Likelihood				
Dumping Surf	Risk: Injury / death as a result of being dumping wave. Target: Swimmers, surfers, inexperienced beach users, fishermen	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. SLSC and seasonal lifeguard service	43 /49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Water	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. SLSC and seasonal lifeguard service	43 /49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Drop Off	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. SLSC and seasonal lifeguard service	43 /49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Strong Currents	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. SLSC and seasonal lifeguard service	43 /49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Hole	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. SLSC and seasonal lifeguard service	43 /49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Shallow Water	Risk: Injury/Death caused by shallow water depth. Target: swimmers, surfers, fishermen, inexperienced beach users.	B. Severe Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. SLSC and seasonal lifeguard service	38 /49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/34 Medium



		Risk Matrix Score						
		C. Serious Impact	4. Could Happen		Moderate to Poor- Limited periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Unrestricted Access	Risk: Injury/Death from entering more dangerous areas than if access provided, also not warned or able to make an informed decision on where to swim. Target: swimmers, surfers, fishermen, inexperienced beach users.	C. Serious Impact	4. Could Happen		Moderate to Poor- Limited periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Sharks	Risk: Injury/Death as a result of being attacked by a shark Target: anyone entering water	C. Serious Impact	4. Could Happen		Moderate to Poor- Limited periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Uneven Ground	Risk: Injury as a result of slipping Target: All traffic	C. Serious Impact	4. Could Happen		Moderate to Poor- Limited periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Stingers (Floating)	Risk: Injury as a result of being stung Target: Anyone entering the water	C. Serious Impact	4. Could Happen		Moderate to Poor- Limited periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Rocks - Submerged and/or Slippery	Risk: Injury / Death due to beach user colliding with submerged rock, or slipping. Target: swimmers, surfers, fishermen, inexperienced beach users.	C. Serious Impact	4. Could Happen		Moderate to Poor- Limited periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Steep Descent	Risk: Injury due to gradient Target: Beach users	C. Serious Impact	4. Could Happen		Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
UV Exposure	Risk: Sunburn and potential for skin cancer. Target: All	D. Moderate Impact	4. Could Happen		Poor - Limited shade and/or public awareness noted during time of assessment.	27/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	D. 6. 13/49 Low



3.1.5 Risk Register and Risk Treatment Plan – Hastings Point including Cudgera Beach

Hazard	Risk associated with hazard and target groups	Risk Matrix Score		Adequacy of Existing Controls	Risk and Rating	Proposed Risk Treatment	Residual Risk
		Consequence	Likelihood				
Shore Dump	Risk: Injury / Death due to spinal type injury as a result of being dumped headfirst. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Water	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Drop Off	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Strong Currents	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Currents	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Hole	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium



		Risk Matrix Score						
Steep Descent	Risk: Injury due to gradient Target: Beach users	B. Severe Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	38/49 High		a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	B. 6. 22/49 Medium
Shallow Water	Risk: Injury/Death caused by shallow water depth. Target: swimmers, surfers, fishermen, inexperienced beach users.	B. Severe Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	38/49 High		a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium
Unrestricted Access	Risk: Injury/Death from entering more dangerous areas than if access provided, also not warned or able to make an informed decision on where to swim. Target: swimmers, surfers, fishermen, inexperienced beach users.	C. Serious Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	32/49 Medium		a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
Sharks	Risk: Injury/Death as a result of being attacked by a shark Target: anyone entering water	C. Serious Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment.	32/49 Medium		a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Rocks - Submerged and/or Slippery	Risk: Injury / Death due to beach user colliding with submerged rock, or slipping. Target: swimmers, surfers, fishermen, inexperienced beach users	C. Serious Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	32/49 Medium		a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
Slippery Stairs	Risk: Injury as a result of slipping on steps Target: Anyone using steps.	C. Serious Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	32/49 Medium		a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
Uneven Ground	Risk: Injury as a result of slipping Target: All traffic	C. Serious Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	32/49 Medium		a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
Stingers (Floating)	Risk: Injury as a result of being stung Target: Anyone entering the water	C. Serious Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment.	32/49 Medium		a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium



		Risk Matrix Score					
UV Exposure	Risk: Sunburn and potential for skin cancer. Target: All	D. Moderate Impact	4. Could Happen	Poor - limited shade and/or public awareness noted during time of assessment.	27/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	D. 6. 13/49 Low
Mixed Usage	Risk: High volume pedestrian traffic within carpark and adjacent foreshore path network. Probability of collisions may occur between vehicles (e.g. Car, 4WD, bike, etc.) Target: pedestrians and drivers.	D. Moderate Impact	4. Could Happen	Moderate to Poor- Limited periodic advisory signage at time of assessment. Defined access paths in place at time of assessment.	27/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	D. 6. 13/49 Low



3.1.6 Risk Register and Risk Treatment Plan – Pottsville to Mooball Creek (North)

Hazard	Risk associated with hazard and target groups	Risk Matrix Score		Adequacy of Existing Controls	Risk and Rating	Proposed Risk Treatment	Residual Risk
		Consequence	Likelihood				
Dumping Surf	Risk: Injury / death as a result of being dumped wave. Target: Swimmers, surfers, inexperienced beach users, fishermen	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Water	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Drop Off	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Strong Currents	Risk: Injury/Death as a result of drowning - dangerous currents at creek mouth.. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Dangerous Current	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Steep Descent	Risk: Injury due to gradient Target: Beach users	B. Severe Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium
Shallow Water	Risk: Injury/Death caused by shallow water depth. Target: swimmers, surfers, fishermen, inexperienced beach users.	B. Severe Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium



Risk Matrix Score		Risk	Impact	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	B. 6. 22/49 Medium
Severity	Frequency					
Boat Traffic	B. Severe Impact	Risk: Boating activities entering and existing river mouth and Jack Evans Boat Harbour on a continual basis. Potential for collision with other craft and swimmers. Target: Other craft users, all swimmers and surfers	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	B. 6. 22/49 Medium
Boat Ramp/Launch	B. Severe Impact	Risk: Boating activities entering and existing river mouth and Jack Evans Boat Harbour on a continual basis. Potential for collision with other craft and swimmers. Target: Other craft users, all swimmers and surfers	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	B. 6. 22/49 Medium
Submerged Obstacles	B. Severe Impact	Risk: Injury / Death due to boat colliding with submerged rock Target: Boat traffic, inexperienced beach users	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	B. 6. 22/49 Medium
Erosion	C. Serious Impact	Risk: Injury/Death caused by changed or exposed surfaces Target: swimmers, surfers, fishermen, inexperienced beach users.	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	C. 6. 20/49 Medium
Unrestricted Access	C. Serious Impact	Risk: Injury/Death from entering more dangerous areas than if access provided, also not warned or able to make an informed decision on where to swim. Target: swimmers, surfers, fishermen, inexperienced beach users.	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	C. 6. 20/49 Medium
Sharks	C. Serious Impact	Risk: Injury/Death as a result of being attacked by a shark Target: anyone entering water	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	C. 6. 20/49 Medium
Slippery Rocks	C. Serious Impact	Risk: Injury as a result of slipping Target: All traffic	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	C. 6. 20/49 Medium
Slippery Surface	C. Serious Impact	Risk: Injury as a result of slipping on steps Target: Anyone using steps	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	C. 6. 20/49 Medium



	Risk Matrix Score	Risk Matrix Score					
		C. Serious Impact	4. Could Happen				
Uneven Ground	Risk: Injury as a result of slipping Target: All traffic	C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
Stingers (Floating)	Risk: Injury as a result of being stung Target: Anyone entering the water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
UV Exposure	Risk: Sunburn and potential for skin cancer. Target: All	D. Moderate Impact	4. Could Happen	Poor - Limited shade and/or public awareness noted during time of assessment.	27/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	D. 6. 13/49 Low



3.1.7 Risk Register and Risk Treatment Plan – Mooball Creek (South) to Black Rocks

Hazard	Risk associated with hazard and target groups	Risk Matrix Score		Adequacy of Existing Controls	Risk and Rating	Proposed Risk Treatment	Residual Risk
		Consequence	Likelihood				
Dumping Surf	Risk: Injury / death as a result of being dumping wave. Target: Swimmers, surfers, inexperienced beach users, fishermen	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Water	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Drop Off	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Strong Currents	Risk: Injury/Death as a result of drowning - dangerous currents at creek mouth.. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Dangerous Current	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Steep Descent	Risk: Injury due to gradient Target: Beach users	B. Severe Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium



		Risk Matrix Score						
		B. Severe Impact	4. Could Happen					
Shallow Water	Risk: Injury/Death caused by shallow water depth. Target: swimmers, surfers, fishermen, inexperienced beach users.	B. Severe Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium	
Boat Traffic	Risk: Boating activities entering and existing river mouth and Jack Evans Boat Harbour on a continual basis. Potential for collision with other craft and swimmers. Target: Other craft users, all swimmers and surfers	B. Severe Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium	
Boat Ramp/Launch	Risk: Boating activities entering and existing river mouth and Jack Evans Boat Harbour on a continual basis. Potential for collision with other craft and swimmers. Target: Other craft users, all swimmers and surfers	B. Severe Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium	
Submerged Obstacles	Risk: Injury / Death due to boat colliding with submerged rock Target: Boat traffic, inexperienced beach users	B. Severe Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium	
Erosion	Risk: Injury/Death caused by changed or exposed surfaces Target: swimmers, surfers, fishermen, inexperienced beach users.	C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium	
Unrestricted Access	Risk: Injury/Death from entering more dangerous areas than if access provided, also not warned or able to make an informed decision on where to swim. Target: swimmers, surfers, fishermen, inexperienced beach users.	C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium	



		Risk Matrix Score						
		C. Serious Impact	4. Could Happen					
Sharks	Risk: Injury/Death as a result of being attacked by a shark Target: anyone entering water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium	
Slippery Rocks	Risk: Injury as a result of slipping Target: All traffic	C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium	
Slippery Surface	Risk: Injury as a result of slipping on steps Target: Anyone using steps	C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium	
Uneven Ground	Risk: Injury as a result of slipping Target: All traffic	C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Defined access in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium	
Stingers (Floating)	Risk: Injury as a result of being stung Target: Anyone entering the water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium	
UV Exposure	Risk: Sunburn and potential for skin cancer. Target: All	D. Moderate Impact	4. Could Happen	Poor - Limited shade and/or public awareness noted during time of assessment.	27/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	D. 6. 13/49 Low	



3.1.8 Risk Register and Risk Treatment Plan – Wooyung

Hazard	Risk associated with hazard and target groups	Risk Matrix Score		Adequacy of Existing Controls	Risk and Rating	Proposed Risk Treatment	Residual Risk
		Consequence	Likelihood				
Dumping Surf	Risk: Injury / death as a result of being dumping wave. Target: Swimmers, surfers, inexperienced beach users, fishermen	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Water	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Drop Off	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Strong Currents	Risk: Injury/Death as a result of drowning - dangerous currents at creek mouth.. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Deep Hole	Risk: Injury/Death as a result of drowning. Target: swimmers, surfers, fishermen, inexperienced beach users.	A. Disastrous Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment.	43/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	A. 6. 34/49 Medium
Shallow Water	Risk: Injury/Death caused by shallow water depth. Target: swimmers, surfers, fishermen, inexperienced beach users.	B. Severe Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment.	38/49 High	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	B. 6. 22/49 Medium



	Risk Matrix Score	Risk	Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Unrestricted Access	C. Serious Impact	Risk: Injury/Death from entering more dangerous areas than if access provided, also not warned or able to make an informed decision on where to swim. Target: swimmers, surfers, fishermen, inexperienced beach users.	C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Sharks	C. Serious Impact	Risk: Injury/Death as a result of being attacked by a shark Target: anyone entering water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
Uneven Ground	C. Serious Impact	Risk: Injury as a result of slipping Target: All traffic	C. Serious Impact	4. Could Happen	Moderate to Poor - Some periodic advisory signage at time of assessment. Some defined access infrastructure in place at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	C. 6. 20/49 Medium
Stingers (Floating)	C. Serious Impact	Risk: Injury as a result of being stung Target: Anyone entering the water	C. Serious Impact	4. Could Happen	Moderate - Some periodic advisory signage at time of assessment.	32/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50). e. Provision of system of supervision (p.55).	C. 6. 20/49 Medium
UV Exposure	D. Moderate Impact	Risk: Sunburn and potential for skin cancer. Target: All	D. Moderate Impact	4. Could Happen	Poor - Limited shade and/or public awareness noted during time of assessment.	27/49 Medium	a. Adopt safety signage system (p.51). b. Education Programmes (p.58). c. Emergency Action Plan (EAP) (p.57). d. Control beach access (p.50).	D. 6. 13/20 Medium



Tweed Shire Council

3.2 Overview of Principal Risk Treatments

Assessed Beaches:

- Duranbah
- Fingal (including Dreamtime)
- Kingscliff
- Salt/ Casuarina
- Cabarita including North Beach
- Hastings Point including Cudgera Beach
- Pottsville to Mooball Creek (North)
- Mooball Creek (South) to Black Rocks
- Wooyung



3.2.1 Overview of Principal Risk Treatments

There are a range of risk treatment options that can be considered in the context of coastal risk management. The selection of the most appropriate option involves balancing the financial, social and environmental impacts of implementing each against the benefits derived from each. These may include any combination of the following

- Spread (share) risk – insurance
- Engineer (structural and technological) risk treatment – include modified practices
- Regulatory and institutional – change through revised regulations and planning
- Avoid – isolate the risk, move people away
- Research to better understand
- Educate and inform stakeholders

3.2.2 Hierarchy of risk treatments (controls)

In determining the most appropriate and cost effective option, it is important to consider the hierarchy of risk treatments (controls). The hierarchy is a sequence of options which offer a number of ways to approach the hazard control process.

- Hard controls deal with the tangible such as
 - Eliminate the hazard which in a coastal context is often difficult to achieve
 - Isolate the hazard which in a coastal context can be difficult due to the dynamic nature of environmental and weather conditions.
 - Use engineering controls such as design of access paths, installation of appropriate signage, and revegetation
 - Use administrative controls such as supervision, emergency action plans, other documented policies, practices and procedures
- Soft controls deal with human behaviour such as:
 - Use of effective leadership, management, trust, ethics, integrity, and building relationships
 - Education

Outlined below are principal risk treatment solutions that expand upon those listed within the Risk Register and Risk Treatment Plan section (pages 18-42). The solutions outlined endeavour to provide specific and detailed information relative to the beach locations; however due to the diverse nature of location characteristics, recommendations are at times mainly generic in nature.

Land managers, in this instance the Tweed Shire, should endeavour to adopt the most appropriate treatments specific to their organizations capabilities and in consultation with all relevant stakeholders. The principal risk treatments are as follows:

3.2.3 Beach Access Infrastructure and Ongoing Capital Works/ Maintenance Programmes

The provision of access to a beach is a major contributor to the creation of risk in that the access methods will guide people to the beach and to any hazards that may be present.

Therefore, access treatment, or otherwise is a major contributor to managing coastal risk.



With the existence of some public access infrastructure (defined access), and amenities comes the necessity to maintain existing infrastructure / capital works and further develop infrastructure to match that of the growing and changing community/ stakeholders needs.

A key outcome of the implementation of access tracks and safety signage is the need for a periodic maintenance / inspection and replacement programme. This is evidenced on the Tweed Coast with a reasonable number of existing defined access signs missing, broken and/or vandalized at the time of assessment.

It is recommended that infrastructure and capital works programmes that should be considered as a priority include:

- Removal of any undefined access tracks and boat launch area/s
- Erect fencing to restrict and or promote usage of the beach to certain areas only (also restrict access to cliff top edges)
- Upkeep of defined access paths
- Erect appropriate signage on all defined access tracks
- Removal of unnecessary and cluttered signage
- Improve conditions (grading or similar) and control (gates) of beach access tracks for emergency vehicles and other approved users such as professional fishers.

Other infrastructure and capital works programmes that may be undertaken (periodically and/or other) are as follows:

- Upkeep of jetty structures, rails, barriers, walkways and platforms.
- Upkeep of service amenities such as toilets, ablution, drinking water and the like.

Additionally, existing foreshore BBQ, playground/s, car park and service amenities, all subsequently attract large numbers of people (residents and tourists) including young children. The Guidelines for Water Safety in Urban Water Developments states that playgrounds that are situated within 30m of water should be isolated with fencing compliant with AS 1926.1 Swimming Pool Safety – Fencing for Swimming Pools. This keeps young children in the area of the playground and hinders them from wandering off and entering the water unintentionally.

RECOMMENDATIONS

4. The recommended beach access treatments as outlined in the Access and Signage Schedule in Section 3.3 be implemented.

5. It is recommended the Tweed Shire review all playgrounds and picnic areas within close proximity of water areas, both coastal and estuary, and ensure appropriate risk treatments are in place.

3.2.4 System of Safety Signage

A co-ordinated approach to signage with strategically placed signs and content clearly visible is a very important part of aquatic risk management. An indicative signage schedule has been included within the 'Signage Schedule' section of the report.

Safety Signs

In terms of a signage system, the following points are made for consideration:



- Safety Signs as recommended in this report should follow the National Aquatic and Recreational Signage Style Manual, 3rd Edition, July 2006 and AS 2416 – 2002: Design and application of water safety signs (4th Edition).
- Signage layout consist of the following sections listed in hierarchal order:
 - a. Location name and emergency marker (if applicable) or street address
 - b. Hazards and warnings within the designated area
 - c. Safety information or general location /area details
 - d. Regulations
 - e. Facility Land Manager
- The importance of effectively placing risk management and safety signage in a public reserve cannot be underestimated. Location, height and existing visual distractions are major factors which contribute to the effectiveness of a sign when installed.
- Car park signs should be sited central to the car parking area as visitors drive in and placed where parked vehicles will not obscure the sign.
- Open access signs should be spaced at regular intervals, with the distance between individual signs dependent upon the calculated Facility Visitation Rate (FVR).
- Defined access signs should be sited as close as practical to the access point, or other appropriate location, and need to be consistently applied where possible *e.g.* on the left of the track entrance.
- To effectively capture the attention of visitors, improve overall visual amenity and avoid confusion as a result of too many signs, repetitive and/or unnecessary information and signs should be removed. Further, any secondary signage that is present at a location should not “compete” for attention and should be re-located as appropriate so as not to impact on the recognition of the safety orientated primary risk management signage.

As a summary, the signage schedule has recommended the following types and quantities of signage.

Figure 3.2.4.1: Signage Schedule Summary

BEACH	OPEN ACCESS	Open Access (Optional closure)	DEFINED ACCESS	Defined Access (Optional Closure)	ACCESS CLOSURE
Duranbah	0	0	8	0	2
Fingal	0	0	9	1	0
Kingscliff	1	0	33	8	2
Salt/Casuarina	2	0	24	0	2
Cabarita	2	0	12	3	0
Hastings Point	2	1	10	1	0
Pottsville	2	0	9	3	0
Mooball	5	0	14	6	0
Wooyung	2	1	1	1	0



	16	2	120	23	6
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In total 120, Defined Level 3 Access and 16 Open Access signs have been recommended for the beaches outlined and assessed within the report. The option has been given to close some of these accesses which if done correctly would negate the signage requirement. If all optional access closures were closed then a total of 14 Open Access signs and 97 Defined Access signs would be required for Tweed Shire beaches.

These are listed in detail within the 'Access and Signage Schedule' in Section 3.3 of the report.

RECOMMENDATION

6. The Tweed Shire implement the risk treatments outlined in the Access and Signage Schedule in Section 3.3.

Emergency Location Indicators/Markers (aka Emergency Beach Access Number)

The provision of specific location information along a coastal area, beach, trail or track can be vital in times of emergency and to ensure emergency services can respond to a call for help and go directly to the location without hesitation or wasted time. The following photographs show samples of the two types of emergency location indicator signs currently in use in the Tweed Shire.



Beach based pyramid marker, Pottsville, NSW



Street based flat marker, North Kingscliff, NSW

In July 2006 the third edition of the National Aquatic and Recreational Signage Style Manual (NARSSM) was released, with a call for an Australia-wide standardisation of best practice aquatic and recreational safety signage.

Existing markers noted at time of assessment may need to be revised and incorporated into the new signage system. Some signs are obscured by growing foliage and debris from trees.

The Assessors are aware the Tweed Shire in liaison with other local Shires and the Northern Branch, Parks and Wildlife Group are working on a new emergency location indicator numbering scheme. The development of a numbering scheme should also be coordinated with Emergency Services Authorities.

At present there is no national numbering scheme and recent information would indicate this outcome is some way off.

RECOMMENDATION

7. It is recommended that the following emergency location signage identifier as shown in the NARSSM be used in the installation of any new emergency location indicator scheme within the Tweed Shire.



Surf Life Saving New South Wales is well placed to assist in this activity.

3.2.5 Separate Designated Swimming and Boating Areas

Clearly defined areas for swimming and boating will greatly reduce the likelihood of a collision occurring between a swimmer and a boat and/or other small craft.

During the course of the risk assessment there were a number of creek and river mouth locations identified where there may be a conflict between swimming and boating activities, in particular the northern Tweed River and Cudgen Creek.

These areas should be reinforced with appropriate visible signage, viewable and legible from both in and out of the water.

In addition, the separation of swimming and boating may necessitate the need for prohibition and/or warning signage advising that swimming is not advised. A blanket recommendation has been made specific to 'swimming not advised' within the various river and creek mouths due to currents and the potential of collision with boats and crafts. A distinction between the two types of signage (prohibition and warning) needs to be made as considerations arise with each alternative.

Fundamentally, a prohibition 'No Swimming Sign (RS, 40)' can be interpreted as requiring a systemic approach of reinforcement/ policing (e.g. enforceable within local laws regulations). If it cannot be feasibly enforced, consideration should be given to erecting an advisory warning sign of 'Swimming Not Advised (AWS, 1)'. Consultation should be made with the local laws or relevant regulatory enforcement body within the Tweed Shire.

Strategic use of buoyage systems can also provide clear identification of areas or zones where activities are permitted or otherwise. The Australian Coastal Public Safety Guidelines SE 1103 Issue 1; Aquatic activity zoning and safety zones outlines how zoning provides a beach management tool to isolate or separate activities that may be incompatible with the other activities or isolate hazards or activities that are required to be contained to a particular area.

Additionally, any informal boat access points onto the beach/es should be closed in order to nullify the need for signage.

Consultation, as relevant and appropriate, should be sought with the appropriate marine safety regulatory body.

RECOMMENDATION

8. It is recommended that appropriate safety signs be provided at those beaches immediately inside the creek mouths where boat traffic and swimmers are likely to come in contact.; eg. Tweed river and Cudgen Creek mouths. Further, appropriate marker buoys be considered to warn boat operators of the potential for swimmers.

3.2.6 System of Supervision – Lifesaving Service Level Analysis

The supervision of beaches is often required to manage the risk of the location whether due to prevailing water conditions, the proximity to large populations of people or the attendance to the beach due to its proximity or attractiveness.

The following four factors, often termed the hierarchy of supervision, are collectively vital components of effective aquatic supervision.

I. Attention of supervision

Visual supervision is vital in any effective supervision.

- Cameras through closed circuit television (CCTV) can aid supervision through remote monitoring of television screens, however their effectiveness is only as good as the person watching the screen and the appropriateness of the response practices and procedures in place to respond to an alter actioned by that person watching the screen(s). CCTV can be effective for accident investigation.
- Lifeguards (on beach, on towers, in-water and combination) are the most effective method of supervision as they can provide supervision that is able to prevent incidents, they can be mobile to compensate for changing conditions such as beach usage, weather and water conditions.

Auditory supervision can aid visual supervision, however in many aquatic instances the environmental sounds such as that created by wind and waves can mask or even modify the sounds.

II. Proximity of supervision in the aquatic safety context can be defined as the location (on-beach, in a lifeguard tower, mobile, in-water, on vessel or vehicle etc.) of persons providing supervision (lifeguard) to persons on the beach and in the water such that they can affect an intervention to minimise the risk of injury or death.

III. Continuity of supervision is measured in terms of uninterrupted, intermittent, or absent and can impact aquatic safety.

IV. Timeliness of supervision is the provision of supervision at appropriate or opportune times where there is a reasonable likelihood, determined by historical and real time data analysis, of people being present at the beach/in the water and requiring intervention to ensure their safety from risk of injury or death.

The management of protective and rescue services at open-water recreational beaches should distinguish between those areas that will receive a lifesaving service and those areas that will not.

The primary decision to be made by management before establishing a lifesaving service is which areas will be denoted as “guarded” and which will be “unguarded.” A lifeguarded beach or designated safer bathing (swimming) area is one at which a trained lifesaver and/or lifeguard is stationed during prescribed times and designated by the flying of red and yellow flags.



A lifesaver/lifeguard or lifeguard vehicle that periodically visits or checks a beach area should not be considered as providing a guarded beach by either the management or the population served.

The beach users should be made aware of the location of the guarded and unguarded sites so that they may make an informed choice as to where to swim. This can be achieved through appropriate signage, advertising in local media, and public awareness through residential and accommodation promotion.

As is often the case, the provision of supervision is difficult to establish or not provided for some or all of the following.

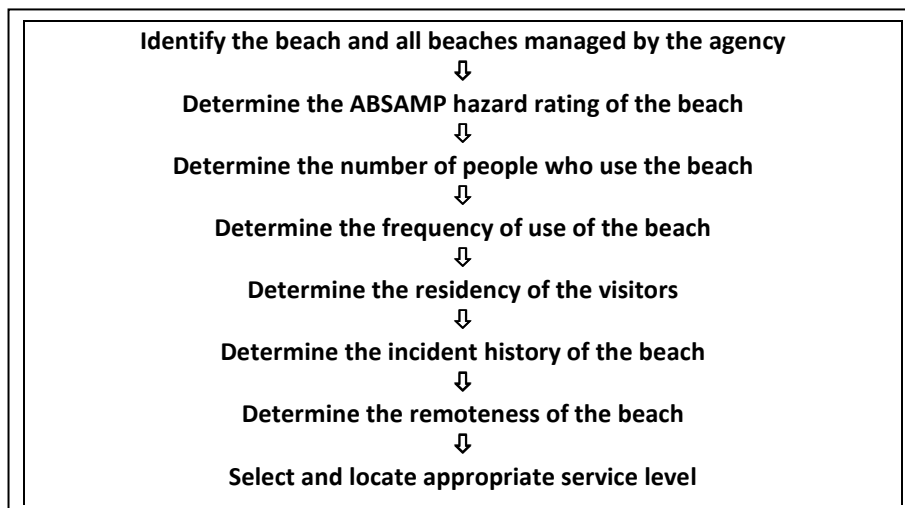
- The provision of a service may encourage attendance at a non suitable location
- Difficulty locating suitable volunteers
- Deemed too cost prohibitive and therefore not provided by the responsible management agency.

There are a range of beach supervisory services that should be considered as it is not “one size fits all”. They include:

- **Full time comprehensive Lifesaving Service** with appropriate levels of trained personnel, fixed and portable facilities, equipment, craft, vehicles and links to central command and emergency services.
- **Seasonal Lifesaving Service** with appropriate levels of trained personnel, portable facilities, equipment, craft, vehicles and links to central command and emergency services.
- **Seasonal Lifesaving Service with trained personnel**, portable facilities, some equipment and craft, and links to a command centre.
- **Camera surveillance**, however the limitations as outlined above must be noted
- **No Service**, but the provision of Safety Signs.

To determine the necessary lifesaving service levels required at each of the beaches, subject to this assessment, the following process (see Figure 3.2.6.1 below) has been carried out.

Figure 3.2.6.1: Lifesaving Service Level Assessment Process



The quantitative values from each item are then added together to form the Lifesaving Service Level Score which is then used to determine the recommended service level of the location.

Section 3.4 contains the Lifesaving Service Level calculations for each beach with relevant information.

RECOMMENDATION

9. It is recommended the Tweed Shire implement lifesaving service levels as described in Section 3.4 of this report.

3.2.7 Existence of Coastal/Beach Emergency Action Plans

Coastal emergencies can vary between land and water, and can be the result of natural processes or human action.

A well planned and rehearsed emergency action plan (EAP) can greatly minimise the extent of injury and damage if an incident does occur. Obviously, Tweed Shire and beach stakeholders and users will need to know how to raise the alarm and this will involve educating them in the Emergency Action Plan (EAP).

The Emergency Action Plan (EAP) is an important part of coastal operations.

A coastal based EAP should consider many emergency situations including medical, missing persons, fire, vehicle accident, vessel collision, pollution event, severe weather, structure collapse, structure climbing/descending emergencies, criminal assault, natural disasters such as tsunami and earthquake. These coastal EAPs should be developed in liaison with lifesaving service providers and should link in with lifesaving service EAPs where possible.

The EAP should be developed through broad consultation with all relevant stakeholders that may include relevant personnel from the local government authorities and regional agencies for the State government, emergency services representations, local safety organisations such as surf lifesaving clubs and lifeguard service providers.

The EAP should consider a broad range of issues including the following.

- the specific needs, conditions and environment of each location
- details of the location such as map, street names, GPS coordinates
- the date when the plan was developed and approved for implementation
- Emergency Personnel Names and Phone Numbers
- Designated Responsible Official (Highest Ranking Manager for Shire); name and contact details, plus role and responsibilities
- Emergency Coordinator for the location; roles and responsibilities
- Emergency notification flow chart
- Emergency assembly locations, access and evacuation routes; if gated the names and contact details for all relevant personnel who have access
- Emergency related equipment such as communications (telephones, alarms etc.), rescue equipment, fire fighting etc.
- Emergency service contact details, which may include Fire, Police, Ambulance, Lifesavers, Security, Ranger/land manager, utilities such as water, communications, gas and electricity



- Emergency procedures in particular procedures that establish timely and reliable recognition of emergency events, and procedures for emergency notification and hierarchy
- Critical operations in times of emergencies
- Critical communications for the emergency services
- Communications for the communities affected

The EAP should be tested and periodically practiced, and the existence of the plan should be communicated with relevant stakeholders, and the community at large.

It is also important for local lifesaving services to be included in any local disaster plans, in particular given an increase in the number and severity of extreme weather events.

It is noted that the assessment or development of an Emergency Action Plan was not part of this Coastal Risk Assessment.

RECOMMENDATION

10. It is recommended the Tweed Shire should have in place appropriate EAPs for its key beaches and coastal areas.

3.2.8 Education and Awareness Programmes

Education and awareness programmes for residents and tourists alike have been shown to be effective in controlling risks on beaches.

Public education and safety awareness programmes outlining known and likely occurring hazards within the Tweed Shire beaches should be developed. This would be especially relevant to the various “tourist” areas and high-density accommodation locations e.g. caravan parks and hotels throughout the shire boundaries.

However, education and awareness programmes should not be confined to just the tourist sector; local community groups should also be made aware of any potential hazards associated with their local coastal environment i.e. primary school children, indigenous groups.

Education and safety awareness programmes may incorporate various aspects associated with specific beach activities and management e.g. Education about PFD usage on recreational crafts, rock and beach fishing safety and other water safety initiatives and any emergency response strategies.

The programme could be executed using a variety of forums. A myriad of marketing/health promotion approaches/strategies may be used in order to obtain wide spread awareness of common coastal associated hazards (e.g. radio, signage or schools programmes) or specific to a particular foreseeable hazard. Consideration should be given to a multi-lingual approach in areas where extensive foreign language discourse occurs.

The following Table 6 outlines a range of education and awareness programme options which can be packaged and targeted at specific population groups.

It is noted that the development of a recommended education and awareness programme was not part of this Coastal Risk Assessment.



RECOMMENDATION

11. It is recommended the Tweed Shire, in liaison with beach safety groups, tourism authorities and other coastal representative groups should develop a coastal, beach, rock and beach fishing, boating and water safety education and awareness programme.

Surf Life Saving New South Wales is well placed to assist in this activity.

Table 3.2.8.1: Recommended education and awareness programmes

Programme	Target audience	Location	Delivery
Beach safety leaflets	Caravan parks, hotels, back packer accommodation, tourist attractions and tourist information centres.	All locations	SLSNSW/Tweed Shire
School based safety programmes	Lifesavers/Lifeguards attending local Tweed Shire primary schools	All locations	SLSNSW
Indigenous safety awareness programme	Visit by local lifesavers/lifeguards to indigenous communities to provide beach safety information	Eg. Fingal	SLSNSW/Tweed Shire
Car park tickets	Use car parking ticketing to deliver key safety message i.e. "always swim between the red and yellow flags".	All locations	Tweed Shire
Media/Promotion	Use local media and promotional opportunities to deliver safety messages during the peak summer season i.e. local newspapers, local radio, community publications and billboards.	All locations	SLSNSW/Tweed Shire
Hotel safety cards	Small card displayed in hotel rooms/Static caravans etc...promoting key safety messages – flags, rips, emergency telephone number.	All locations	SLSNSW/Tweed Shire
Nipper programmes	Encourage local children to join local SLSC's and take part in Nipper activities.	All locations	SLSNSW and SLSC's
Boating safety information	Display safety information at launching sites/ramps i.e. by-laws, speed restrictions, zones.	All locations	Maritime NSW/Tweed Shire
Disseminate boating safety leaflet	Distribute boating safety leaflets to local and visiting boat users and at launch sites, caravan parks, hotels, tourist attractions, garages etc...	All locations	Maritime NSW/Tweed Shire
Surf survival programme	Promote SLSA's surf survival programme at local SLSC's and surf shops	All locations	SLSNSW and SLSC's
Beach safety warnings	Media (eg. Radio and TV)	All locations	SLSNSW

3.2.9 Monitor and review

Monitoring and reviewing ensure that risk treatment options are meeting their objectives, new hazards and risks are identified in a timely manner and evolving council strategies are in line with community expectations.



The Tweed Shire has some well developed data and information collection, collation and analyses practices and procedures, however there is room for improvement on that which relates to access and use of the 37kms of coastline and the many beaches.

This data is vital in monitoring risk exposures and treatments and any trends arising from changing beach usage by residents and tourists. The timely analysis of the data and evaluation of risk treatments will enable intervention strategies and tactics to be effectively implemented.

The Tweed Shire may determine to engage service providers such as the surf lifesaving clubs and lifeguard services to assist with or even lead this task.

RECOMMENDATION

12. It is recommended the Tweed Shire should review and enhance its coast and beach related data and information collection, collation and analyses deemed necessary to underpin accurate risk assessment and effective risk treatment actions. This activity could be actioned on behalf of the Shire by the beach safety liaison committee.



Tweed Shire Council

3.3 Access and Signage Schedule/s

Assessed Beaches:

- Duranbah
- Fingal (including Dreamtime)
- Kingscliff
- Salt/ Casuarina
- Cabarita including North Beach
- Hastings Point including Cudgera Beach
- Pottsville to Mooball Creek (North)
- Mooball Creek (South) to Black Rocks
- Wooyung

Note: GPS Datum is WGS 84. Additionally, the GPS device used was a GARMIN GPS 60 with a margin error of ± 6.0 metres.



3.3.1 Signage Schedule – General Overview

Recommended Signage Types







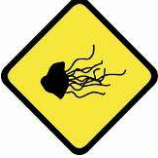









Provided below are examples of the types of signs recommended within each of the nine beach cluster locations.

				<p>Level 3: Defined Access Type B: 3 or 4 Hazard Symbols</p>	<p>Level 3 Open Access Type C: 3 or 4 Hazard Symbols</p>	<p>Level 1: Road Sign</p>	<p>Level 4: Individual Hazard and Regulation Signs</p>
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Recommended Hazard Symbols

In reference to the hazard symbol pictorials they are listed in summary below. The alpha numerical code relates to how they are ordered with the *National Aquatic and Recreational Signage Style Manual, Third Edition*.

					
Swimming Not Advised (AWS,1)	Outfall (WS,40)	Submerged Objects (WS,35)	Shore Dump (WS,41)	Slippery Stairs (WS,37)	Deep Hole (WS,36)
					
Stingers (WS 26 or 27) – depending on type	Sharks (WS,25)	Unstable Cliffs (WS,9)	(Playground) (WS,2)	Steep Walking Track (WS,6)	Pedestrians (WS,4)
					
Slippery Area (WS,11)	Beware Boat Traffic	Beware Swimmers	Drop Off (WS,32)	Warning (WS,15)	

Signage Schedule Reference Number Definition

The Reference numbers in the following signage schedules present two sets of numbers; firstly the global positioning system (GPS) way point reference number and secondly a camera allocated photograph number. In summary, the numbers on their own (eg. 003) are the way points from the GPS device and the two 3 digit number joined by a hyphen (eg. way 003-001) are the way point followed by the photograph number from the camera. The way point number will only be used once when it is on its own (eg. 003), however the way point number can be used a multiple number of times when it has a photograph attached (eg. 003-001, 003-002 etc.)

There are some way points without a photograph attached as the assessor determined a photograph was not required during the on-site visit, or the photograph was “not attached to the way point” during the data synchronization phase during preparation of this risk assessment report.

The actual onsite risk assessment for the Tweed Shire coast was completed from south to north and hence in general the lower numbers are in the south and the higher numbers in the north.



Access and Signage Schedule – Access Specific Risk Treatments

The following signage schedules include existing and proposed risk treatments that are specific to accesses. These include, but are not limited to:

- **Closure (Elimination)** – involving revegetation of eroded ground and preventative measures (such as fencing and the removal of existing signage) that would prevent a reasonable person from concluding that access is provided.
- **Formalisation** – involving provision of access control measures (such as fencing and signage) that would allow a reasonable person to conclude that access is provided the desired location.
- **Maintenance** – existing signage & formal access tracks requiring maintenance to ensure they continue to provide the desired controlling of access, and ensure they do not become a hazard themselves.
- **Routine Maintenance** – Monitoring of implemented signage and formalised access to ensure a satisfactory condition is maintained.
- **Signage** – as described in “System of Safety Signage” (page 42). This may also involve the removal of non-standard signage that could cause confusion or detract from the desired purpose of standard aquatic and recreational signage.

Access and Signage Schedule – Recommendations for all signs

All signage should incorporate the following information:

- **General Information** – for example, the location and direction of the nearest patrolled location,
- **Regulations** – As required by local Tweed Shire ordinances,
- **Facility Manager** – If desired, the signs can incorporate the Tweed Shire logo.

Emergency Location Indicators/Markers

The following should be read in conjunction with Section 3.2.4 above and the Access and Signage Schedule as follows.

During the assessment there were a number of emergency location indicators/markers obscured by growing foliage and debris from trees. There were some markers noticeably missing as there were rusted poles without any signage atop. The existing emergency location indicators/markers identified during the course of the assessment should be revised and incorporated into the new signage system as recommended in this section. This review should be conducted in liaison with both statutory and emergency services agencies.

Emergency Vehicle Access to the Beach

There are a number of vehicle access tracks to the beach, few have relevant signs or control mechanisms such as a lockable barrier.

Those tracks that are used for emergency vehicles should be identified by appropriate signage at the nearest contact with the roadway. These signs should have an emergency location indicator/marker in accordance with the recommendations contained within this report and numbering scheme approved by the relevant emergency service providers.





Distance to closest Lifesaving Service Patrolled Area






The following signage should be used to direct the beach users to permanent lifesaving services such as that provided by the four volunteer surf lifesaving clubs.








Reference to specific user group or language requirements



3.3.2 Access and Signage Schedule – Duranbah






Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
056-388		1st defined access at end of Eden Street northward into reserve.	S28 10.007 E153 33.014	Car parking, some signage, formal walkway	- Signage - Routine Maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
056-399		1st defined access at end of Eden Street providing south access onto Duranbah Beach.	S28 10.020 E153 33.015	Informal access with no risk treatments	- Closure		
057-401		2nd defined access off Eden Street providing access onto Duranbah Beach.	S28 10.081 E153 32.996	Formal, fenced & signed.	- Signage - Routine Maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Outfall (WS,40)
057-402		3rd defined access at end of Eden Street providing south access onto Duranbah Beach.	S28 10.090 E153 32.994	Formal fenced vehicular access, unsigned	- Formalisation - Signage - Routine Maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Outfall (WS,40)
057-403		4th defined access at end of Eden Street providing south access onto Duranbah Beach.	S28 10.113 E153 33.011	Formal, fenced & signed.	- Signage - Routine Maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Outfall (WS,40)







Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
057-409		1st Defined access (starting from the north) off Coral Street.	S28 10.147 E153 33.026	Formal, fenced & signed. Temporary steps provided over sand pumping pipe. No handrails provided for steps.	- Signage - Maintenance - Routine Maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Outfall (WS,40)
057-412		2nd Defined access (starting from the north) off Coral Street.	S28 10.171 E153 33.044	Formal, fenced & signed. Temporary steps provided over sand pumping pipe. No handrails provided for steps.	- Closure*		
057-418		3rd Defined access (starting from the north) off Coral Street.	S28 10.191 E153 33.034	Formal & signed. Temporary fencing provided around sand pumping pipe.	- Signage - Maintenance - Routine Maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Outfall (WS,40)
057-428		4th Defined access (starting from the north) off Coral Street - leading to breakwater.	S28 10.202 E153 33.034	Observation deck, formal and fenced	- Closure OR - Signage - Routine Maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Drop Off (WS,32) Submerged Objects (WS,35) Slippery Rocks and Surface (WS,11) Swimming Not Advised in River Mouth - Boat Traffic (AWS,1)
057-429		Defined access off Coral Street, leading onto North Head Beach.	S28 10.208 E153 33.018	Formal access, prohibition signage	- Signage - Routine Maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Drop Off (WS,32) Submerged Objects (WS,35) Slippery Rocks and Surface (WS,11) Swimming Not Advised in River Mouth - Boat Traffic (AWS,1)



3.3.3 Access and Signage Schedule –Fingal (including Dreamtime)






Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
018-348, + Caravan Park		Multiple Defined access from Caravan Park and Defined access adjacent to Surf Life Saving Club.	S28 11.907 E153 33.945	Formal, fenced access. Non-standard signage.	- Signage - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
056-379		1st Defined Access off Marine Parade; starting from the north.	S28 11.923 E153 33.953	Formal, fenced, non-standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
056-380		2nd Defined Access off Marine Parade; starting from the north.	S28 11.970 E153 33.990	Formal, fenced, non-standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
056-381		3rd Defined Access off Marine Parade; starting from the north.	S28 11.982 E153 33.999	Formal, fenced. No Signage	- Closure OR - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
056-382		4th Defined Access off Marine Parade; starting from the north.	S28 12.013 E153 34.016	Formal, fenced	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)









Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
056-383		Defined Access off Queen Street.	S28 12.057 E153 33.943	Formal, fenced, signed as beach access	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
056-384		Defined Access path end of Queen Street leading east to Fingal Head.	S28 12.160 E153 33.990	Emergency access track	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
056-385		Defined Access path end of Queen Street leading south of Fingal Head.	S28 12.155 E153 33.996	Formal, fenced, signed as "Fingal Head Lighthouse Access Track"	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
018-349		Defined Access off Fingal Road south of Fingal Head.	S28 12.246 E153 34.012	Formal, fenced, non-standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)









3.3.4 Access and Signage Schedule –Kingscliff

Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
017-281		Access in front of Coast Guard Tower.	S28 15.548 E153 34.946	Wooden Sign, informal	- Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C- 3/4 Hazard Symbols)	Swimming Not Advised in Creek - Turbid Water (AWS,1) Strong Currents (WS, 29) Drop Off (WS,32) Boat Traffic (WS,3)
017-286		Toward end of Breakwater/ Rock Wall east side of Cudgen Creek.	S28 15.515 E153 34.987	Paved walkway along breakwater, non-standard signage	- Closure OR - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Swimming Not Advised in Creek - Turbid Water (AWS,1) Strong Currents (WS, 29) Drop Off (WS,32) Boat Traffic (WS,3)
017-287		1st defined access within Faulks Park; starting from the east.	S28 15.545 E153 34.917	Path access, unsigned, no fencing	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
017-289		2nd defined access within Faulks Park; starting from the east.	S28 15.533 E153 34.887	Formalised, fenced, prohibition signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
017-290		3rd defined access within Faulks Park; starting from the east.	S28 15.529 E153 34.852	Formalised, fenced	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)









Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
017-291		4th defined access within Faulks Park, starting from the east.	S28 15.526 E153 34.813	Formal, fenced, non-standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B-3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
017-292		1st Defined access east of Life Saving Club, off Marine Parade Car Park	S28 15.492 E153 34.750	Formal, fenced.	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B-3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
017-295		2nd Defined access east of Life Saving Club, off Marine Parade Car Park	S28 15.478 E153 34.699	Formal, fenced.	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B-3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
017-301		1st Defined access east of Life Saving Club.	S28 15.455 E153 34.665	Formal, fenced, non-standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B-3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
018-313		1st defined Access within Kingscliff Beach Caravan Park off Marine Parade; starting from the west heading east.	S28 15.427 E153 34.613	Formal access, insufficient fencing, prohibition signage and shower	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B-3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
018-316		2nd defined Access within Kingscliff Beach Caravan Park off Marine Parade; starting from the west heading east.	S28 15.413 E153 34.589	Worn informal access, near lighting and degraded fencing	- Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B-3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)









Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
018-318		3rd defined Access within Kingscliff Beach Caravan Park off Marine Parade; starting from the west heading east.	S28 15.397 E153 34.573	Formal access, insufficient fencing, prohibition signage and shower	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-319		4th defined Access within Kingscliff Beach Caravan Park off Marine Parade; starting from the west heading east.	S28 15.383 E153 34.556	Informal access, not signed, not fenced	- Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-320		5th defined Access within Kingscliff Beach Caravan Park off Marine Parade; starting from the west heading east.	S28 15.377 E153 34.545	Informal access, not signed, not fenced	- Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-321		6th defined Access within Kingscliff Beach Caravan Park off Marine Parade; starting from the west heading east.	S28 15.364 E153 34.530	Informal access, not signed, not fenced	- Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-326		7th defined Access within Kingscliff Beach Caravan Park off Marine Parade; starting from the west heading east.	S28 15.355 E153 34.521	Degraded access, informal, not signed	- Closure		
018-327		8th defined Access within Kingscliff Beach Caravan Park off Marine Parade; starting from the west heading east.	S28 15.349 E153 34.511	Channelled access not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B - 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)









Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
018-328		9th defined Access within Kingscliff Beach Caravan Park off Marine Parade; starting from the west heading east.	S28 15.338 E153 34.497	Informal access, not signed, not fenced	- Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-329		10th defined Access within Kingscliff Beach Caravan Park off Marine Parade; starting from the west heading east.	S28 15.319 E153 34.474	Informal access, not signed, not fenced	- Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-330		11th defined Access within Kingscliff Beach Caravan Park off Marine Parade; starting from the west heading east.	S28 15.310 E153 34.466	Channelled access not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-332		South Defined Access path with RSL Car Park.	S28 15.290 E153 34.447	Formal fenced access, car park, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-333		North Defined Access path with RSL Car Park.	S28 15.230 E153 34.382	Car park, informal access not signed	- Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-334		1st Defined Access path within Jack Bayliss Park; Starting East and heading northwest.	S28 15.165 E153 34.316	Formal, vehicle access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)




Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
018-335		2nd Defined Access path within Jack Bayliss Park; Starting East and heading northwest.	S28 15.076 E153 34.246	Formal paved access, not signed, shower located near by	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
018-336		3rd Defined Access path within Jack Bayliss Park; Starting East and heading northwest.	S28 14.995 E153 34.209	Well used access, fenced along one side, not signed	- Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
018-337		4th Defined Access path within Jack Bayliss Park; Starting East and heading northwest.	S28 14.930 E153 34.179	Formal access, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
018-338		5th Defined Access path within Jack Bayliss Park; Starting East and heading northwest.	S28 14.872 E153 34.157	Informal track	- Closure		
018-339		6th Defined Access path within Jack Bayliss Park; Starting East and heading northwest.	S28 14.813 E153 34.130	Formal access, not signed	- Closure OR - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
018-340		7th Defined Access path within Jack Bayliss Park; Starting East and heading northwest.	S28 14.795 E153 34.117	Formal access, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)








Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
018-341		8th Defined Access path within Jack Bayliss Park; Starting East and heading northwest.	S28 14.722 E153 34.093	Formal access, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-342		9th Defined Access path within Jack Bayliss Park; Starting East and heading northwest.	S28 14.620 E153 34.039	Formal access, signed, car park, bbqs and tables.	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-343		10th Defined Access path within Jack Bayliss Park; Starting East and heading northwest.	S28 14.515 E153 34.026	Formal access, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-344		1st Defined Access path within Kingscliff North Holiday Park; starting southeast and heading northwest.	S28 14.487 E153 34.018	Formal access, with non standard signage ("patrolled beach 2km south")	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-345		2nd Defined Access path within Kingscliff North Holiday Park; starting southeast and heading northwest.	S28 14.455 E153 34.010	Formal access, with non standard signage ("patrolled beach 2km south")	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)
018-346		3rd Defined Access path within Kingscliff North Holiday Park; starting southeast and heading northwest.	S28 14.402 E153 33.963	Formal access, non standard signage ("Public Beach")	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingery (WS,15)









Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
018-347		Defined access path north of Murphy's Road	S28 14.157 E153 33.867	Formal access, non standard signage ("Beach Access")	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)



3.3.5 Access and Signage Schedule -Salt/ Casuarina

Access Reference	Photos	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
193	N/A	Formalised car parking area with long track leading to beach	S 28°19'1.83" E 153°34'9.37"			Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-194		1st defined access path within Salt housing estate; starting from the south - starting south of Harper Court	S28 19.039 E153 34.186	Paved, formal access.	Marked for removal by land manager		
015-196		2nd defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 19.006 E153 34.198	Formal access with amenities, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-199		3rd defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.969 E153 34.198	Formal access with amenities, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-200		4th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.917 E153 34.212	Formal access with amenities, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-201		5th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.861 E153 34.224	Formal access with amenities, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)



Access Reference	Photos	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
015-203		6th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.760 E153 34.232	Formal access with amenities, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-204		7th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.687 E153 34.238	Formal access with amenities, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-205		8th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.662 E153 34.249	Formal access with amenities, not signed	Marked for removal by land manager		
015-206		9th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.534 E153 34.275	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-208		10th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.480 E153 34.285	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-209		11th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.367 E153 34.312	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)



Access Reference	Photos	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
015-210		12th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.264 E153 34.332	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-216		13th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.155 E153 34.358	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-217-8		14th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 18.008 E153 34.385	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-219		15th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 17.921 E153 34.406	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-220		16th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 17.871 E153 34.415	Formal 4WD Emergency access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)








Access Reference	Photos	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
015-221		17th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 17.794 E153 34.431	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-222		18th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 17.727 E153 34.447	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-223		19th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 17.627 E153 34.467	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-224		20th defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 17.508 E153 34.497	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-225		21st defined access path within Salt housing estate; starting from the south and off parallel foredune track network.	S28 17.394 E153 34.523	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-228		1st defined access path, from the south off Clara Lane.	S28 16.930 E153 34.628	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)









Access Reference	Photos	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
015-229		2nd defined access path, from the south off Clara Lane.	S28 16.835 E153 34.655	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
018-310		Defined access leading to lookout tower.	S28 16.539 E153 34.750	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
018-311		1st Defined access to the north of surf club and lookout tower.	S28 16.447 E153 34.760	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
018-312		1st Defined access to the south of surf club and lookout tower.	S28 16.625 E153 34.710	Formal access with amenities, some non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)






3.3.6 Access and Signage Schedule -Cabarita including North Beach

Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
013-151		Defined access adjacent Brushshox Court	S28 20.495 E153 34.281	Informal, not signed	- Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
013-152		Defined access at end of Hastings Road - Southward defined access path	S28 20.307 E153 34.424	"Emergency Vehicle Access" Formal, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
014-158		At top of Norries Head Lookout.	S28 20.248 E153 34.596	At the end of formal stepped access way, not signed, start of informal tracks	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Unstable Cliffs (WS, 9) Steep Stairs (WS,38) Slippery Area (WS,11) Uneven Ground (WS,7)
014-172		Defined access with reserve at end of Hastings Road	S28 20.216 E153 34.413	Formal access at top of stairs not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Submerged Objects (WS,35) Strong Currents (WS, 29) Steep Descent (WS,9) Slippery Rocks and Surface (WS,11)
014-175		Defined access with reserve at end of Hastings Road	S28 20.265 E153 34.451	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Submerged Objects (WS,35) Strong Currents (WS, 29) Steep Descent (WS,9) Slippery Rocks and Surface (WS,11)



Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
014-176		Defined access with reserve at end of Hastings Road	S28 20.266 E153 34.474	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Submerged Objects (WS,35) Strong Currents (WS, 29) Steep Descent (WS,9) Slippery Rocks and Surface (WS,11)
014-177		Defined access with reserve at end of Hastings Road	S28 20.272 E153 34.480	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Submerged Objects (WS,35) Strong Currents (WS, 29) Steep Descent (WS,9) Slippery Rocks and Surface (WS,11)
014-178		Defined access at end of Hastings Road - eastward defined access path	S28 20.288 E153 34.440	Formal access, non standard signage	Closure OR - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
015-179		Open access on raised foredune/ reserve area off Coast Road	S28 20.177 E153 34.370	Formal access, not standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C- 3/4 Hazard Symbols)	Cliffs Edge (WS, 9) Steep Descent (WS,16) Slippery Area (WS,11) Steep Walking Track (WS,6)
015-183		Defined access at end of Palm Avenue	S28 20.017 E153 34.194	Formal access, not standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-184		Defined access at end of Pandanus Parade	S28 19.968 E153 34.177	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)




Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
015-185		1st Defined access off reserve/foreshore area parallel to Cypress Crescent (starting south)	S28 19.928 E153 34.177	Formal access, non standard signage	- Closure OR - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-186		2nd Defined access off reserve/foreshore area parallel to Cypress Crescent (starting south)	S28 19.897 E153 34.169	Formal access, non standard signage	- Closure OR - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
015-193		3rd Defined access off reserve/foreshore area parallel to Cypress Crescent (starting south)	S28 19.829 E153 34.157	Formal access, non standard signage, table	- Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)








3.3.7 Access and Signage Schedule - Hastings Point including Cudgera Beach

Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
012-105		Defined access adjacent to Hastings Point Holiday Village.	S28 22.250 E153 34.324	Formal access, vehicle access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
012-106		Defined access adjacent to 600 metres north of Hastings Point Holiday Village.	S28 22.074 E153 34.435	Informal access, non standard signage	- Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
012-123		Open access (Seasonal Camping) areas allowing south access - south of Hastings Point.	S28 21.787 E153 34.589	Informal access, non standard signage	- Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
013-134		Multiple access paths to beach and Cudgera Creek from Peninsula Street.	S28 21.586 E153 34.436	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
135	N/A	1st defined access north of 013-134	S 28°21'27.31" E 153°34'29.70"	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
136	N/A	2nd defined access north of 013-134	S 28°21'25.04" E 153°34'29.76"	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
137	N/A	3rd defined access north of 013-134	S 28°21'23.01" E 153°34'28.53"	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)









Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
138	N/A	4th defined access north of 013-134	S 28°21'22.18" E 153°34'28.64"	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
139	N/A	5th defined access north of 013-134	S 28°21'20.16" E 153°34'27.65"	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
140	N/A	6th defined access north of 013-134	S 28°21'18.74" E 153°34'27.40"	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
013-145		Defined access adjacent to North Star Resort and Holiday Park.	S28 21.358 E153 34.279	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)

3.3.8 Access and Signage Schedule -Pottsville to Mooball Creek (North)





Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
012-081		Defined access path 200 metres north of caravan park - Creek access. (Western side of Creek).	S28 23.333 E153 33.920	Car Park, well worn access track, not signed	- Formalise - Signage - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Swimming Not Advised at creek mouth (AWS, 1) Strong Currents (WS, 29) Submerged Objects (WS,35) Slippery Area (WS,11)
012-082		Defined access between residential housing off Elanora Avenue.	S28 23.266 E153 34.030	Street side formal access, curb side ramp, no signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
012-088		Defined access at the end of Boronia Avenue.	S28 23.157 E153 34.108	Informal access, non standard signage, well worn	- Formalise - Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
012-089		1st defined access (starting from the south) within Surfside Crescent.	S28 23.107 E153 34.114	Informal access, non standard signage, well worn	- Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
012-091		2nd defined access (starting from the south) within Surfside Crescent.	S28 23.054 E153 34.123	Informal access, non standard signage, well worn	- Closure OR - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)








Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
012-092		3rd defined access (starting from the south) within Surfside Crescent.	S28 23.031 E153 34.129	Informal access, not standard signage, well worn	- Closure OR - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS, 15)
012-093		4th defined access (starting from the south) within Surfside Crescent.	S28 23.013 E153 34.140	Informal access, not standard signage, well worn	- Closure OR - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS, 15)
012-094		5th defined access (starting from the south) within Surfside Crescent.	S28 22.974 E153 34.143	Chained, formal vehicle access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS, 15)
012-095		Defined access at the end of Monash Place.	S28 22.911 E153 34.135	Formal access, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS, 15)
012-100		Defined access at the end of Elfrank Avenue. Multiple accesses off this path.	S28 22.859 E153 34.172	Formal access, non standard signed	- Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS, 15)
012-102		Defined access north of roundabout at end of Cudgera Avenue.	S28 22.671 E153 34.097	Formal, vehicle access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS, 15)









3.3.9 Access and Signage Schedule -Mooball Creek (South) to Black Rocks

Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
005-026		Approximately 400 metres south of Kellehers Road Bridge.	S28 25.028 E153 33.669	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
005-028		Defined/ Undefined access path approximately 300 metres south of Kellehers Road Bridge.	S28 24.962 E153 33.678	Semi formal access, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
005-029		Defined access path adjacent Kellehers Road Bridge.	S28 24.799 E153 33.723	Formal stepped access, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
005-030		Defined / Undefined access path approx. 150 north of Kellehers Road Bridge.	S28 24.745 E153 33.734	Informal access, not signed	Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)







Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
005-031-032-033		Multi path network approximately 250 metres north of Kellehers Road Bridge.	S28 24.695 E153 33.751	Informal access, location signage	<ul style="list-style-type: none"> - Formalise - Signage - Maintenance - Routine maintenance 	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
005-034		Defined / Undefined access path approx. 500 north of Kellehers Road Bridge.	S28 24.548 E153 33.767	Informal vehicle access, not signed	<ul style="list-style-type: none"> - Formalise - Signage - Maintenance - Routine maintenance 	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
007-035MID, 005, 006		Multi path network (Small car park) approximately 900 metres north of Kellehers Road Bridge.	S28 24.356 E153 33.807	Semi formal, not signed	<ul style="list-style-type: none"> - Signage - Maintenance - Routine maintenance 	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
010-036. 007, 008, 009		Multi path network (Small car park) approximately 1200 metres north of Kellehers Road Bridge.	S28 24.189 E153 33.838	Semi formal, not signed	<ul style="list-style-type: none"> - Formalise - Signage - Maintenance - Routine maintenance 	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
010-037		Defined / Undefined access path approx. 1200 metres south of Mooball Creek Mouth.	S28 24.001 E153 33.888	Semi access, non standard signage	<ul style="list-style-type: none"> Closure OR - Formalise - Signage - Maintenance - Routine maintenance 	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)






Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
010-038		1st defined beach side access north of Tweed Coast Road Bridge.	S28 23.645 E153 33.978	Formal access, non standard signage	- Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
010-040		Defined / Undefined access path approx. 100 meters north of Tweed Coast Road Bridge - Beach access side.	S28 23.605 E153 34.000	Semi formal access, non standard signage	Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
010-041		Defined access path approx. 150 metres north of Tweed Coast Road Bridge - Creek access.	S28 23.575 E153 34.001	Formal access, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Swimming Not Advised (AWS, 1) Strong Currents (WS, 29) Drop Off (WS,9) Submerged Objects (WS,35)
010-042		Defined access path approx. 180 metres north of Tweed Coast Road Bridge - Creek access.	S28 23.550 E153 34.005	Formal access, non standard signage ("Swimming Prohibited")	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Swimming Not Advised (AWS, 1) Strong Currents (WS, 29) Drop Off (WS,9) Submerged Objects (WS,35)
010-043		Defined access path approx. 190 metres north of Tweed Coast Road Bridge - Beach access.	S28 23.546 E153 34.014	Semi formal access, not signed	Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
010-044		Defined access path approx. 180 metres north of Tweed Coast Road Bridge - Creek access.	S28 23.509 E153 34.014	Formal access, non standard signage ("Swimming Prohibited")	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Swimming Not Advised (AWS, 1) Strong Currents (WS, 29) Drop Off (WS,9) Submerged Objects (WS,35)



Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
010-045		Defined access path approx. 150 metres south of creek mouth - Beach access.	S28 23.513 E153 34.024	Semi formal access, not signed	Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
010-046		Defined access path approx. 130 metres south of creek - Creek access.	S28 23.495 E153 34.026	Semi formal access, not signed	Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Swimming Not Advised (AWS, 1) Strong Currents (WS, 29) Drop Off (WS,9) Submerged Objects (WS,35)
010-047		Defined access path approx. 100 metres south of creek mouth - Beach access.	S28 23.476 E153 34.029	Formal access, not signed	- Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)
010-065		Defined access path approx. 50 metres south of creek mouth - Beach access.	S28 23.447 E153 34.044	Semi formal access, not signed	Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Submerged Objects (WS,35)



3.3.10 Access and Signage Schedule -Wooyung

Access Reference	Photo	Access Location Description	GPS Position	Current Access Risk Treatment	Proposed Risk Treatment for Access	Type	Hazards
003-001		1st defined access off Tweed Coast Road - Cnr opposite Caravan Park and off Wooyung Road.	S28 27.516 E153 33.128	Informal road side access, not signed	Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS,15)
003-002		2nd defined access off Tweed Coast Road - Cnr opposite Caravan Park and off Wooyung Road.	S28 27.511 E153 33.141	Informal access, not signed	Closure OR - Formalise - Signage - Maintenance - Routine maintenance	Level 3: Defined Access (Type B.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS, 15)
003-004		3rd defined access off Tweed Coast Road - approximately 450 meters north of 2nd defined access.	S28 27.267 E153 33.218	Informal access, not signed	- Formalise - Signage - Maintenance - Routine maintenance	Level 3: Open Access (Type C.- 3/4 Hazard Symbols)	Shore Dump (WS, 41) Strong Currents (WS, 29) Drop Off (WS,32) Warning: Sharks and Stingers (WS, 15)



Tweed Shire Council

3.4 System of Supervision - Lifesaving Service Level Analysis

Assessed Beaches:

- Duranbah
- Fingal (including Dreamtime)
- Kingscliff
- Salt/ Casuarina
- Cabarita including North Beach
- Hastings Point including Cudgera Beach
- Pottsville to Mooball Creek
- Mooball Creek to Black Rocks
- Wooyung



3.4.1 Volunteer Lifesaving Services

At 129 beaches in NSW and 305 around Australia, Surf Life Saving Clubs (SLSCs) provide a voluntary highly skilled rescue service on weekends and public holidays through the patrol season. Voluntary services provide an invaluable service to the community, and where possible should be used in conjunction with paid lifesaving services (Lifeguards) who are able to provide services throughout the week.

In the Tweed Shire there are four Surf Life Saving Clubs, being:

- Fingal Rovers SLSC;
- Cudgen Headland SLSC;
- Salt SLSC; and,
- Cabarita Beach SLSC.

These SLSCs provide vital lifesaving services on weekends and public holidays. These SLSC's collect data for days they are actively patrolling, which. This information is logged into SLSA Surfguard database.

Since Surf Life Saving Clubs offer voluntary services over wider period of time than current contracted lifesaving services in Tweed Shire, the statistics collected by these clubs can be used to quantify beach usage levels outside of the peak summer season.

Even though the statistics collected by the Surf Life Saving Clubs pertain only to weekends and public holidays, it would be reasonable to expect that these figures could be used as a guide for mid week usage, particularly during the school holiday periods.

Where available, a three year average has been used to make lifesaving service level calculations and recommendations.

Table 3.4.1.4. Kingscliff Beach Lifesaving Service Level calculations based on a three year average (2006-08) (statistics collected by Cudgen Headland SLSC)

	ABSAMP	PEAK VISITATION	PEAK VISITATION FREQUENCY	TYPE OF USER	INCIDENT HISTORY	REMOTENESS	LSL	# Guards
JANUARY	6	3	4	3	5	2	23	2
FEBRUARY	6	3	3	3	5	2	22	2
MARCH	6	3	3	3	5	2	22	2
APRIL	6	3	4	3	5	2	23	2
MAY	6	0	0	0	5	2	13	surveillance
JUNE	6	0	0	0	0	2	8	0
JULY	6	0	0	0	0	2	8	0
AUGUST	6	0	0	0	0	2	8	0
SEPTEMBER	6	2	0	0	0	2	10	signage
OCTOBER	6	2	3	3	5	2	21	2
NOVEMBER	6	2	3	3	5	2	21	2
DECEMBER	6	3	4	3	5	2	23	2



Table 3.4.1.5. Salt Beach Lifesaving Service Level calculations based on a three year average (2006-08) (statistics collected by Salt SLSC)

	ABSAMP	PEAK VISITATION	PEAK VISITATION FREQUENCY	TYPE OF USER	INCIDENT HISTORY	REMOTENESS	LSL	# Lifesaving Personnel
JANUARY	6	2	3	3	3	3	20	2
FEBRUARY	6	2	3	3	3	3	20	2
MARCH	6	1	3	2	3	3	18	1
APRIL	6	2	2	1	3	3	17	1
MAY	6	0	0	0	0	3	9	0
JUNE	6	0	0	0	0	3	9	0
JULY	6	0	0	0	0	3	9	0
AUGUST	6	0	0	0	0	3	9	0
SEPTEMBER	6	2	2	1	3	3	17	1
OCTOBER	6	2	3	3	3	3	20	2
NOVEMBER	6	2	3	3	3	3	20	2
DECEMBER	6	2	3	3	3	3	20	2

Table 3.4.1.6 Fingal Head Beach Lifesaving Service Level calculations based on a three year average (2006-08) (statistics collected by Fingal Rovers SLSC)

	ABSAMP	PEAK VISITATION	PEAK VISITATION FREQUENCY	TYPE OF USER	INCIDENT HISTORY	REMOTENESS	LSL	# Lifesaving Personnel
JANUARY	6	2	4	3	4	2	21	2
FEBRUARY	6	3	3	1	4	2	19	1
MARCH	6	2	3	1	4	2	18	1
APRIL	6	2	3	3	4	2	20	2
MAY	6	0	0	0	0	2	8	0
JUNE	6	0	0	0	0	2	8	0
JULY	6	0	0	0	0	2	8	0
AUGUST	6	0	0	0	0	2	8	0
SEPTEMBER	6	1	1	1	4	2	15	1
OCTOBER	6	3	3	2	4	2	20	2
NOVEMBER	6	2	3	3	4	2	20	2
DECEMBER	6	2	4	3	4	2	21	2

Table 3.4.1.7 Cabarita Beach Lifesaving Service Level calculations based on a three year average (2006-08) (statistics collected by Cabarita Beach SLSC)

	ABSAMP	PEAK VISITATION	PEAK VISITATION FREQUENCY	TYPE OF USER	INCIDENT HISTORY	REMOTENESS	LSL	# Lifesaving Personnel
JANUARY	6	2	3	3	5	2	21	2
FEBRUARY	6	2	3	3	5	2	21	2
MARCH	6	2	3	3	5	2	21	2
APRIL	6	2	1	2	5	2	18	1
MAY	6	0	0	0	0	2	8	0
JUNE	6	0	0	0	0	2	8	0
JULY	6	0	0	0	0	2	8	0
AUGUST	6	0	0	0	0	2	8	0
SEPTEMBER	6	1	2	2	5	2	18	1
OCTOBER	6	2	3	3	5	2	21	2
NOVEMBER	6	2	3	3	5	2	21	2
DECEMBER	6	2	3	3	5	2	21	2

3.4.2 Recent Drownings

According to the SLSA Incident Report Database there have been 4 drowning fatalities in the Tweed Shire since 2005. This data is important in determining lifesaving service levels as a drowning fatality results in an incident rating of 5.

The following is a brief summary of those four drowning fatalities.

On the 24th July, 2005 at approximately 5pm a 50 year old male British tourist entered the water at Casuarina Beach, conditions were calm. He did not return to shore and was later found drowned.

On Sunday, 8th January, 2006 at approximately 8am a 42 year old drowned male was found at Kingscliff Beach, causes and conditions are unknown. The body was found inshore.

On Saturday, 22nd of April, 2006 at approximately 3pm a 15 year old male drowned in a choppy 2-3 metre swell at Cabarita Beach. The boy was found to have had a 0.06% blood alcohol reading and a paracetamol blood concentration of 10mg/L.

On Tuesday, 8th May, 2007 a 45 year old male was swept away from the beach in 2 metre waves at Kingscliff Beach. He drowned approximately 20 metres from shore.

3.4.3 Seasonality

The Tweed Shire climate is classified as sub-tropical maritime. On the coast in summer, the mean maximum shade temperature is 28°C and the mean minimum shade temperature is 20°C. In winter, the mean maximum shade temperature is 22.0°C and the mean minimum shade temperature is 12°C. The water temperature range is from 19°C in winter to 27°C in summer.

2008 School Holidays

School holidays for both New South Wales (NSW) and neighbouring states should be taken into consideration when developing the operating dates of your lifeguard service. The following tables provide a summary of the school holiday dates for NSW, Queensland and Victoria.



New South Wales

	TERM DATES	HOLIDAYS
1st Term	29 January - 11 April	12 April - 27 April
2nd Term	28 April - 04 July	5 July - 20 July
3rd Term	21 July - 26 September	27 September - 12 October
4th Term	13 October - 19 December	20 December -

Queensland

	TERM DATES	HOLIDAYS
1st Term	29 January - 4 April	5 April - 13 April
2nd Term	14 April - 27 June	28 June - 13 July
3rd Term	14 July - 19 September	20 September - 5 October
4th Term	6 October - 12 December	13 December -

Victoria

	TERM DATES	HOLIDAYS
1st Term	29 January - 20 March	21 March - 6 April
2nd Term	7 April - 27 June	28 June - 13 July
3rd Term	14 July - 19 September	20 September - 5 October
4th Term	6 October - 19 December	20 December -

Peak Season – The peak season corresponds to the Spring, Summer and Autumn school holiday periods, and Easter where not included within the Autumn school holiday period. The peak season is usually characterised by a high level of beach activity on all days. In the 2008/2009 Summer season for example the Tweed Shire will require a minimum peak season of lifeguard service implemented from 20th December, 2008 to the end of the Summer school holidays in 27th January, 2009. These dates will need to be reviewed to correspond with the start and finish dates of New South Wales, Queensland and Victorian school holidays.

Fringe Season – The fringe season are the periods between the Summer school holidays and both the Spring and Autumn school holidays, excluding the actual school holidays and Easter. The fringe season is usually characterised by periods of high level beach activity on weekends and public holidays and medium level beach activity on week days.

Off Peak Season – The off peak is the winter period generally from May through to August and which traditionally has low levels of beach activity.

3.4.4 Lifeguard Service

The nature of the volunteer lifesaving service means that it is most difficult to provide a lifesaving service on days and times when volunteers may be working or studying. As a consequence it is vital that lifeguards be employed to provide a lifesaving service during these times and at locations where beach conditions and attendances dictate.

The following table identifies the peak season calculated Lifesaving Service Level Scores for the Tweed Shire beaches using the ABSAMP Beach Hazard Ratings; Visitation Levels; Frequency of Use; Residency of Visitors; Incident History; and Remoteness of Location to determine best practice lifesaving service levels, and for which the information was available.



Table 3.4.4.1: Lifesaving Service Level scores – Tweed Shire Beaches

Location	ABSAMP RATING	Visitation	Frequency	Residency	Incidents	Remoteness	Service Level	# Lifeguards
Duranbah	7	4	3	4	3	1	22	2
Fingal (including Dreamtime)	6	3	2	3	2	2	18	2*
Kingscliff	6	4	4	4	5	3	26	3
Salt***	6	3	2	3	5	3	22	2
Casuarina***	6	3	2	3	5	3	22	2
CabaritaBeach	6						22	
Norries Head Beach	5	3	4	2	5	2	21	2
North Beach (Sth Norries Head)	6						22	
Hastings Point incl. Cudgera Beach	3	1	3	5	3	3	13	1**
Hastings Point	6	4	3	5	3	3	24	2**
Pottsville	6	3	3	3	2	3	20	2
Mooball (South)	6	3	3	2	3	4	21	2
Wooyung	6	1	1	1	2	3	14	SIGNAGE

NOTES TO TABLE 3.4.4.1:

* Two lifeguards have been recommended as these locations have an ABSAMP beaches hazard higher than 4, and access to other rescue services is greater than 5 minutes.

** One lifeguard has been recommended for inside Hastings Creek mouth providing the adjacent service at Hastings Point is provided as per recommendations (minimum 2 lifeguards).

*** The beaches at Salt and Casuarina have been separately identified due to the length of beach. Further, it is the view of the assessors that this stretch of beach from the northern limit of Salt to the southern end of Casuarina at the new Cotton Beach development needs special lifesaving service treatment due to the 5kms of beach and the 32 separate access tracks. It is recommended the Tweed Shire liaise with Surf Life Saving New South Wales in this regard. Australian CoastSafe is available to assist as required.

The three separate beach areas at Cabarita require further and special consideration regarding the provision of lifeguards and the assessors recommend the Tweed Shire have further discussions with Surf Life Saving New South Wales in this regard.

Based on the information available at the time of writing, a seasonal lifesaving service should be considered for Mooball beach that will cater for the population growth and urban release areas. The actual lifesaving service configuration and preferred location (i.e. Black Rocks versus near the Pottsville Bridge) of the service should be developed in collaboration with Surf Life Saving New South Wales.

3.4.5 Lifesaving Service Level Descriptors

The following lifesaving service level descriptors provide the recommended lifesaving service level for the scores/rating as calculated in table 3.4.4.1 above. The scores are not absolute and are to be used as a guide in determining the actual levels.

Table 3.4.5.1: Lifesaving Service Level scores

Rating	Lifesaving Service Level Description
</= 10	Warning Signage to Aquatic & Recreational Signage Style Guide standard
11-14	Emergency Beacons and/or Camera Surveillance or Swimming Enclosure (where applicable) Routine monitoring/surveillance patrols (land, sea, air) to also be considered
15-19	Lifesaving service = 1 x Lifeguard personnel during period assessed (refer to note 2)
20-25	Lifesaving service = 2 x Lifeguard personnel during period assessed
26-30	Lifesaving service = 3 x Lifeguard personnel during period assessed
> 31	Lifesaving service= more than 3 Lifeguard personnel during period assessed

Note 1: When Visitations and Frequencies are low yet rating is high consideration should be given to some form of surveillance patrols or IT solutions to overcome variations of population/visitation numbers.

Note 2: In the case of one lifeguard being recommended this service should only be implemented if the following requirements/infrastructure is in place: the ABSAMP hazard of beach is no higher than 4, OR access to other rescue services is less than 5 minutes, direct communication with services is in place, and a Rescue Water Craft is in place. Otherwise, the minimum number of lifeguards is two (2).

Note 3: Where the number of people in the patrolled area is over 1,000 service provider should increase the number of lifesaving personnel in line with the following table:

Table 3.4.5.2: Impact of beach attendance on lifesaving service levels

No. of People on Beach	No. of additional lifeguards
1,000 - 5,000	2
5,000 - 10,000	4
> 10,000	6

Crowds can become in themselves hazardous as a result of difficulties of surveillance and heightened crowd interaction

3.4.6 Recommended Lifesaving Service Levels – Tweed Shire Beaches

Based on the Lifesaving Service Level Calculations from both SLSA's volunteer service logs and Australian Lifeguards Services statistics the following service levels should be implemented immediately:

Table 3.4.6.1: Lifesaving Service Levels for the peak/Summer period – Tweed Shire Beaches

BEACH	START DATE	FINISH DATE	DAYS	LIFEGUARDS	SIGNAGE
Duranbah	20/12/2008	27/01/2009	SMTWTFS	2	YES
Fingal*	20/12/2008	27/01/2009	MTWTF	2	YES
Kingscliff*	20/12/2008	27/01/2009	MTWTF	3	YES
Salt*	20/12/2008	27/01/2009	MTWTF	2	YES
Casuarina	20/12/2008	27/01/2009	SMTWTFS	2	YES
Cabarita*	20/12/2008	27/01/2009	MTWTF	2	YES
Hastings Point	20/12/2008	27/01/2009	SMTWTFS	2	YES
Pottsville	20/12/2008	27/01/2009	SMTWTFS	2	YES
Mooball	20/12/2008	27/01/2009	SMTWTFS	2	YES
Wooyung	20/12/2008	27/01/2009	N/A	N/A	YES

* Note lifesaving service provided by SLSC on Saturdays, Sundays and Public Holidays.

The above service levels should also be implemented during the Autumn, Easter and Spring school holiday periods.

For the purposes of lifesaving services the stretch of beach including Salt and Casuarina has been split into two services. These services will need to cover a 5km length of coastline and will need to have operating procedures in place to ensure the best coverage is provided. These procedures will need to be developed in conjunction with the provider of lifesaving services.

Tweed Shire should also be providing a level of service across the fringe season, especially on those beaches not serviced by volunteer SLSC's. The four Surf Life Saving Clubs in the Tweed Shire area provide services on weekends and public holidays. This usually occurs from late September through to late April each year. These dates do change each year, so continued consultation with local SLSC's to ensure optimal coverage is essential.

Table 3.4.6.2: Lifesaving Service Levels for fringe seasons – Tweed Shire Beaches

BEACH	START DATE	FINISH DATE	DAYS	LIFEGUARDS	SIGNAGE
Duranbah	27/01/2009	28/04/2009	SS	2	YES
Fingal	27/01/2009	28/04/2009	SLSC	SLSC	YES
Kingscliff	27/01/2009	28/04/2009	SLSC	SLSC	YES
Salt	27/01/2009	28/04/2009	SMTWTFS	2	YES
Casuarina	27/01/2009	28/04/2009	SS	2	YES
Cabarita	27/01/2009	28/04/2009	SLSC	SLSC	YES
Hastings Point	27/01/2009	28/04/2009	SS	2	YES
Pottsville	27/01/2009	28/04/2009	N/A	N/A	YES
Mooball	27/01/2009	28/04/2009	N/A	N/A	YES
Wooyung	27/01/2009	28/04/2009	N/A	N/A	YES

An off peak service is not essential at all beaches, provided other controls such as signage and access controls are in place. There should, however, be a centralised lifesaving service capable of responding to

emergencies that occur over the off peak season, or special circumstances where beach attendance may determine.

During the course of the assessment it became apparent that there is a year round lifesaving service at Salt. Based on the available information this service may not be required throughout the off-peak / winter period. However, there is a high concentration of tourist beds at this location which present a level of uncertainty requiring further analysis. If the service level were to be removed during the off-peak season it should only be conducted in conjunction with an intensive education and awareness campaign targeted at residents and tourists. Alternatively, this service could be retained and provide the centralised lifesaving service as previously mentioned.

During the assessment it was also noted that there can be improvements in the collection and collation of beach usage data on all Tweed Shire beaches that will lead to more accurate assessment of lifesaving service needs into the future. As such, it is recommended the Tweed Shire engage Surf Life Saving New South Wales to assist in this area. Refer also the Monitor and Review section below.

3.4.7 Recommended Patrol Strength and Qualifications of Lifesaving Personnel

Volunteer Lifesavers

The volunteer lifesavers within the surf lifesaving movement have a broad range of training options available.

The recommended patrol personnel and associated qualifications are as provided in the SLSA regulations available from Surf Life Saving New South Wales.

Lifeguard Service

The lifeguards of the Australian Lifeguard Service are trained to worlds best practice with the training exceeding the standards recommended by the International Life Saving Federation. The training includes the following requirements.

"Ocean Surf Lifeguard" (recommended for locations that have an ABSAMP hazard rating of 4-10)

- ~ A proficient Surf Life Saving Bronze Medallion/Cert II
- ~ A proficient Advanced Resuscitation Certificate
- ~ A proficient Senior First Aid Certificate
- ~ A proficient Defibrillator Certificate
- ~ A proficient Gold Medallion
- ~ A proficient Rescue Water Craft Certificate and/or Power Craft Certificate (what ever applicable to the area)
- ~ An Open Drivers Licence (where applicable)

Surf Lifeguards are also required to be able to successfully complete the following:

- ~ Swim 800 meters continuously within 14 minutes
- ~ Complete the SLSA 'Mission' (or equivalent) in less than 23 minutes

The recommended lifeguard supervision standards and lifeguard qualifications are as provided by the Australian Lifeguard Service available from Surf Life Saving New South Wales.



3.4.8 Equipment Recommendations

Australian CoastSafe recommends that the minimum gear and equipment required for a lifesaving service is as follows (per patrol area):

Lifesaving Gear and Equipment (Minimum)

- 1 x set of patrol flags/feathers with suitable stand
- 1 x set of surf craft area signs
- 1 x swimming prohibited sign on pole with red flag
- 1 x set of hazard signs

Beach condition report boards

- 1 x set of SLSA signal flags on poles
- 1 x hazard warning flag (yellow)
- 1 x emergency evacuation flag (red and white quartered)
- 1 x Powercraft Launching Area sign

1 UHF Hand Held Radio per person

- 1 x Loud Hailer
- 1 x Whistle
- 1 x Emergency Evacuation Siren

Rescue Tubes - 1 per lifeguard on duty

- Rescue Boards - 1 per lifeguard
- Flippers - 1 pair per lifeguard
- Personal Response Kit - 1 per Lifeguard

Medical Equipment as per SLSA requirements including First Aid kit, Oxygen equipment and Defibrillator

- Permanent and / or portable Observation Tower / Hut with shade
- Appropriate Shade / Shelter for lifeguard at Waters Edge
- Marine Stinger Response Kit where applicable

Where a beach has an ABSAMP hazard rating of 4 -10 a Rescue Water Craft (Lifeguard Service Only) or Inflatable Rescue Boat (Club Services Only) and 4WD Vehicle or All Terrain Vehicle (ATV) are recommended items of lifesaving equipment

ATVs should have a full set of rescue equipment fixed to the vehicle

4 Implementation Plan

Tweed Shire Council

Assessed Beaches

- Duranbah
- Fingal (including Dreamtime)
- Kingscliff
- Salt/ Casuarina
- Cabarita including North Beach
- Hastings Point including Cudgera Beach
- Pottsville to Mooball Creek
- Mooball Creek to Black Rocks
- Wooyung



4.1 Implementation Priorities

The assessors recommend the following priorities for implementation

Priority 1 (Year 1: 2008/2009 – immediate)

Administration

- Control measure implementation charts, similar to that as outlined in table 4.1.1 below to be implemented without delay.
- Works programmes be developed from control measure implementation charts, and in conjunction with relevant stakeholder groups
- High priority works to be commenced as soon as is practical
- Communication with relevant stakeholders be increased
- Risk monitoring practices and procedures be implemented
- Enhanced data collection and collation procedures be implemented (see also lifesaving services)

The following chart is provided as one example of how the Tweed Shire should log and manage its coastal risk management programme.

Table 4.1.1: Control Measure Implementation (To Be Completed By Coastal Staff):

Ref	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				



Access and Signage

- Access paths be clearly defined
- Discontinued access paths to be closed through fencing or revegetation
- Appropriate safety signage be installed at the entrances to all clearly defined access paths
- Inappropriate, damaged or vandalised signs to be removed
- Emergency response markers to be implemented in a system consistent with best practices and the needs of local emergency services

NOTE: Should insufficient resources be available to complete all risk treatments as recommended then the risk treatments should be implemented in accordance with the risk priorities identified in this report; i.e. those beaches with the highest risk to be addressed first.

Lifesaving Services

- Current lifesaving services provided by the volunteer surf lifesaving clubs be supported such that their service standards continue
- Current levels of lifeguard services be maintained
- Enhanced levels of lifeguard services as recommended in the report be implemented
- Shire wide beach attendance and incident data collection, collation and analysis programme be implemented

Priority 2 (Year 2: 2009/2010 or earlier if funds and resources are available)

Education and awareness

- Education and awareness programme inclusive of rock fishing safety be developed and implemented (development may be commenced earlier in Year 1)

Lifesaving Services

- Enhanced lifesaving service provision implemented as a result of the research completed in year 1.

Risk Assessment Update

- An updated risk assessment to be conducted and information collected to be collated with the inclusion of relevant and up to date data collected and collated in the intervening period.

5 General Observations

Tweed Shire Council

Assessed Beaches

- Duranbah
- Fingal (including Dreamtime)
- Kingscliff
- Salt/ Casuarina
- Cabarita including North Beach
- Hastings Point including Cudgera Beach
- Pottsville to Mooball Creek
- Mooball Creek to Black Rocks
- Wooyung



5.1 General Observations Within the Areas Assessed

The following general observations were noted during the course of the on-site inspections in early April 2008 and were considered important to note.

5.1.1 Duranbah



Picture. 1 - Existing warning sign with evidence of vandalism at time of assessment.



Picture. 2 – Temporary steps provided over sand pumping pipe. No handrails provided for steps.



Picture. 3 – Drop off on Duranbah beach due to eroding sand dunes.



Picture. 4 – Sand pumping delivery point onto Duranbah Beach. No preventative/ distance barriers noted at time of assessment.



Picture. 5 – Edge drop off noted along Tweed Terrace.



Picture. 6 - Removal of hazard signage noted at time of assessment.

5.1.2 General Observations – Fingal (including Dreamtime)



Picture. 1 – Example of defined access sign posted at time of assessment.



Picture. 2 – Path access onto beach at base of Fingal Head. Many undefined access paths noted from the beach at time of assessment.



Picture. 3 – Example of access path leading onto Dreamtime beach at time of assessment.



Picture. 4 – Defined access with no hazard/ advisory signage at time of assessment.



Picture. 5 – Defined access sign posted at time of assessment.



Picture. 6 – Defined access with Fingal residential zones at time of assessment.

5.1.3 General Observations – Kingscliff



Picture. 1 – Example of existing signage of road bridges access the Cudgen Creek



Picture. 2 – Existing Signage in place at Cudgen Headland.



Picture. 3 – View of Cudgen Creek mouth.



Picture. 4 - Boat ramp in proximity to Cudgen Creek mouth.



Picture. 5 – Rocks and boulders on banks of Cudgen Creek.



Picture. 6 – Existing signage at Boat Ramp area.

5.1.4 General Observations – Salt/ Casuarina



Picture. 1 – Defined Access pathways with the Salt Development.



Picture. 2 – Kick rails provided on paths.



Picture. 3 – Defined access with no hazard signage.



Picture. 4 –Example of path signage specific to numbering but not hazard warning/s.



Picture. 5 – Open access areas off defined path network. Areas still to be developed.



Picture. 6 – Defined access onto Salt/ Casuarina Beach.

5.1.5 General Observations – Cabarita including North Beach



Picture. 1 – Example of cluttering of signs at defined access point.



Picture. 2 – Evidence of beach erosion at time of assessment.



Picture. 3 – Steep stairs and drop off at top of Norries Head lookout. No barrier fencing provided at time of assessment.



Picture. 4 – Example of slippery rocks at foot of Norries Head.



Picture. 5 – Kick rails provided on paths in vicinity to Norries Head lookout.



Picture. 6 – View of Cabarita Beach at foot of Norries Head.

5.1.6 General Observations – Hastings Point including Cudgera Beach



Picture. 1 – Southern view of Cudgera Beach from Hastings Point.



Picture. 2 – Seasonal camping (Reserve) areas at Hastings Point.



Picture. 3 – Access to Cudgera Beach south of Hastings Point.



Picture. 4 – Example of cliff hazard and steep descent/ edge. No restrictive barriers in place at time of assessment.



Picture. 5 – Example of fisheries signage at time of assessment.



Picture. 6 - Example of uneven ground in proximity to shallow sandbars at mouth of Cudgera Creek.

5.1.7 General Observations – Pottsville to Mooball Creek (North)



Picture. 1 – Defined access path behind residential zones.



Picture. 2 – Example of existing emergency marker overgrown with tree foliage.



Picture. 3 – Defined access path behind residential zones. Multiple access points provided.



Picture. 4 – View of Cudgera Beach from residential zone off surfside Crescent.



Picture. 5 – Defined access path in residential zone with any hazard signage.



Picture. 6 - Uneven ground within beach foredune areas.

5.1.8 General Observations –Mooball Creek (South) to Black Rocks



Picture. 1 – Existing emergency marker adjacent to Cnr Coast Road and Kellehers Road.



Picture. 2 – Existing signage at 1st defined entrance south of the Mooball Creek mouth car park area.



Picture. 3 – Existing signage on the Tweed Coast Road bridge crossing the Mooball Creek.



Picture. 4 - Example of individual regulation sign within the Mooball Creek mouth car park area. Sign is specific to the river.



Picture. 5 – Obscured regulation sign within the Mooball Creek mouth car park area.



Picture. 6 – Steep Descent into the Mooball Creek mouth from a defined access path leading from the car park. Path is narrow and unintentional entry may occur.

5.1.9 General Observations – Wooyung



Picture. 1 - Evidence of vehicular (4WD) access onto Wooyung Beach.



Picture. 2 – Ambiguity over existence of defined/ undefined access paths.



Picture. 3 – As per picture two.



Picture. 4 - View of northern access path in Wooyung Beach.



Picture. 5 – Evidence of horse walking activities on Wooyung Beach.



Picture. 6 - North facing view of Wooyung Beach

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6 References and Compliance Standards



The references and compliance standards used for this report were:

References

Civic Mutual Plus. (1999). **Best Practice Manual – Signs as Remote Supervision**. Civic Mutual Plus.

Farmer, N., Andronaco, R., and Weir, A. (2008) **Aquatic Risk and Safety Services on Tweed Shire Beaches – Preliminary Assessment**. Surf Life Saving Australia.

Life Saving Victoria. (LSV). (2006). **National Aquatic and Recreational Signage Style Manual (3rd Edition)**. State Government of Victoria.

Matthews, B. PhD. (2006). **Water Safety for Rock Fishers – Update**. Research and Injury Prevention. Life Saving Victoria, October 2006.

Royal Life Saving Society Australia. (2004). **Guidelines for Water Safety in Urban Water Developments**. The Royal Life Saving Society Australia Victoria Branch.

Short, Andrew. (2006). **Beaches of the New South Wales Coast: A guide to their nature, characteristics, surf and safety**. Coastal Studies Unit, School of Geosciences, Sydney NSW. University of NSW.

Surf Life Saving Australia. (2007). **Australian Coastal Public Safety Guidelines 1st Edition – Consultation Edition**. Surf Life Saving Australia. Sydney. August 2007

Van den Enden T. et al. **Aquatic risk and safety management**, Tony van den Enden Brett Ellis. Katherine McLeod. Surf Life Saving Australia. Sydney. 2004

Compliance Standards

Standards Australia International. (2004). **Risk Management**.

ASNZS 4360 – 2004. Standards Australia International Ltd. Sydney, Australia.

Standards Australia International. (2002). **Design and application of water safety signs (4th Edition)**.

AS 2416 – 2002. Standards Australia International Ltd. Sydney, Australia.

Standards Australia International. (1986). **Public Information Symbol Signs – General Information Signs**.

AS 2899.1 – 1986. Standards Australia International Ltd. Sydney, Australia.

Standards Australia International. (1986). **Public Information Symbol Signs – Water Safety Signs**. AS

2899.2 – 1986. Standards Australia International Ltd. Sydney, Australia.



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Appendices



APPENDIX A: Facility Visitation Rating (FVR) Reference Tables

Table 1 - Suggested development rating for beaches using the hazard rating derived from ABSAMP.

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

Table 2 - Suggested population use rating for beaches.

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

Table 3 - Suggested frequency of use rating for beaches.

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

APPENDIX B: Risk Matrix

Impact		Frequency / Occurrence						
		Almost Definite	Common	Has Happened	Could Happen	Uncommon	Quite Unlikely but Possible	Practically Impossible
		1	2	3	4	5	6	7
Disastrous Impact	A.	49	48	46	43	39	34	19
Severe Impact	B.	47	45	42	38	33	22	17
Serious Impact	C.	44	41	37	32	28	20	14
Moderate Impact	D.	40	36	31	27	25	13	10
Low Impact	E.	35	30	26	24	23	9	6
Minor Impact	F.	29	21	16	12	8	5	3
Negligible Impact	G.	18	15	11	7	4	2	1

High - Immediate correction required. Consider discontinuing.

Medium - Attention needed, correction required.

Low - Perhaps acceptable as is.



APPENDIX C: Indicative Assessment Areas

Figure C.1: Duranbah assessment area (shaded red)

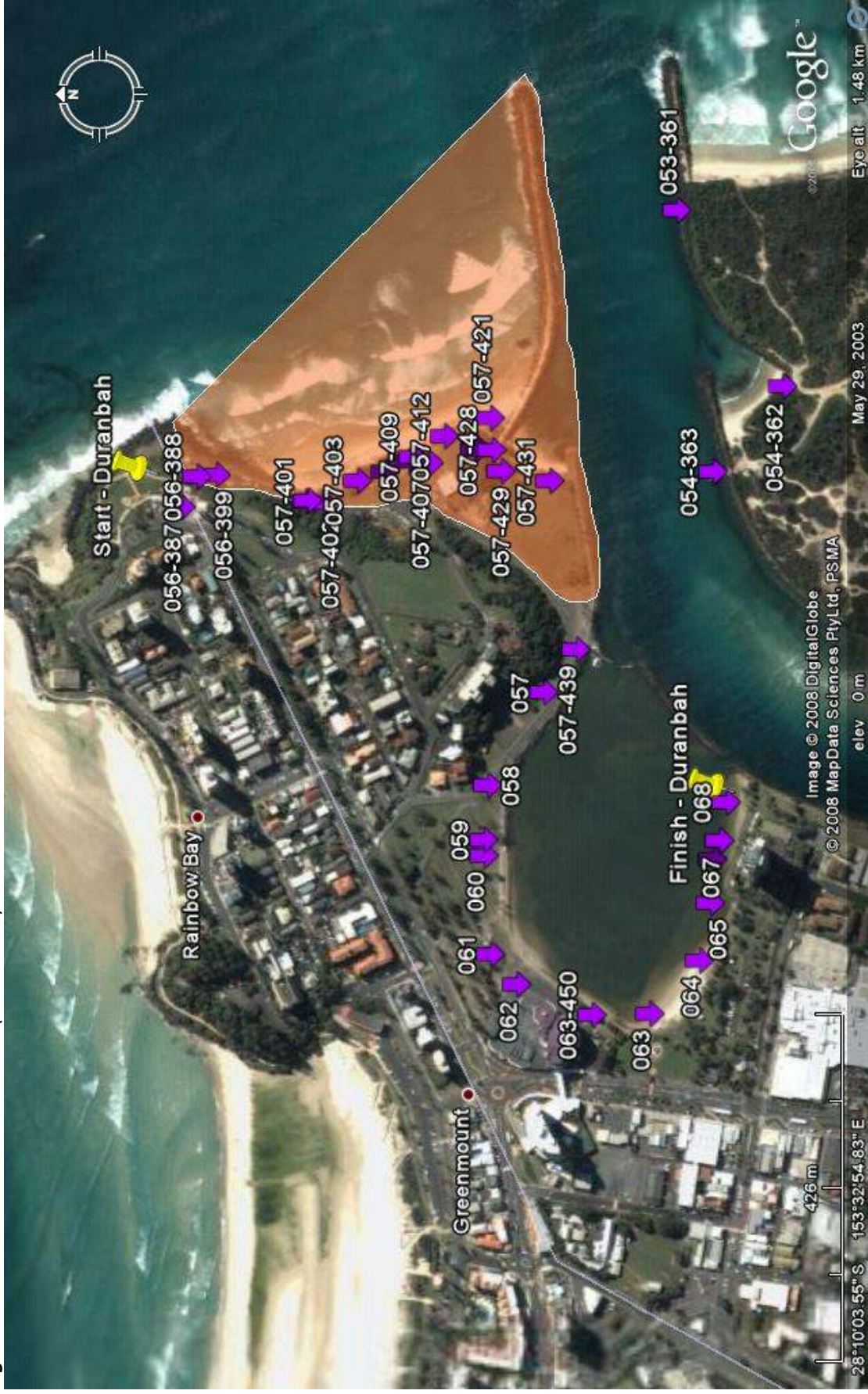


Figure C.2: Fingal (including Dreamtime) assessment area (shaded red)

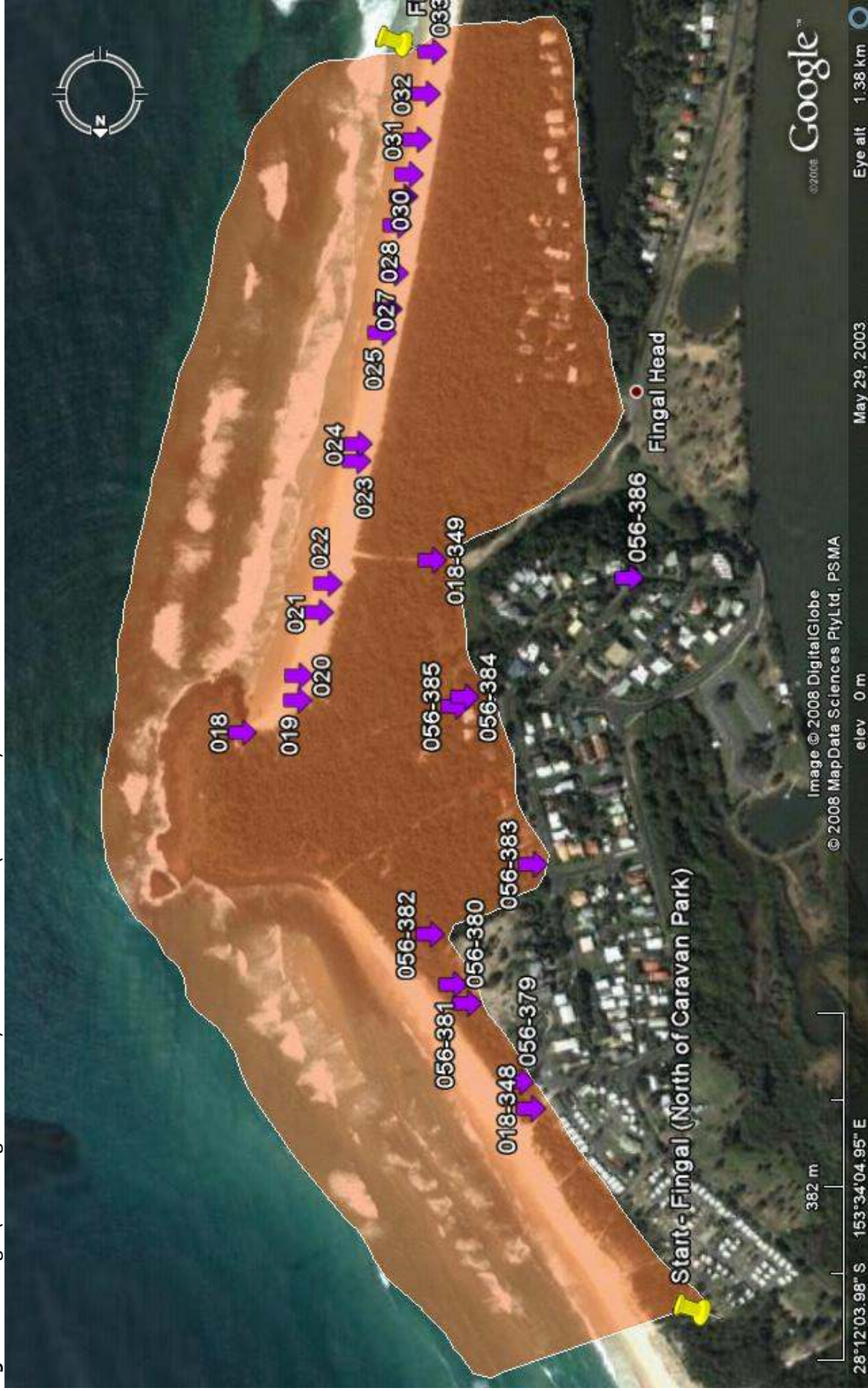


Figure C.3: Kingscliff assessment area (shaded red)

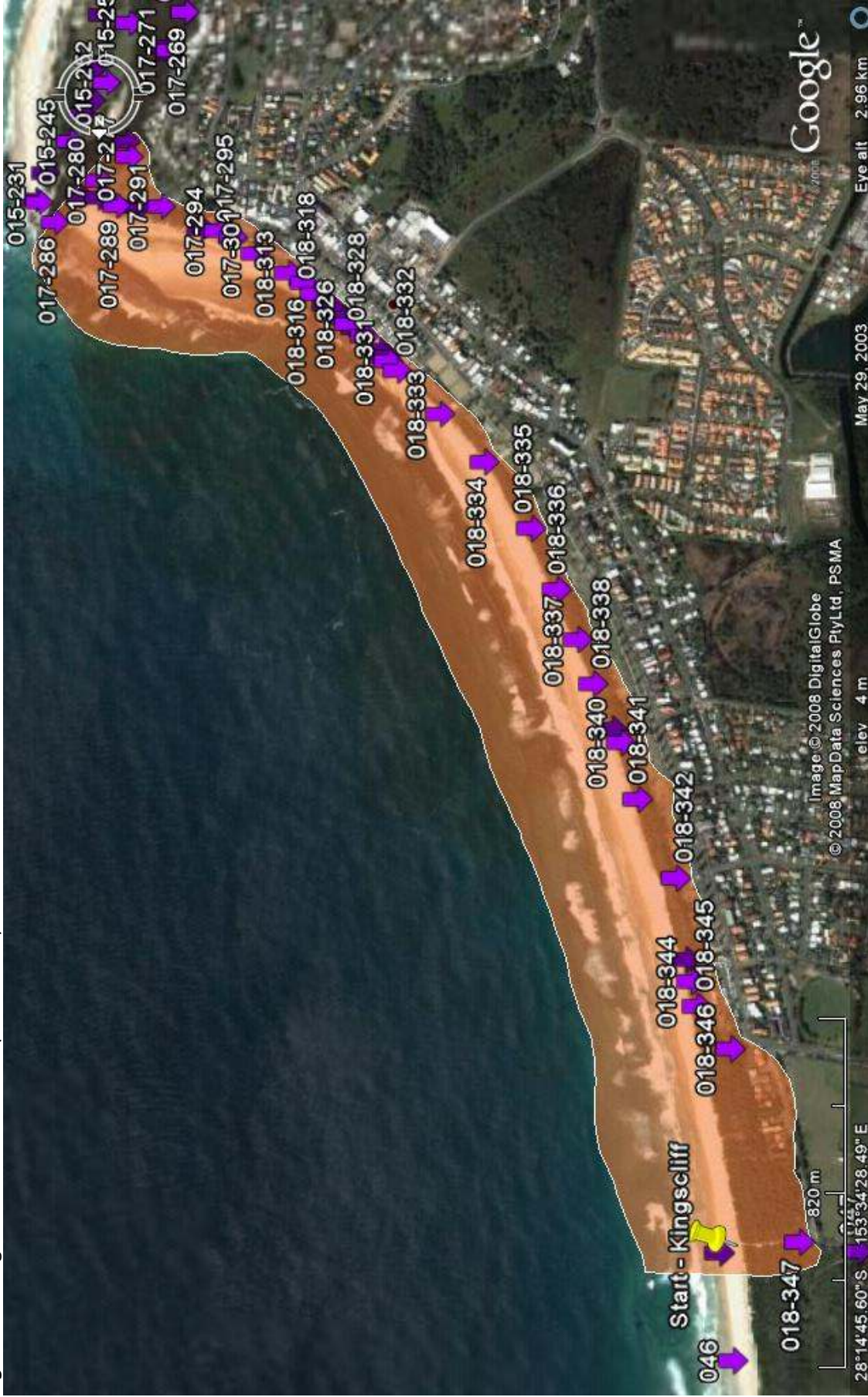


Figure C.4: Salt – Casuarina northern assessment area (shaded red)

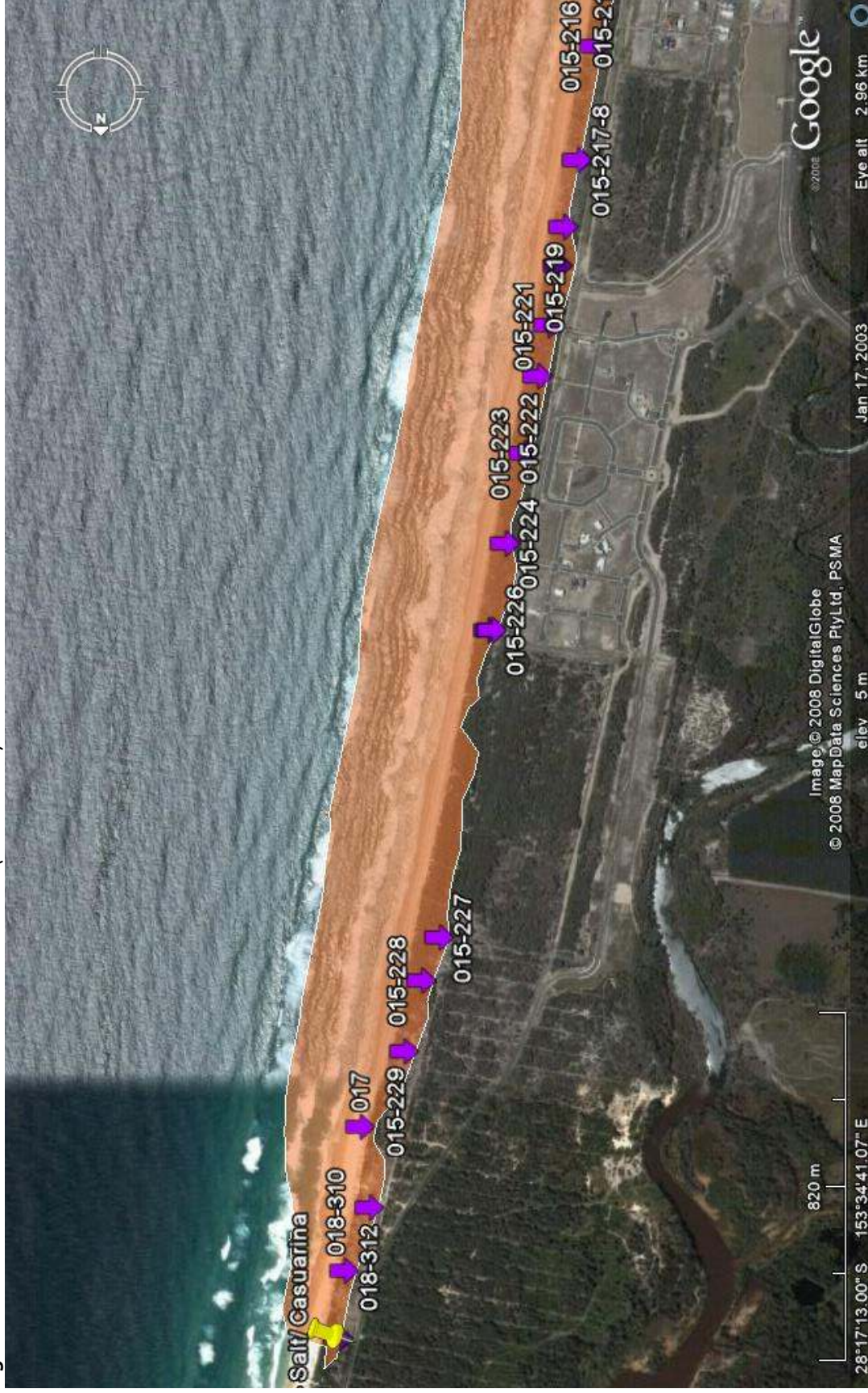


Figure C.5: Salt - Casuarina southern assessment area (shaded red)



Figure C.6: Cabarita (inc. North Beach) assessment area (shaded red)



Figure C.7: Hastings Point (inc Cudgera) assessment area (shaded red)

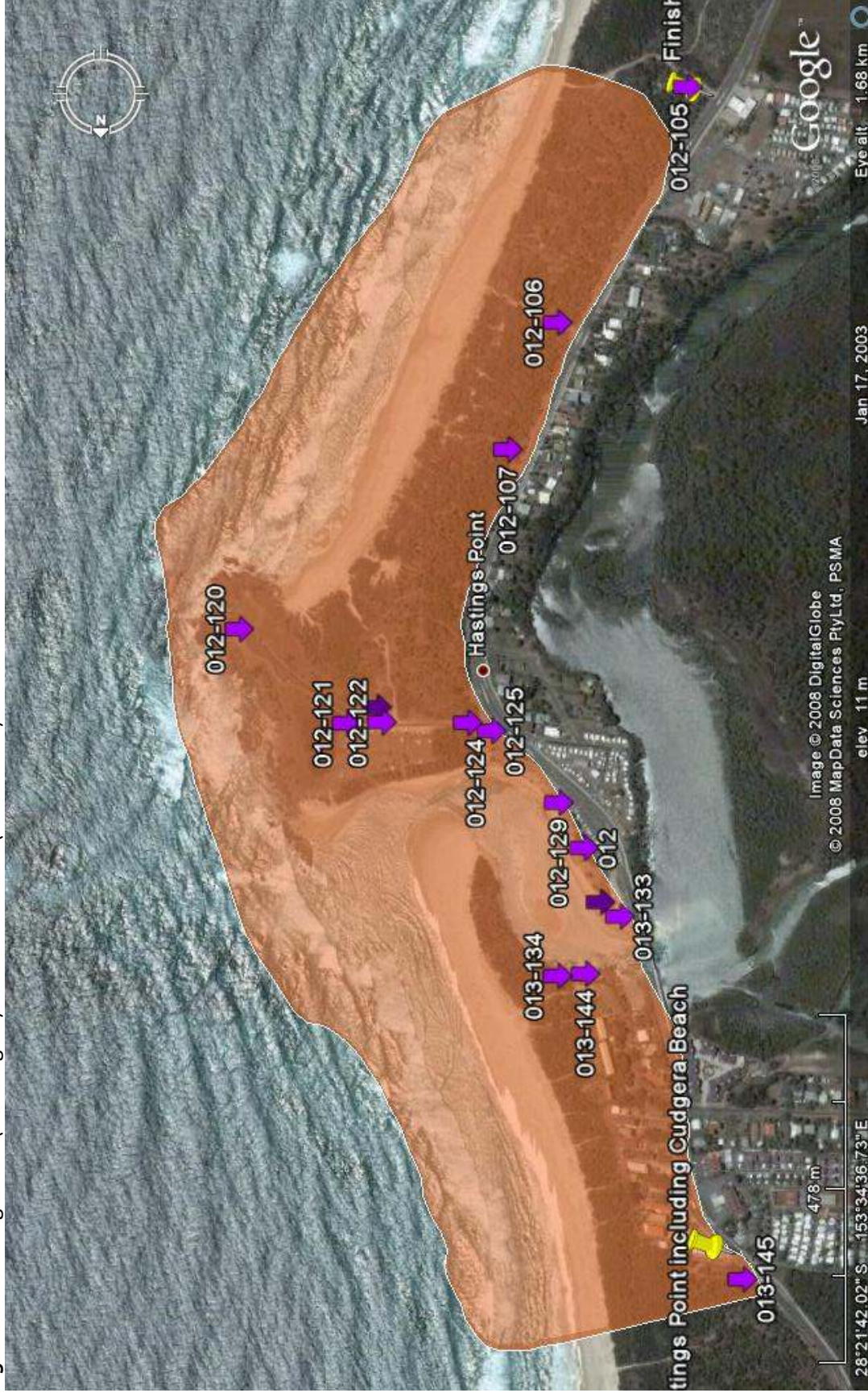


Figure C.8: Pottsville to Mooball assessment area (shaded red)

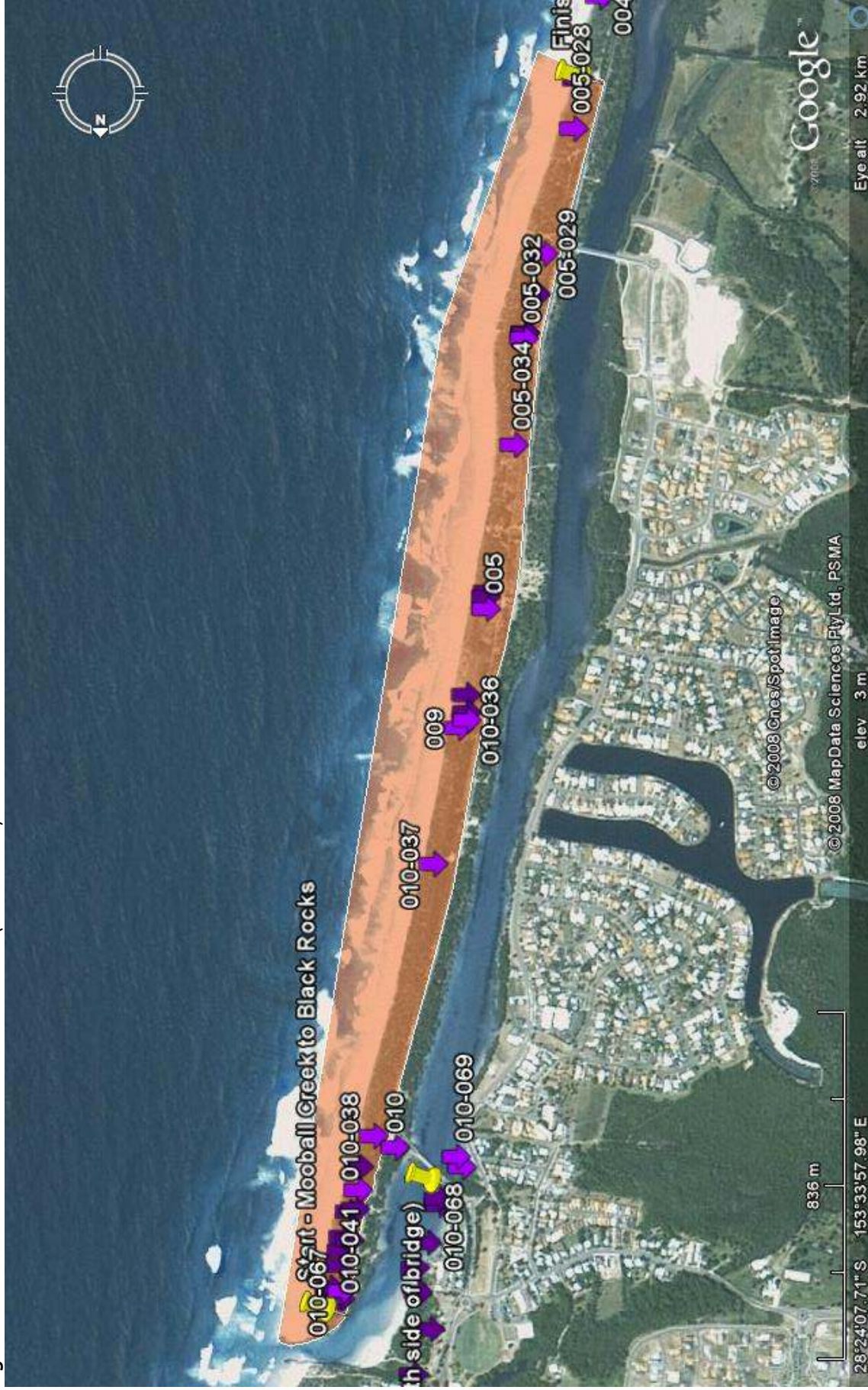


Figure C.10: Wooyung assessment area (shaded red)

