Coastal Public Safety Risk Assessment

Main Report - Risk Assessment and Treatment Plan 2018

Fingal Head

Prepared for
Tweed Shire Council

Prepared by
Surf Life Saving New South Wales & Australian CoastSafe

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Executive Summary

This report contains findings and treatment options which align with current International and Australian standards, guidelines and best practice risk management processes. The report contains information specific to locations under the authority of Tweed Shire Council.

The locations included in this report are;

- Letitia Spit / Fingal Beach
- Fingal Headland
- Dreamtime Beach

Activities/Facilities

The Fingal Head area is a popular destination which sees year round public usage and recreational activity, including swimming, surfing (including all surfcraft), fishing and walking. Fingal Head is in close proximity to the Queensland Border and can attract visitors looking to get away from the busy beaches of the Gold Coast.

A number of facilities support coastal usage and activities including well maintained car parks and beach access, lifeguard and lifesaving supervision, Holiday accommodation options, coastal walks, a number of public amenity blocks, BBQs, and picnic tables.

Hazards/Risks

The Fingal Head Area has a number of consistent hazards due to the geography and high energy nature of the area. These are outlined in detail in the Risk Register (pg. 82)

Based on the risk assessment, the following hazards have been rated with the greatest inherent risk for the Fingal Head area:

Strong currents/rip currents:	As a result of wave action and beach type
Waves/waves overwashing:	As a result of model wave height and exposure to ocean swells
Inshore holes/drop off/deep water:	As a result of coastal processes, wave action and beach type
Slippery rocks/uneven surfaces:	As a result of coastal geography/break walls and wave action
Shallow sandbanks/shore dump:	As a result of coastal process, wave action and beach type
Submerged rocks:	As a result of coastal geography and sand movement
Cliffs/dangerous access:	As a result of coastal geography

It has been identified that the hazards listed above pose risk to the following types of recreational users:

Strong currents/rip currents:	Swimmers, surf craft users, fishermen, rock platform users
Waves/waves overwashing:	Swimmers, surf craft users, fishermen, rock platform users
Inshore holes/drop off/deep water:	Swimmers, fishermen
Slippery rocks/uneven surfaces:	Fishermen, rock platform users
Shallow sandbanks/shore dump:	Swimmers, surf craft users
Submerged rocks:	Swimmers, surf craft users, fishermen
Cliffs/dangerous access:	Fishermen, walkers, sight seers

Existing Risk Treatments

Land Managers in partnership with a number of other organisations have implemented the following risk treatment initiatives within the Fingal Head Area:

- System of supervision
- Education and awareness programs
- Safety signage

Summary of Key Recommendations

Please note:

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

- Coastal usage and incident data (e.g. drowning incidents, emergency callouts, lifesaving and lifeguard statistics) should be used when making informed decisions about the implementation of risk treatments for coastal safety (pg. 24).
- Land Managers and tourism organisations should ensure that patrolled locations and surf safety information is promoted through any websites, specific promotional material, newsletters and social media pages (pg. 33).
- Education and awareness programs should include standardised key safety messages which are recognised by the aquatic industry (pg. 34)
- Distribution of standardised surf safety collateral (e.g. brochures and flyers) to Fingal Holiday Park and any other coastal accommodation providers. Collateral could also be made available at local shops such as newsagents or bakeries (pg.35).
- Tweed Shire Council to use the Signage and Access schedules as a guide for any future maintenance and signage reviews in the Fingal Head area (pg. 41 & 69).
- Consideration given to the installation of a life ring at Fingal Headland (pg. 78)
- Consideration given to the implementation of an Emergency Response Beacon at Dreamtime beach (pg. 79)
- This document should be reviewed regularly to measure the effectiveness of any risk mitigation strategies and drowning prevention initiatives that have been implemented (pg. 99)

Introduction:

Fingal Head has had a number of Coastal Drownings and Coastal Deaths in recent years and is being looked at as a potential blackspot on the NSW coast.

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

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

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

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

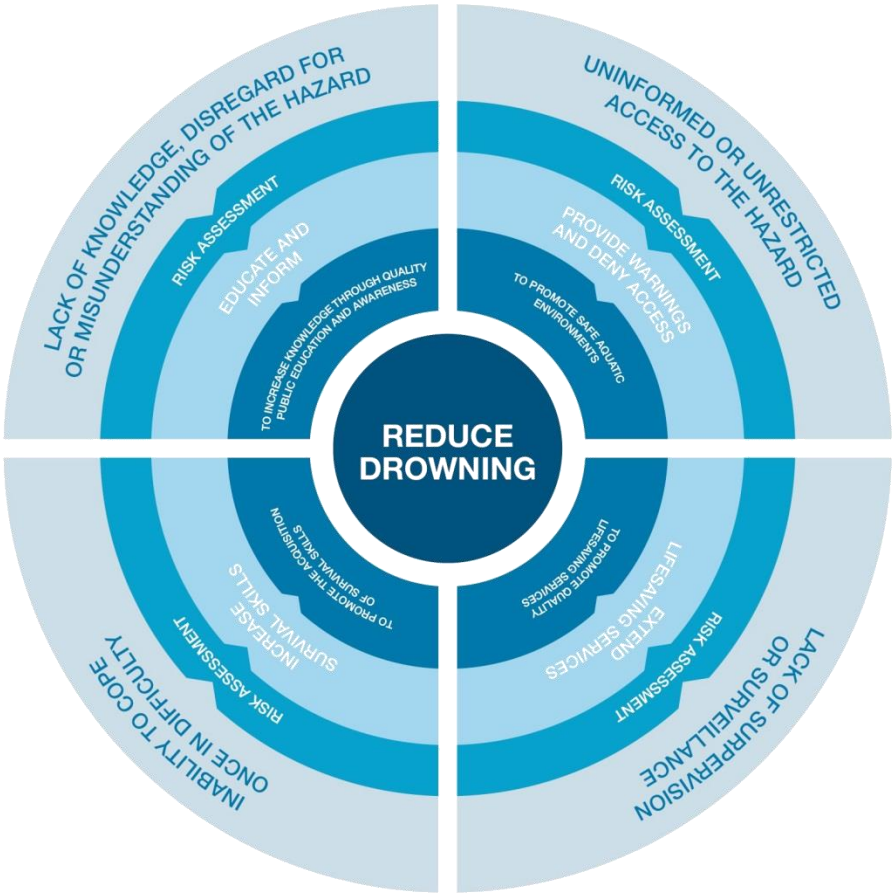

Figure 1 The international Life Saving Federation Drowning Chain.
Source: International Life Saving Federation

Treatment Options:

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

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

The treatment options found in the report are representative of Australian CoastSafe's opinion in relation to risk management at the locations assessed.
The report provides risk treatment options about how to improve risk and safety management in line with current industry standards:

- AS/NZS ISO 31000:2009 Risk management – Principles and Guidelines,
- AS/NZS2416.1:2010 Water Safety Signs and Beach Safety Flags,
- ISO 7001:2007 Graphical symbols – Public information symbols,
- AS2342 – 1992 Development, Testing and Implementing of Information and Safety Symbols and Symbolic Signs, and
- ISO9001:2008 Quality Management Systems – Requirements.

Project Scope

This coastal risk assessment and treatment plan has been prepared following an on-site risk assessment undertaken by Australian CoastSafe of the Fingal Head Area on Saturday 21st April 2018.

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

The geographical scope of this assessment extended approximately 700m north of Fingal headland and 700m south along Dreamtime beach. Figure 2 provides an overview of the assessment area. All accessible coastal environments within these boundaries have been included in this report.

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

- Access locations, classifying these as formal or informal access tracks and recommending treatment options. Signage that should be implemented, in conjunction with an audit of current signage
- Hazards, their potential risks, risk groups, risk scores and treatment options.
- Public rescue equipment that should be implemented, in conjunction with an audit of current public rescue equipment.
- Facilities and points of interest that may attract members of the public to coastal location.

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

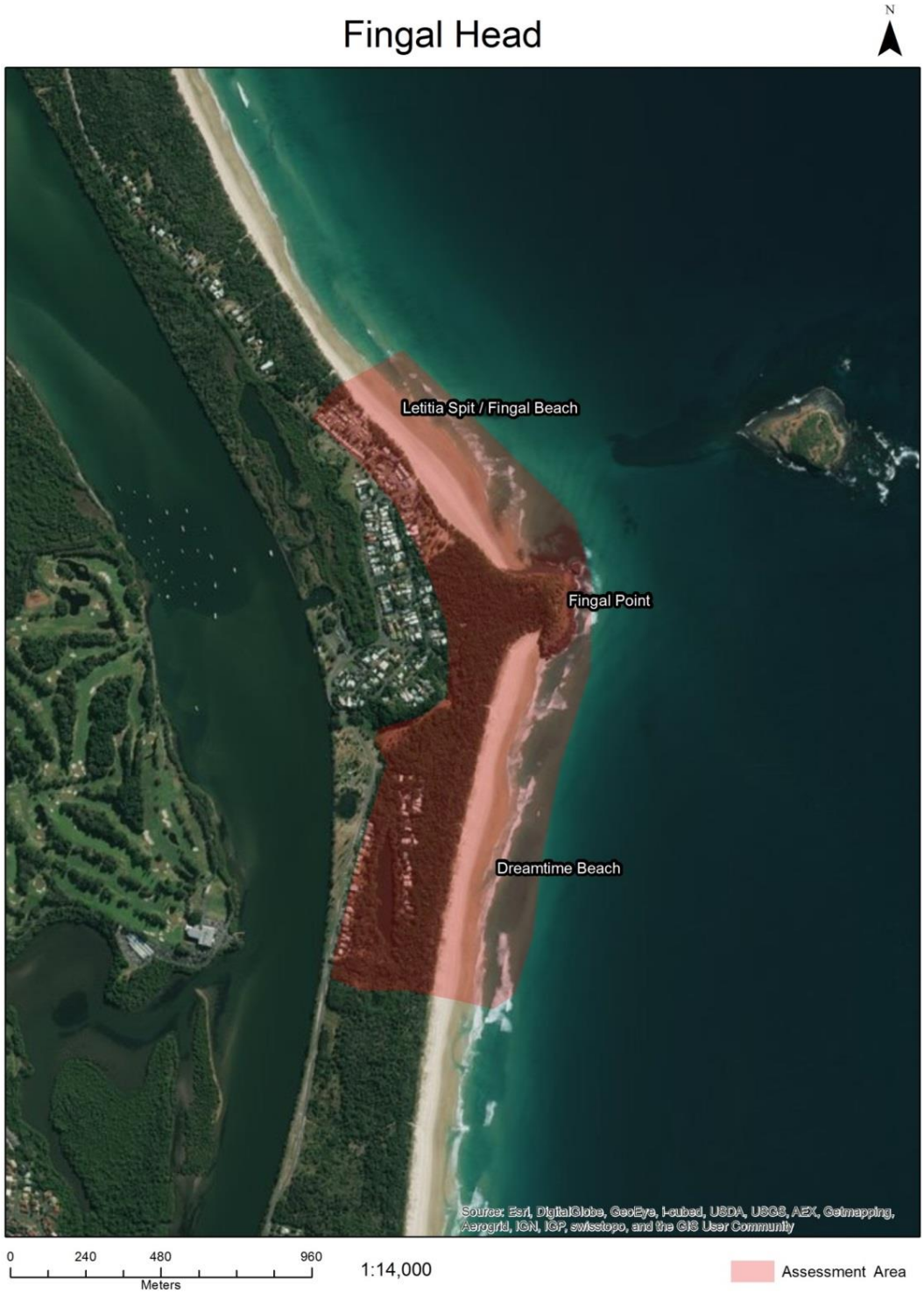

Figure 2 Coastal risk assessment area

Definition of Terms

Definitions of the key terms used within this report are provided below.

Table 1 Definitions of key terms.

ABSAMP	Australian Beach Safety and Management Program.
Attendance	A snapshot of the on-beach and in-water attendance taken every two hours on a daily basis.
ATV	All-terrain vehicle.
CALD	Culturally And Linguistically Diverse (CALD) Communities.
Coastal	The foreshore, seabed, coastal water, and airspace above a large body of water (harbour/bay/inlet), including areas up to 2NM offshore and of which the landward boundary is the line of mean high water, except that where that line crosses a river/inlet, the landward boundary at that point shall be the point upstream that is calculated by multiplying the width of the river/inlet mouth by 5 (Adapted from the Resource Management Amendment Act 1991 – New Zealand).
Coastal Waterway	A coastal body of water e.g. river/creek opening.
Consequence	Outcome or impact of an event.
Control	An existing process, policy, device, practice or other action that acts to minimise negative risk or enhance positive opportunities.
Emergency Action Plan	A plan that outlines the procedures to be used in the event of an emergency.
First Aid	A lifesaver/lifeguard treating either a minor or major first aid incident, which may require further assistance from NSW Ambulance e.g. broken bones or stings/bites.
Formal Access	Formal, well maintained access ways are effective in promoting and facilitating the use of a generally safer 'track', effectively exposing people to the relevant safety signage/information, reducing the quality of signage required and enhancing emergency reporting/location identification.
Frequency	A measure of the number of occurrences per unit of time.
Geomorphology	Is the scientific study of landforms and the processes that shape them.
Hazard	A source of potential harm.
Hazard Symbols	A graphical symbol used together with a safety colour and safety shape to form a safety sign.
Inaccessible	A location that is not able to be accessed from land by standard reasoning and/or entry is prohibited by private access.

Informal Access	Informal access ways may create higher risk through use (uneven ground/hazards), may expose people to dangerous locations (cliffs/sink-holes), may require duplicate/multiple signage (inefficient/costly) and may make emergency location reporting difficult (location awareness).
Inherent Risk	The risk that an activity would pose if no controls or other mitigating factors were in place.
IRB	Inflatable Rescue Boat.
LGA	Local Government Area – for the purposes of this report this area is used to determine the scope of the assessment (i.e. the coastal boundary of the Local Government Area). This may include lands managed by Councils, Crown and National Parks and Wildlife Service.
Lifesaving Service	An organised and structured service comprised of paid lifeguards and/or volunteer lifesavers and appropriate rescue and first aid equipment supported by a coordinated backup team.
Likelihood	Used as a general description of probability or frequency.
Modal	The conditions that occur most frequently, or more often than other conditions.
Monitor	To check, supervise, observe critically or measure the progress of an activity, action or system on a regular basis in order to identify change from the performance level required or expected.
Peak Water Safety Agencies	A peak body is defined as a state, territory or national non-profit organisation established to cater for the needs, interests and aspirations of its members. Members may include individuals or organisations, but they will all have a common interest. Peak bodies in the water safety sector may include agencies such as Surf Life Saving, Royal Life Saving, Surf Educators Australia, Austswim, Australian Professional Ocean Lifeguard Association, Surfing NSW and the Office of Boating Safety who represent the NSW Water Safety Advisory Council as a committee member.
Prevailing	The conditions existing in a particular place or at a particular time.
Preventative Action / Prevention	Direct action taken to reduce or eliminate the probability of a specific rescue, first aid or other reportable incident from happening in the future. Note: A preventative action will be recorded as the singular activity taken (i.e. clearing the water for lightening will be one action. The number of people warned/alerted as a result of this action will be recorded separately as a warning)
Probability	A measure of the chance of occurrence expressed as a number.

Rescue	Retrieving a person in distress, delivering them to a place of safety and the application of first aid and basic life support as may be required
Residual Risk	Risk remaining after implementation of risk treatments.
Rip Current	Channelled currents of water flowing away from shore, typically extending from the shoreline, through the surf zone, and past the line of breaking waves.
Risk	Standards Australia defines risk as the effect of uncertainty on objects (AS/NZS 31000:2009).
Risk Analysis	Systematic process to understand the nature of and to the level of risk.
Risk Assessment	Standards Australia defines a risk assessment as the overall process of risk identification, risk analysis and risk evaluation (AS/NZS 31000:2009).
Risk Evaluation	Process of comparing the level of risk against criteria.
Risk Identification	The process of determining what, where, when, why and how something should happen.
Risk Management	Standards Australia defines risk management as coordinated activities to direct and control an organisation with regard to risk (AS/NZS 31000:2009).
Risk Register	A table summarising the identified risks, the location, why it has been identified as a risk, and what current treatments are in place to lessen the risk and an overall hazard rating.
Risk Treatment	Process of selection and implementation of measures to modify risk.
Risk Treatment Plan	A table summarising how to deal with the identified risks, including a list of potential risk treatments, the risk treatments currently and any residual risk.
RWC	Rescue water craft (jet ski).
SLS Branch	Surf Life Saving Branch, a regional body of Surf Life Saving formed to further the objects of surf lifesaving in a particular geographic area.
Stakeholders	Those people and organisations who may affect, be affected, or perceive themselves to be affected by a decision, activity or risk.

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Hazard Identification and Risk Assessment

During the site inspection hazards were identified within the area inspected and assessed in terms of their individual risk to public safety (extreme, high, medium, low) using a risk assessment matrix (pg. 82)

The risk framework and descriptors used in the risk ranking tool (pg. 82) are based on Surf Life Saving Australia's risk management framework. Specific mentions of Surf Life Saving in the descriptors should be used to provide clarification on what the different ratings for consequence and impact may equate to for the specific circumstances of the Land Manager. If necessary, Land Managers may wish to translate these ratings to their own risk management framework in order to align assessed risks with their existing enterprise risk management frameworks.

Risks assessed in this report are specific to injury and death along the coast. As a result this report and assessment is usually aligning to the descriptors used for 'physical/safety' in the risk assessment tool (pg. 82).

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.

This coastal public safety risk assessment aligns with the international standard of risk management 'AS/NZS ISO 31000:2009 Risk Management Principles and Guidelines' (Standards Australia, 2009).

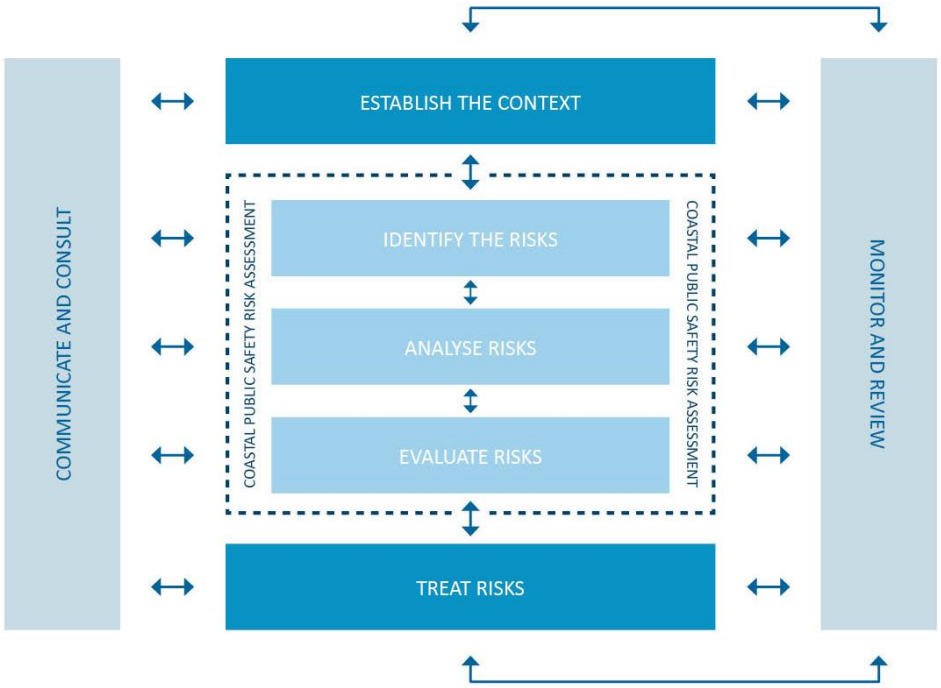


Figure 3 Risk management process (Standards Australia, 2009).

Beach Hazard Ratings and Overview

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

Table 2 ABSAMP Beach Hazard Ratings

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

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

Table 3: Beach hazard rating calculation matrices for wave dominate beaches.

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

The beach hazard ratings used in risk based calculation throughout the 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 the hazard may in fact be greater or less, depending upon an individual's own skill, and

understanding and competence in relation to a certain area. The ABSAMP hazard ratings for the inspected areas of the Fingal Head area are detailed within the next section of the report.

ABSAMP Types and Ratings

The ABSAMP Hazard Rating for the assessed locations listed in Table 4 below. The table provides both a modal and a prevailing ABSAMP rating. The modal ABSAMP rating represents the average conditions for each location, which has been extracted from the Australian Beach Safety and Management Program. The prevailing ABSAMP rating represents the conditions observed by Australian CoastSafe on the day each audit took place.

Table 4 ABSAMP Hazard Ratings

Location Name	ABSAMP No.	ABSAMP Rating (Modal)	ABSAMP Type (Modal)	ABSAMP Rating (Prevailing)	ABSAMP Type (Prevailing)
Fingal Beach / Letitia Spit	NSW002	6	Rhythmic bar and beach	5	Transverse Bar and Rip
Fingal Point	NSW002RPa	6*	Rock Platform	6*	Rock Platform
Dreamtime Beach	NSW003a	6	Rhythmic bar and beach	6	Rhythmic Bar and Beach

** Fingal Head Area Rock Platform Ratings*

Currently there is no method of rating the hazardousness of the rocky coast, in an equivalent manner to the ABSAMP beach hazard rating system for sandy beaches.

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

It is a limitation of the report that there is no available method of calculating the specific hazard rating of a rock platform.

ABSAMP Beach Type Characteristic Overview and Hazards

The modal beach characteristics and associated hazards for each location are as follows:

Rhythmic Bar and Beach

Rhythmic bar and beach type commonly occurs around the southern Australian coast. They usually consist of relatively fine-medium (0.3 mm) sand and exposure to waves averaging more than 1.5 m. They are characterised by an outer bar which is separated from the beach by a deep trough, however unlike the longshore bar and trough type, the bar varies in width and elevation alongshore, and it is rhythmic.

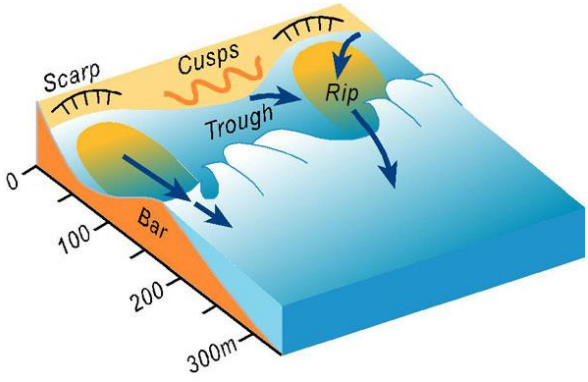


Figure 4 Illustration of a Rhythmic Bar & Beach

Waves break more heavily on the shoreward-protruding rhythmic bar sections with the broken wave and white water flowing shoreward as a wave bore. The bore then flows off the bar into the deeper tough, where it moves shoreward and longshore as a rip feeder current. Part of the wave reforms in the trough and breaks again on the shore.

The water from both the wave bore and the swash piles up in the rip feeder channel and moves sideways toward the adjacent rip embayment. The converging feeder currents turn and flow seaward as a rip current through the trough and across the deeper seaward-protruding sections of the rhythmic bar.

Transverse Bar and Rip

Transverse bar and rip (TBR) type is the most common and extensive of Australia's wave-dominated beach types. They occur primarily on beaches composed of fine to medium sand (0.3 mm) and exposed to waves averaging 1.5 m. This beach type received its name from the fact that the bars are transverse or perpendicular to and attached to the beach, separated by deeper rip channels.

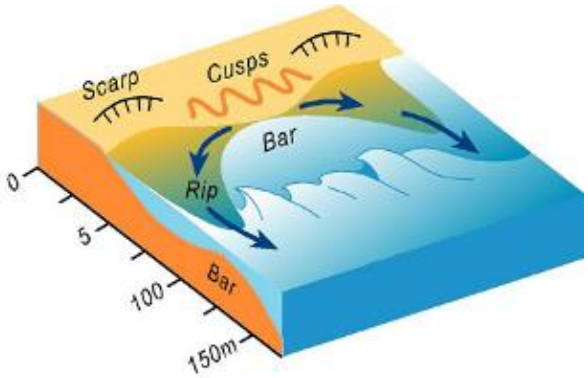


Figure 5 Illustration of a Transverse Bar & Rip

The bars and rips are usually regularly spaced and range from 150 m on the lower energy sea-dominated northern Australian beaches to 250 m along the higher energy southeast coast and 350 m along the exposed southern coast. Waves break heavily on the shallower bars and less in the deeper rip channels resulting in lower energy swash in lee of the bars and higher energy swash/shore break in lee of the rips. The shoreline is rhythmic building a few metres seaward behind the attached bars as deposition occurs forming the mega cusp horns and being scoured out and often scarped in lee of the rips forming the embayments. The surf zone has a cellular circulation pattern. Waves tend to break more on the bars and move shoreward as wave bores. This water flows both directly into the adjacent rip channel and, closer to the beach, into the rip feeder channels located at the base of the beach. The water in the rip feeders converge and return seaward as a strong rip current.

Rock Platforms and Rocky Coasts

Rock platforms and rocky coasts are wave eroded regions that exist at the base of rocky cliffs and headlands. They are typically influenced by tides and waves. For coastal hazards, rocky coasts can therefore be considered static features unable to adjust their morphology during storms unlike sandy beaches (Kennedy, et al., 2013).

Facility Visitation Rates (FVR)

The Facility Visitation Rate (FVR) is a quantitative assessment system developed by State-wide Mutual as 'Best Practice' for *Signage As Remote Supervision* (2007). The FVR can be used by NSW Local Government to determine the most appropriate signage schedule for a facility (venue or location).

The FVR is calculated using data collected during the assessment process and includes site population use and frequency of use. Since the FVR calculation is used to determine aquatic recreational warning signage requirements, the figures used are those of the peak period of beach usage.

The following information is used to calculate the FVR:

1. Observational data collected during the site assessment; (only during peak summer periods do we rely on observational data)
2. Stakeholder observation, consultation and feedback; and,
3. Historical statistical data

The Facility Visitation Rate is calculated using the following formula:

FVR = (Development x Population) + Frequency

Where:
Development* = the level of facilities and infrastructure that exist within or about the facility.
Population = the average number of people that use the facility at any point in time.
Frequency = the number of times that the facility is used by patrons.

*** Note**: Development ratings were calculated with reference to table 5.

Facility Visitation Rating (FVR) Reference Tables

Table 5 Typical development ratings for beaches

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

Table 6 Typical population use rating for a facility

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

Table 7: Suggested Frequency use rating for a Facility.

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

The FVR values for assessed locations in the Fingal Head Area are provided in Table 8.

Table 8: Facility Visitation Rates – for assessed locations.

LOCATION NAME	DEVELOPMENT RATING	X	POPULATION	+	FREQUENCY	=	FVR
Letitia Spit / Fingal Beach	3	x	4	+	3	=	15
Fingal Point	3	x	2	+	3	=	9
Dreamtime Beach	3	x	3	+	2	=	11

Given the FVR scores listed in Table 8, the most appropriate signage characteristics for each location are listed below.

FVR Score between 7 and 10

- Fingal Point

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

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

FVR Score between 11 and 15

- Letitia Spit / Fingal Beach
- Dreamtime Beach

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

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

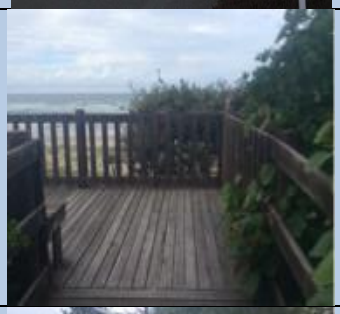
Facilities Audit

Why do we record facilities?

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

The below tables show the facilities available in the Fingal Head assessment Area;

Table 9 Letitia Spit / Fingal Beach

Facility Type	Photo	Latitude	Longitude	No. of Facilities
Accommodation		-28.196700	153.566012	1
Viewing platform		-28.196878	153.566929	1
Barbecue Area		-28.197741	153.567126	1

Bench		-28.197374 -28.197417 -28.197531 -28.197786	153.566991 153.567037 153.567186 153.567383	4
Bin		-28.196978 -28.197741 -28.201322 -28.212919	153.566786 153.567126 153.567625 153.563640	4
Car Park		-28.194909 -28.197504 -28.212919	153.563425 153.566867 153.563640	3 (Approx. 55 spots)
Park		-28.198267	153.567620	1
Playground		-28.197417	153.567037	1
Shower		-28.196886 -28.197050 -28.200734	153.566775 153.566871 153.568161	3

Water tap		-28.197910	153.567392	1

Table 10 Fingal Headland

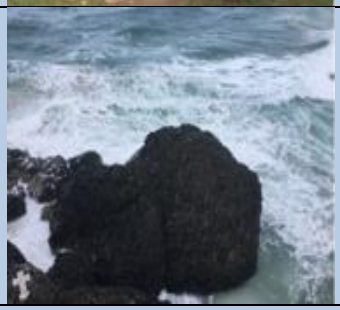
Facility Type	Photo	Latitude	Longitude	No. of Facilities
Car Park		-28.201233	153.567474	1 (Approx. 20 spots)
Evidence of fishing activity		-28.201159	153.570617	1
Bench		-28.199833	153.570883	1
Lighthouse		-28.200010	153.570828	1

Table 11 Dreamtime Beach

Facility Type	Photo	Latitude	Longitude	No. of Facilities
Car Park (Approx. 15 spots)		-28.202377	153.567788	2 (Approx. 20 spots)

Population, Development and Tourism

Population growth is an important consideration when evaluating and predicting beach usage trends. Increasing beach usage due to population growth relates to an increase in the probability of an event occurring. Tourism operations and development proposals are also associated with population growth, and these should also be considered when determining suitable risk treatment options.

Population Statistics

The 2016 census recorded a population count of 91,371 in the Tweed Shire LGA. Over the last 10 years, the population has increased by 12,050 people (15% growth). Table 12 lists the male, female and total population in the Tweed Shire LGA for the last three Census counts. Table 13 lists the 2016 population of the suburbs that are situated in the areas surrounding Fingal Head.

Table 12 Tweed Shire LGA population data (ABS, 2016).

Tweed Shire Local Government Area – Population			
Year	**Males**	**Females**	**Total**
2016	44,109	47,261	91,371
2011	41,012	44,093	85,105
2006	38,624	40,697	79,321

Table 13 Population count of coastal state suburbs near Fingal Head (ABS, 2016).

State Suburb	Males	Females	Total
Tweed Heads	3,905	4,272	8,176
Fingal Head	297	299	592
Kingscliff	3,567	3,890	7,464

Tourism Information

Table 14 Tourism visitation

	International	Domestic Overnight	Domestic Day	Total
Visitors ('000)	20	553	1,106	1,679
Nights ('000)	255	1,976	n/a	2,230

Table 15 Reason for visit

Reason (visitors '000)	International	Domestic Overnight	Domestic Day	Total
Holiday	11	286	575	871
Visiting Friends or Relatives	7	208	412	627
Business	n/a	40	n/a	n/a

Table 16 Visitor travel party type

Travel Party Type (visitors '000)	International	Domestic Overnight	Domestic Day	Total
Unaccompanied	10	112	n/a	122
Couple	6	194	n/a	200

Travel Party Type (visitors '000)	International	Domestic Overnight	Domestic Day	Total
Family Group	n/a	113	n/a	n/a
Friends/relatives	2	116	n/a	117

Table 17 Visitor accommodation type

Accommodation (nights '000)	International	Domestic Overnight	Domestic Day	Total
Hotel or similar	19	472	n/a	491
Home of friend or relative	130	660	n/a	790
Commercial camping / caravan park	8	469	n/a	477
Other	94	373	n/a	467

Notes to tables
Table 14 shows that Domestic Day visitors make up 66% of all tourists in the Tweed LGA which corresponds to the anecdotal evidence that says lots of visitors come down from Queensland for the day. In comparison only 1% of visitors are international.

Table 15 shows that 66% of people on holiday only visit Tweed Shire for the day whilst 33% will stay overnight. These numbers are the same for people visiting friends or family. Only a very small % of these people are international visitors.

Table 16 shows that the most common type of visitor are those in couples (36%) whilst solo travellers, families and friend groups all represent approximately 21% each.

Table 17 shows of the domestic overnight visitors 24% will stay in commercial camping or caravan parks. The most common accommodation type is staying in the home of a friend or relative.

Local Accommodation Providers
Local accommodation providers attract beach users to the coast especially during school holiday periods. Fingal Holiday Park sits just behind Fingal beach has direct access to the beach. Caravan parks/camping grounds that have direct access to coastal waters are of significance when determining the level of risk at a certain location. As most guests are domestic or international visitors their knowledge of the beach conditions will be less than local residents and therefore there is a higher chance of visitors getting into difficulty. It was estimated that Fingal Holiday Park can attract up to 600 guests during peak holiday periods of which a majority would use the beach during their stay.

Access points from the holiday park do not lead directly to the patrolled sections of the beach which increases the level of risk.

Beach Usage Statistics

Volunteer Lifesaving Statistics:

The following statistics have been recorded by the lifesaving (volunteers) operating at Fingal Rovers SLSC. Figures are over five patrolling seasons (2013/14, 2014/15, 2015/16, 2016/17, 2017/18). Statistics for lifesavers have been sourced from the Surf Life Saving internal management database known as 'SurfGuard'.

Attendances:

The graph below provides each seasons attendance figures as recorded by Fingal Rovers lifesavers (weekends and public holidays).

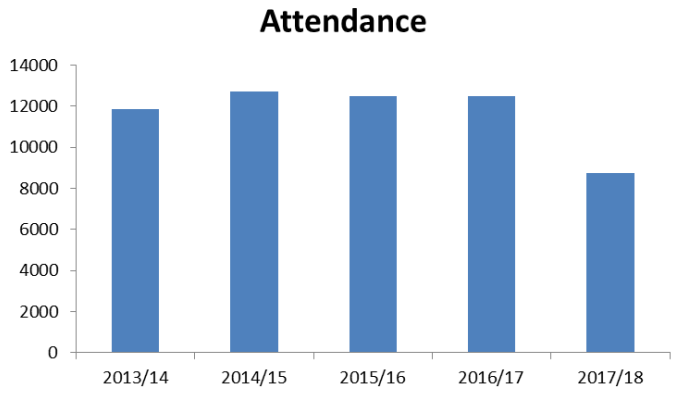


Figure 6 Attendance figures recorded by Fingal Rovers SLSC volunteers

Attendances:

The graph below provides each seasons rescue figures as recorded by Fingal Rovers lifesavers (weekends and public holidays).

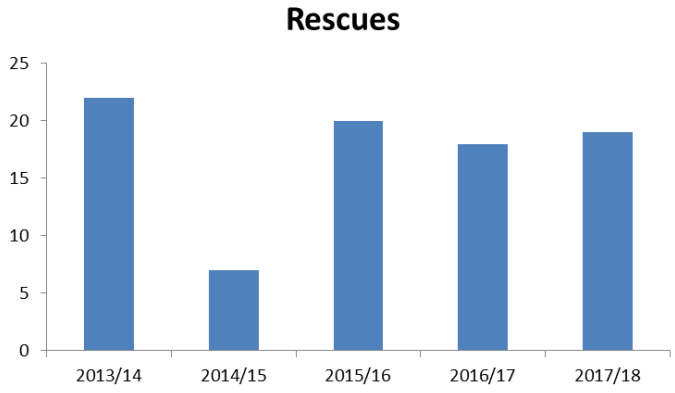


Figure 7 Rescue figures recorded by Fingal Rovers SLSC volunteers

First Aid and Preventative Actions:
The graphs below display the first aid and prevention statistics for lifesavers (weekends and public holidays).

Preventative Actions may include:
- Swimmers advised/warned
- Craft users advised/warned
- Beach users advised/warned
- Warning signs erected
- Shark alarm
- Searches/lost children

First Aid cases may include:
- Minor injuries/first aid
- Major injures/hospitalisation
- Marine stings
- Spinal injuries
- Shock

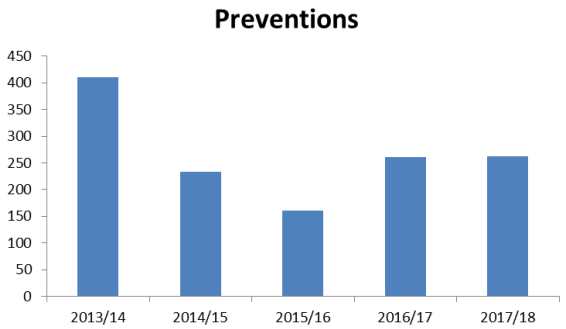


Figure 8 Prevention figures recorded by Fingal Rovers SLSC volunteers

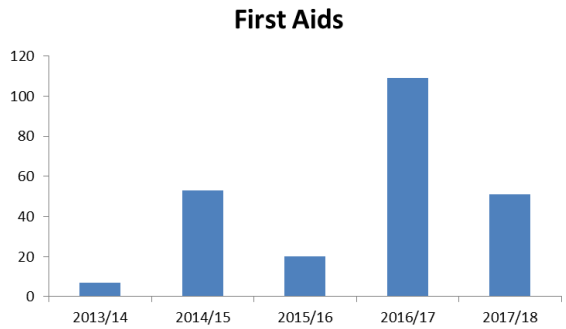


Figure 9 First Aid figures recorded by Fingal Rovers SLSC volunteers

Paid Lifeguard Statistics:
The following statistics have been recorded by the paid lifeguards operating at Fingal Beach. Figures are over 5 patrolling seasons (2013/14, 2014/15, 2015/16, 2016/17, 2017/18).

Attendances:
The graph below provides each seasons attendance figures as recorded by Fingal Beach paid lifeguards (weekdays).

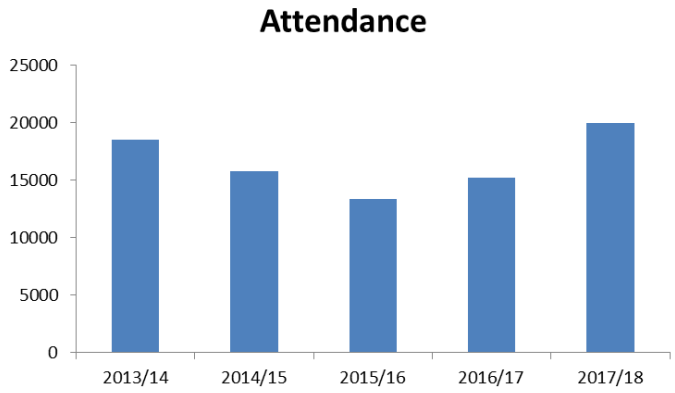


Figure 10 Attendance figures recorded by Fingal Beach Lifeguards

Rescues:

The graph below provides the rescues as recorded by Fingal Beach paid lifeguards (weekdays).

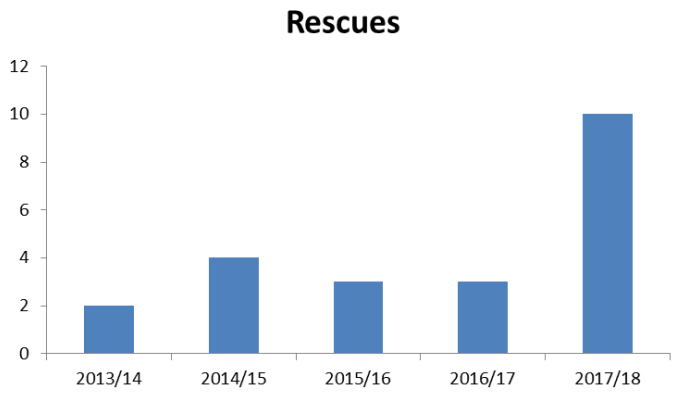


Figure 11 Rescue figures recorded by Fingal Beach lifeguards

First Aid and Preventative Actions:

The graphs below display the first aid and prevention statistics for Fingal beach paid lifeguards (weekdays).

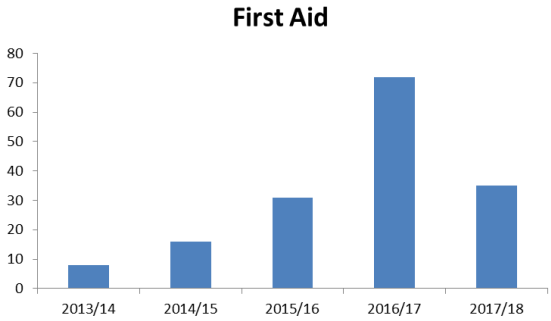


Figure 12 First Aid figures recorded by Fingal Beach lifeguards

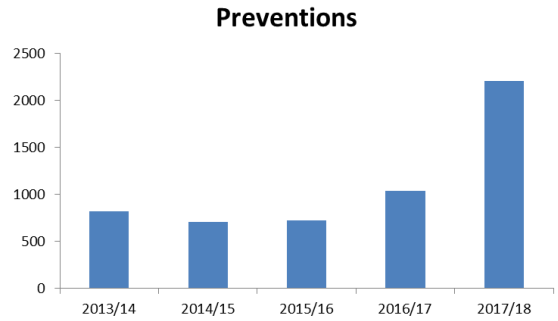


Figure 13 Prevention figures recorded by Fingal Beach lifeguards

Rescues/Preventative Actions:

The following tables show the cumulative statistics for both preventative actions and rescues which are then used to determine the preventative actions: rescues ratio. In theory, the more preventative actions a club/service makes, the number of rescues that are required to be conducted will decrease These statistics may highlight which clubs/services have the opportunity to be more proactive in making Preventative Actions with the aim of reducing the amount of rescues that need to be performed.

Table 18 Rescues / Prevention ratio

	Fingal Rovers Lifesavers	Fingal Beach Lifeguards
Total Preventative Actions	1328	5487
Total Rescues	86	22
Ratio Preventative Actions: Rescues	**15:1**	**249:1**

Over the past 5 seasons Fingal Rovers SLSC makes 1 rescue for every 15 preventative actions whilst the Fingal Beach Lifeguards will complete 249 preventative actions for every rescue performed. This illustrates to the Fingal Rovers SLSC that they could reconsider how their patrols are being performed as there is an opportunity to take more pre-emptive actions and reduce the amount of rescues being performed by the club.

Drowning Incidents

The drowning incidents that have occurred in the Fingal Head area from the 1st of July 2004 are provided below. The table excludes any inland drowning incidents or coastal deaths.

Table 19 Drowning incidents in the Fingal Head area since July 2004

Date	Location	Time	Age & Gender	Nationality	Residential Status	Activity	Victim Postcode
8/02/2009	Letitia Spint/Fingal Point	15:20	49 M	Filipino	Australian Resident	Rock/cliff related	4170
28/01/2011	Letitia Spit/Fingal Point	15:30	73 M	German	International Tourist	Swimming	International
11/10/2015	Fingal Headland	17:07	25 F	New Zealand	Australian Resident	Attempting a rescue	4227
25/03/2016	Dreamtime	15:40	30 M	Australian	Australian Resident	Attempting a rescue	4221
22/10/2017	Letitia Spit/Fingal Point	11:33	20 M	Australian	Australian Resident	Watercraft - surfing	2487
7/02/2018	Fingal Headland	15:33	21 M	Japanese	International Tourist	Swimming	International

- The average age of the drowning victim is 36 years old
- 33% of victims were international tourists. The other 67% were Australian Residents
- 33% of victims were attempting a rescue at the time of their death
- 50% of victims were from Queensland
- Only 17% of victims were from the local area.

Emergency Callouts

There have been 31 emergency callouts through the Surf Emergency Response System (SERS) from 1st January 2008 to 30th June 2018 in the Fingal Head Area. The SERS involves callout teams (lifesavers/lifeguards) including 'after hours' responding to emergencies that have been tasked by the Police. As a result of the 31 callouts, 20 persons were rescued and 11 callouts resulted in 'no further action' or 'stood down before response' meaning resources were ultimately not required. Such cases include self rescue, rescue by another member of the public, rescue by another emergency response organisation, and false alarms. Unfortunately, 5 of these callouts were a result of coastal drowning / death.

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

Table 20 Emergency callouts through the SERS since June 2018

Date	Incident Location	Day	Time	Job Type	Summary Outcome
30/01/2009	Fingal Beach	Fri	16:17	Swimming	NFA
22/03/2009	Fingal Head (FNC)	Sun	15:08	Other	NFA
17/05/2010	Fingal	Mon	10:08	Boating	NFA; Rescued by others
28/01/2011	Fingal Beach	Fri	16:30	Swimming	Drowning/Death
5/08/2011	Fingal Rovers	Fri	15:13	Boating	NFA; Got out by themselves
27/11/2011	Fingal Spit	Sun	9:20	Swimming	Rescued
12/12/2011	Fingal Beach	Mon	13:52	Surfcraft (Kayak)	Rescued
25/12/2011	Fingal Boat Ramp	Sun	14:01	Boating	Rescued
31/12/2012	Fingal Rovers	Mon	8:53	Swimming	Person Found
5/04/2013	Fingal Heads	Fri	15:12	Other	NFA
27/09/2013	Dreamtime, Kingscliff	Fri	13:08	Swimming	NFA; Got Out By Themselves
18/10/2013	Fingal Heads	Fri	14:43	Suicide/Self Harm	NFA; Rescued By Others
10/10/2015	Fingal Headland	Sat	17:07	Swimming	Rescued
24/12/2015	Fingal Headland	Thu	13:09	Boating	Rescued
18/03/2016	Fingal Headland	Fri	18:31	Boating	NFA; Rescued By Others
25/03/2016	Fingal Headland	Fri	15:41	Swimming	Drowning/Death
9/04/2016	Fingal Headland	Sat	16:27	Surfcraft (Kayak)	NFA; Got Out By Themselves

Date	Incident Location	Day	Time	Job Type	Summary Outcome
5/06/2016	Fingal Headland	Sun	9:26	Surfcraft (SUP)	NFA; Nothing Found
20/08/2016	Fingal Headland	Sat	9:10	Swimming	Rescued
22/11/2016	Fingal Headland	Tue	17:36	Surfcraft (Surfing)	NFA; Got Out By Themselves
27/12/2016	Dreamtime Beach	Tue	13:17	Other - land based observation	NFA; Nothing Found
19/01/2017	Dreamtime Beach	Thu	18:28	Swimming	NFA; Rescued By Others
22/01/2017	Fingal Headland	Sun	17:06	Swimming	NFA; Got Out By Themselves
22/10/2017	Fingal Headland	Sun	11:38	Surfcraft (Surfing)	Drowning/Death
4/11/2017	Fingal Headland	Sat	19:13	Surfcraft (Kayak)	Rescued
18/01/2018	Fingal Headland	Thu	15:03	Swimming	Rescued
1/02/2018	Fingal Headland	Thu	11:11	Swimming	Stood Down Before Response
7/02/2018	Fingal Headland	Wed	15:17	Swimming	Drowning/Death
18/02/2018	Fingal Headland	Sun	11:55	Other	Rescued
4/05/2018	Fingal Headland	Fri	13:56	Swimming	NFA; Got Out By Themselves
21/06/2018	Fingal Rovers	Thu	17:10	Rock/Cliff related	Drowning/Death

- 45% of callouts were as a result of people swimming, Boating was the next highest with 16%
- The 2017/18 season has had the most call outs since 1st July 2008 with 26% of total calls.
- Fridays were the most common day for a call out to occur with 29% of incidents. The least common day was Wednesday (3%).

Action Planning Priority Index

The Action Planning Priority Index can be viewed as the gross risk score for a beach. The index seeks to identify the risks associated with the broader coastal environment under assessment, rather than specific hazards and risks present at a particular location or site. The majority of information detailed in this section of the report will be identified through pre-existing data (where available), with new data sourced where gaps are present or the data is not reliable (Tipton & Wooler 2016).

The total score for the Action Planning Priority Index is intended to be used for the purpose of prioritising risk mitigation strategies provided for consideration in this report. The individual components of the Action Planning Priority Index should not be considered in isolation from the total scores outlined in Table 27.

The information is based on modal data for peak visitation during the busiest season(s).

The Action Planning Priority Index uses the following risk identification information:

1. Australian Beach Safety & Management Program (ABSAMP) Rating
2. Local Population Rating (LPR)
3. Human/Activity Interaction Rating (HAIR)
4. Access Rating (AR)

Local Population Rating

The Local Population Rating (LPR) expands on the information obtained from the Facility Visitation Rating. This additional population rating identifies the population of residents and/or non-residents located within 2km's of a coastal location under assessment. The highest figure (resident or non-resident) will be recorded.

Table 21 Local population rating descriptors.

Population Rating	Qualifying Description (all staying/living within 2km of beach)
1	< 50 residents and/or < 20 non-residents (domestic or overseas tourists)
2	50 – 250 residents and/or 21 – 100 non-residents (domestic or overseas tourists)
3	250 – 1000 residents and/or 100 – 500 non-residents (domestic or overseas tourists)
4	1000 – 2500 residents and/or 500 – 1000 non-residents (domestic or overseas tourists)
5	2500 + residents and/or 1000 non-residents (domestic or overseas tourists)

Table 22 Local population ratings applied to assessed locations.

Location	LPR Total
Letitia Spit / Fingal Point	3
Fingal Headland	3
Dreamtime	3

Human/Activity Interaction Rating

The Human/Activity Interaction Rating (HAIR) identifies any conflicts present at the coastal environment between the number of people and activities taking place. Activities include both those in the water and those on the beach.

Table 23 Human/Activity Interaction descriptors.

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

Table 24 Human/Activity Interaction ratings applied to assessed locations.

Location	Population (in water)	Conflict	Population (on beach)	Conflict	HAI Total
Letitia Spit / Fingal Point	4	3	2	2	11
Fingal Headland	1	1	1	2	5
Dreamtime	3	3	2	2	10

Access Rating

Beaches or coastal environments that have increased accessibility (i.e. near major roads, cities, public transport, car parks, boat ramps, maintained access paths etc.) increase the likelihood of users at that beach. This directly increases the level of risk of drowning and or injury.

Table 25 Access rating descriptors.

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

Table 26 Access ratings applied to assessed locations.

Location	Access Rating
Letitia Spit / Fingal Point	4
Fingal Headland	3
Dreamtime	3

Action Planning Priority Score

The action planning priority score provides an indicator for the overall level of risk of the location. The scores range from 0 to 60. These scores can be used to prioritise the order in which risk treatments described in the next section of this report are implemented.

Table 27 Summary of action planning priority calculations for each assessed location.

Location	AMSAMP X 2 (Out of 20)	Population Support X 2 (Out of 10)	Human Activity/ Interaction (Out of 20)	Access X 2 (Out of 10)	Total Score (Out of 60)
Letitia Spit / Fingal Point	12	6	11	8	37
Fingal Headland	12	6	5	6	29
Dreamtime	12	6	10	6	34

General Water Safety:

Community Education:

Providing surf education is a key component in addressing the drowning chain and has the opportunity to reach a key target group. Surf education is not a core responsibility for Land Managers however they are still encouraged to assist with school participation levels.

Surf education (theory and application) can be very beneficial for primary and high school students. This type of education can include but is not limited to:

- Class room based surf safety presentations
- Swim and survive
- Surf education programs at the beach

Online Education:

Tweed Shire Council (2018) has a detailed section on their website that provides an overview of the beaches patrolled and their service dates/times. The website also provides a beach safety tips and a safety brochure (see below) that can be downloaded. The website links to beachsafe which provides additional information for each beach.

Figure 14 Tweed Shire Council online safety brochure

Land Managers may also be able to utilise social media through its Facebook account to communicate safety messages or advise when dangerous surf warnings are in place.

Smart Phone App:

The BeachSafe smartphone app provides beach goers with detailed information about Australia's beaches, including full weather and forecast information, tide, swell and water temperature. Most importantly the app shows which locations are patrolled by either paid lifeguards or volunteer lifesavers and the dates / times the beach is supervised (BeachSafe 2015).

Recommended Controls:

Educational Messages:
Land Managers should continue to provide public education/awareness programs which include standardised key safety messages and align/reference to peak coastal water safety agency websites such as:
NSW Water Safety Advisory Council: http://www.watersafety.nsw.gov.au/beach-safety/

Together with the following referenced websites of the NSW Water Safety Advisory Council for beach safety:

- BeachSafe: www.BeachSafe.org.au
- Safe Fishing: www.safefishing.com.au
- Boating: www.maritimemanagement.transport.nsw.gov.au

Water Safety Information:
Surf safety information has the opportunity to be promoted through various local media streams. Below are options as examples that could be implemented. It is important to acknowledge that there are a percentage of visitors that are non-English speaking and are more likely to be unfamiliar with water safety information in NSW. They may also be less likely to be able to interpret water safety information developed in English. These visitors are also typically the ones with the least experience in coastal environments which places them at a higher risk of drowning or injury (Bierens 2014). Whilst it is unrealistic to have water safety information available in every language, it would be possible to have additional text in targeted languages for those in high-risk demographics.

Posters:
Displaying posters which promote water safety at locations such as public amenity blocks, Surf Life Saving Clubs and visitor information displays directly located around coastal beach access is a great opportunity for the exposure of messages.

Figure 15 An example of a rip current sign on public amenity blocks


Figure 16 Example of a visitor information board at Fingal Headland where water safety information could be displayed.

Educational posters/signage should not be placed in positions where they would compete with formal aquatic and recreational safety signage which is usually placed around formal access points and high traffic areas.

Tourists and Visitors:
The Fingal Holiday Park is a popular destination for domestic travellers, especially through the school holiday periods. By having direct access to the coast people staying in this accommodation are likely to visit the beach at some point during their stay. A recent study has found that "visitors to coastal tourist parks are at a greater risk when swimming and bathing due to a high percentage of parks being close to unpatrolled beaches with

hazardous swimming conditions" (McKay, et al., 2014). It is therefore important to ensure that the guests of these accommodation providers have some understanding of beach safety.

Education Collateral:

The distribution of surf safety collateral (e.g. brochures and flyers) to coastal accommodation providers should be implemented on an ongoing basis to ensure the collateral is part of the welcome information package for guests. Brochures and flyers about surf safety could also be made available at local shops such as newsagents or bakeries. Boating safety collateral is also available through Transport for NSW or RMS.

Figure 17 Fingal Holiday Park accommodation

Personal Protective Equipment:

Water safety agencies actively promote the use of lifejackets for fisherman and recreational boaters. Educational and awareness programs in the Tweed Shire LGA should also promote and encourage these user groups to wear lifejackets. These messages could be included in community based education programs or the use of educational signage at well-known rock fishing locations. Fingal Headland is a good example where lifejacket use should be promoted for people who choose to fish here.

Figure 18 Conditions at Fingal Headland only moments apart

Safety Signage

Safety signage is a fundamental component of any drowning prevention strategy and targets the in-transit and on-arrival periods pertaining to a person/s arriving at a hazardous location (Bierens 2014).

Key factors relating to effective safety signage include:

- a risk assessment process used in the identification of priority information to display,
- alignment to Australian Standards for signage content (AS/NZS2416:2010),
- consistency in signage layout/display (Australian Water Safety Council, 2013),
- consistency in the appropriate positioning of signage, to maximise exposure to the public prior to arriving in a hazardous location, with the minimum number of signs, and
- a consistent process of signage maintenance as part of the Land Managers annual planning.

Existing Controls:

There is existing coastal safety signage for Fingal Head and includes:

- warning signage at coastal access points,
- warning signage directing to patrolled locations
- warning signage at high risk locations, and
- temporary signage in place when lifesavers and lifeguards are on duty.

Tweed Shire Council

Figure 19 Council Access Sign

Figure 20 Swimming not advised

Figure 21 Council Warning Sign.

Figure 22 Council warning Sign.

In general the existing safety signage around the Fingal Head area meets the Australian Standards and Tweed Shire Council should continue to monitor and provide maintenance as necessary. There are a few instances where some changes could be made. These are outlined in the signage schedule (pg. 41).

Recommended Controls:

Proposed Signage:
The Signage Schedule (pg. 41) outlines where access signage has the opportunity of being implemented.

Signage Types (National Aquatic and Recreational Signage Style Manual)

Level 1 Road Signs: Land Managers have the option to place this type of signage at the closest intersection location for directional purposes.

Level 2 Car Park Signs (Primary access sign): Land Managers have the option to place this type of signage at the main entrance/car park to an aquatic environment. The recommended content includes location name, emergency contact information, safety hazards/prohibitions and lifesaving/lifeguard service information.

Level 3 Access Signs (Secondary access sign): Land Managers can place this type of sign at access points or pathways that lead to the aquatic environment (beach, rock pool or rock platform). Level 3 access signs follow the same principles as those of Level 2 car park signs and typically display the location name, emergency contact information, safety hazards/prohibitions and lifesaving/lifeguard service information.

Level 4 Individual Hazard and Regulation sign: Land Managers have the option to us this sign where a hazard is localised and has been identified at a level of risk that warrants sign posting.

When implementing future signage, the following points are recommended:

1. Safety signs as recommended in this report should meet Australian Standard 'AS/NZS 2416.3:2010 *Water Safety Signs and Beach Safety Flags'*, and align signage style/layout with the 'National Aquatic and Recreational Signage Style Manual, 3rd Edition, July 2006' or the State-wide Mutual guide. It is the recommendation of this report that style is aligned to the former.

2. Signage layout (top-down order) consists of the following:
   a) Location name and emergency marker (if/when 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

3. Safety signs should meet the size/height/placement specifications outlined in 'AS/NZS 2416.3:2010 *Water safety signs and beach safety flags*'.

4. 'Diamond' hazard symbols should be utilised (not triangle). Context: AS/NZS 2416.3:2010 provides for the use of either 'diamond' or 'triangle' hazard symbols. For consistency with existing signage and across local government areas the more effective diamond symbols should be utilised.

5. Effective placement of aquatic and recreational 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.

6. Signs positioned in car parks should be placed central to the parking area and where parked vehicles will not obscure the sign.

7. Signs that are positioned in relation to open access areas should be spaced at regular intervals, with the distance between individual signs dependent upon the calculated Facility Visitation Rate (FVR).

8. Signs that are positioned in relation to defined access points 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.

Multilingual signage

Whilst signage can be an effective educational tool, there must be a certain level of understanding by the visitor for it to be a worthwhile installation. For non-English speaking visitors this level of understanding may not be met if sign education is based around the English language. Using internationally standardised symbols to convey the appropriate message or warning can be the most efficient way to deliver information to the visitor without the need to rely on a particular language (ISO Standards, 2014). In instances where supplementary text is recommended, the languages used should be based on the high-risk demographics identified in a given location.

Figure 23 Example of a multilingual sign at Jolong rock platform in Randwick

Signage Consolidation/Removal:
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 non-essential signage (not related to location, safety, hazard, prohibition information) that is present at a location should be considered for removal or re-located as appropriate so as not to impact on the recognition of the safety orientated priority signage

It is important to note that at most locations, an improved safety signage system usually results in an overall reduction in the quantity of signage due to the elimination of duplicate or ineffectual signs and the consolidation of key information into other signs. Excessive signage at coastal access points can cause people to become desensitised to the information presented to them and have the opposite effect of their intended purpose. Signage consolidation may also see a reduction in the implementation and maintenance costs related to signage and a reduction in the visual pollution of a site. The Signage Schedule references those signs that have the opportunity to be consolidated/removed.

Consistent Signage:
Consistent signs are encouraged to avoid confusion and give a clear and consistent message (AS 2416:2010). As seen in the signage examples above, the Fingal Head Area currently has a few access signs that are inconsistent which can be updated to the newer adopted style.

Education Signage:
Rip currents are the number one cause of drowning along the coastline of NSW (SLSNSW, 2018).

As the majority of access locations lead to unpatrolled sections of beaches where rip currents can occur educational signage could be implemented at main car parks or at high usage access points. An example of this sign can be viewed below, however it is suggested that proposed educational signage should be larger than this example. The sign informs beachgoers of how to identify a rip current and what options to take to escape the rip current.

Figure 24 An example of rip education signage

If implemented, this type of signage should not be placed in positions where they would compete with already existing access signage. This type of educational signage would be best positioned on the Fingal Rovers SLSC or on the visitor information board found on the Fingal Lighthouse walking track (see signage schedule 'E38' for GPS location).

Temporary Signage:

Temporary individual hazard signs may be used where a hazard is localised, has been identified at a level of risk that warrants a sign posting and is not permanent in nature.

Temporary hazards signs can be utilised in the following ways:

1. Where there is a higher risk of injury from temporary hazards
2. Where a hazard may exist at a patrolled beach either side of the flags
3. To direct patrons to a flagged area

Figure 25 An example of temporary signage directing patrons to the patrolled location

Temporary signage should be positioned in front of the Fingal Holiday Park to encourage beach users to move down to the patrolled area There is also an option to place temporary signage at Dreamtime beach to encourage people to move to the patrolled Fingal Beach

Tourist Parks:

Accommodation providers that have direct coastal access at unpatrolled locations are well positioned to implement temporary signage to inform people park guests of when beach conditions warrant the 'closing of a beach'. Surf Life Saving NSW will be able to inform park managers of when dangerous swell events are occurring through a media release. The Fingal Holiday Park currently uses temporary signage at the entrance to their accommodation and is a good example of the type of surf education messages that can be distributed before a patron even sees the beach.

Figure 26 Beach safety tips at Fingal Holiday Park

Emergency Marker System

When an incident occurs at a specific street address, it is relatively simple for emergency services to identify the location of the caller/incident. However, when an incident occurs at locations such as open-space parkland, walking trails, beaches or rock platforms (where no cross-street or other reference point is available) it can delay the identification of a location and the subsequent emergency service response.

Emergency location markers enable triple zero call takers to immediately and accurately verify the location of an emergency triple zero call.

Figure 27 Example of an emergency marker sign at Fingal Beach.

Emergency markers display a unique number to a specific location. For the Tweed Shire LGA these markers are displayed in a 'flag' style and are found on beaches at specific points. It is important that these are maintained and that emergency response services have the correct background information for each marker.
Surf Life Saving NSW is currently working with Tweed Shire LGA, key government departments and emergency services to develop a best practice emergency marker system which can be rolled out in the near future.

Signage Schedule

Letitia Spit / Fingal Beach Signage

Map Ref	Sign Type	Sign Description	Photo	Recommendation	GPS Position	
					LAT	LONG
E1	Environmental Sign	Revegetated Area		n/a	-28.195260	153.565480
E2	Prohibition sign	Beach fires prohibited		n/a	-28.195268	153.565565
E3	Environmental Sign	Bird Habitats		n/a	-28.195378	153.565392

E4	Environmental Sign	Bird Habitats		n/a	-28.195398	153.565403
E5	Directional Sign	Fingal Holiday Park Beach Access		n/a	-28.195369	153.565397
E6	DPI Sign	Legal bag limits		Maintain	-28.195845	153.565898

E7	Environmental Sign	Bird Habitats		n/a	-28.195884	153.565896
E8	Emergency Marker Sign	FNL.06		Maintain	-28.196055	153.566489
E9	Prohibition Sign	Beach Fires Prohibited		Maintain	-28.196137	153.566499

E10	Environmental Sign	Bird Habitats		n/a	-28.196296	153.566322
E11	Directional Sign	Fingal Holiday Park Beach Access		n/a	-28.196324	153.566311
E12	Notification sign	Dog leash areas		Maintain	-28.196794	153.566899

E13	Level 2 Access Sign	Coastal safety warnings and prohibitions		Maintain	-28.196875	153.566788
E14	Environmental Sign	Bird Habitats		n/a	-28.196875	153.566788
E15	Level 3 Access sign	Access sign for Fingal Beach		Maintain	-28.197102	153.567120

E16	Council signage	Fingal Surf Club Park prohibitions and warnings		Maintain	-28.197374	153.566991
E17	Level 3 Access sign	Access sign for Fingal Beach		Maintain	-28.197964	153.567635
E18	Environmental Sign	Bird Habitats		n/a	-28.198091	153.567717

E19	Level 3 Access sign	Access sign for Fingal Beach		Maintain	-28.198536	153.567920
E20	Environmental Sign	Bird Habitats		Remove from safety access sign	-28.198536	153.567920
E21	Council signage	Dogs on leash		Maintain	-28.198536	153.567920

E22	Emergency Marker Sign	FNL.07		Maintain	-28.198828	153.569014
E23	Prohibition Sign	Dogs prohibited past this point		Maintain	-28.198851	153.568348
E24	Directional signage	Sign directing to patrolled location (500m north)		Maintain	-28.200447	153.569133

E25	Directional signage	Sign directing to Fingal Beach		Maintain	-28.200469	153.569122
E26	Environmental Sign	Revegetated Area		n/a	-28.200500	153.569172
E27	Directional signage	Sign directing to patrolled location (500m north)		Maintain	-28.200127	153.570140

E28	Keep Australia Beautiful	Clean Beaches		n/a	-28.200726	153.568192
E29	Environmental Sign	Revegetated Area		n/a	-28.200726	153.568187
E30	Keep Australia Beautiful	Clean Beaches		n/a	-28.200735	153.568306

E31	Keep Australia Beautiful	Clean Beaches		n/a	-28.200739	153.568187
E32	Council signage	Dogs on leash		Maintain	-28.200766	153.568158
E33	Environmental Sign	Dune regeneration		n/a	-28.200876	153.568136

E34	Environmental Sign	Native plant regeneration		n/a	-28.200931	153.567938
E35	Level 3 Access sign	Access sign for Fingal Beach		Maintain	-28.201082	153.567581
E36	Prohibition Sign	No parking, emergency access		Maintain	-28.201082	153.567581

E37	Level 3 Access sign	Access sign for Fingal Beach		Maintain	-28.201322	153.567625

Proposed Signage

Letitia Spit / Fingal Beach

Symbol Definitions				
 Strong Currents / Rip	 No Lifesaving Service	 Waves / Waves Overwashing	 Submerged Hazards	 Inshore Gutters and Holes

Map Ref	Access Ref	Sign Type	Sign Example Pic	Location Photo	Location Description	GPS Position	Priority Hazard Code
P1	A2	Level Three Access Sign			To be located at the northern access from the Fingal Holiday Park	-28.195326 153.565422	
P2	A3	Level Three Access Sign			To be located at the middle access from the Fingal Holiday Park	-28.195904 153.565877	

P3	A4	Level Three Access Sign			To be located at the southern access from the Fingal Holiday Park	-28.196286 153.566312	


Access and Signage Audit - Fingal Headland
N
A14
P4
E37
E38
A13
E39
E36
E40
Legend
Access
Access redirection
Vehicle access
Proposed signage
Existing signage
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
0
45
90
180
Meters
1:3,000

Fingal Headland

Map Ref	Sign Type	Sign Description	Photo	Recommendation	GPS Position	
					LAT	LONG
E36	Access Warning Signage	Sign directing to Fingal Head Lighthouse, Patrolled area and warning for Dreamtime Beach		Maintain	-28.201322	153.567625
E37	Directional signage	Sign directing to Final Headland lighthouse		Maintain	-28.200553	153.569065
E38	Visitor info sign	Information about Fingal Headland		Maintain Update with surf safety educational messaging.	-28.200779	153.568170

E39	Directional signage	Sign directing to Fingal Head Lighthouse + prohibitions		Maintain	-28.201011	153.567745
E40	Directional Signage	Sign directing to Fingal Head Lighthouse		Maintain	-28.201322	153.567625

Proposed Signage

Symbol Definitions	
	
Waves / Waves Overwashing	Steep / Unstable Cliffs

Map Ref	Access Ref	Sign Type	Sign Example Pic	Location Photo	Location Description	GPS Position	Priority Hazard Code
P4	A14	Level Four Access Sign (multi-lingual)			To be located at the end of the Fingal Lighthouse walking track on Fingal Headland	-28.199855 153.570809	

Access and Signage Audit - Dreamtime Beach

Dreamtime Beach

Map Ref	Sign Type	Sign Description	Photo	Recommendation	GPS Position	
					LAT	LONG
E41	Council signage	Warning sign + Directions to patrolled location		Maintain	-28.200731	153.568711
E42	Council signage	Dogs on leash		Maintain	-28.200731	153.568711
E43	Directional signage	Sign directing to Dreamtime Beach		Maintain	-28.200748	153.568691

E44	Level 2 Access Sign	Coastal safety warnings and prohibitions		Maintain	-28.202449	153.567847
E45	DPI signage	Legal Bag Limits		Maintain	-28.202449	153.567847
E46	Level 3 Access sign	Access sign for Dreamtime Beach		Maintenance required – location name incorrect.	-28.202488	153.568854

E47	Prohibition Sign	No dumping of rubbish		n/a	-28.204055	153.566803
E48	Notification sign	Dog leash areas		Maintain	-28.200646	153.570316
E49	Council signage	Dogs on leash		Maintain	-28.200576	153.570270

E50	Level 2 Access Sign	Coastal safety warnings and prohibitions		Maintain	-28.203806	153.565695
E51	Council signage	Aboriginal Land Council		n/a	-28.210354	153.564166
E52	Level 3 Access sign	Access sign for Dreamtime Beach		Maintenance required – location name incorrect.	-28.212919	153.563640

E53	Council signage	Dogs on leash		Consolidate dog leash information onto access sign	-28.205308	153.566652
E54	Level 3 Access sign	Access sign for Fingal Beach		Maintenance required – location name incorrect.	-28.205308	153.566652

Access Infrastructure and Ongoing Capital Works/Maintenance Programs

The way the coast is accessed is a significant factor in the management of coastal risk. While preventing public access/use to the coastal environment is not desired, a number of options exist to minimise the risks associated with the access way itself and the hazards that may be encountered on the coast (via that access way).

In reference to the assessment process, access points have been broken down into formal (defined), and informal (undefined) access.

Access issues are interrelated to other risk management initiatives/options such as water safety signage, emergency access numbering/reporting, supervision (lifeguard) information and public rescue equipment. An effective access plan for an area may optimise the effectiveness and efficiency of other initiatives.

Figure 28 Formal access at Fingal Beach

Figure 29 Informal access at Dreamtime Beach.

Formal Access:
Formal, well maintained access ways are effective in promoting and facilitating the use of a generally safer 'track', exposing people to the relevant safety signage/information, reducing the quantity of signage required and enhancing emergency access, reporting and location identification.

Informal Access:
A number of informal access tracks also exist. Informal access ways may create higher risk through use (uneven ground/hazards), may expose people to dangerous locations (cliffs/unstable and uneven surfaces), may require duplicate/multiple signage (inefficient/costly) and may make emergency location reporting difficult (location awareness).

Options for formalising, redirecting or consolidating informal access use may include man-made barriers, vegetation growth and fencing. It is noted that for some locations and situations it may be difficult to formalise access and/or restrict the use of informal access.

Figure 30 An example of access redirection at Dreamtime Beach

Open Access:

Open access occurs where there are no channels or barriers restricting where visitors can access the aquatic environment.

Emergency Vehicle Access:

Access for emergency and lifeguarding/lifesaving services should be well known to key personnel. These access paths are regularly monitored to ensure that emergency vehicles are able to access a coastal location. All emergency vehicle access locations are recorded in the signage schedule (pg. 41).

Access Schedule

Letitia Spit / Fingal Beach Access

Map Ref	Access Type	Photo	Access Location Description	GPS Position	Recommendation	Signage
A1	Public Informal Pedestrian		Access from Letitia Road along the boundary fence at the northern end of Fingal Holiday Park	-28.194623 153.563482	Strategy of redirection e.g. vegetation growth, man-made barriers, fencing etc.	No signage required
A2	Private Formal Pedestrian		Beach access for patrons of the Fingal Holiday Park	-28.195326 153.565422	Maintain	Proposed level three access sign
A3	Private Formal Pedestrian		Beach access for patrons of the Fingal Holiday Park	-28.195904 153.565877	Maintain	Proposed level three access sign

A4	Private Formal Pedestrian		Beach access for patrons of the Fingal Holiday Park	-28.196286 153.566312	Maintain	Proposed level three access sign
A5	Public Formal Pedestrian / Vehicle		Pedestrian and vehicle access at Fingal Rovers SLSC.	-28.196789 153.566749	Maintain	Level two access sign already in place.
A6	Public Formal Pedestrian		Pedestrian access from the carpark on Marine Parade	-28.197123 153.567028	Maintain	Level three access sign already in place

A7	Public Formal Pedestrian		Pedestrian access from Fingal Surf Club Park	-28.197964 153.567635	Maintain	Level three access sign already in place
A8	Public Informal Pedestrian		Pedestrian access from Fingal Surf Club Park	-28.198097 153.567720	Strategy of redirection e.g. vegetation growth, man-made barriers, fencing etc. Direct to access 'A7'	No signage required
A9	Public Formal Pedestrian		Pedestrian access from Fingal Surf Club Park and the walking tracks from Fingal Headland	-28.198851 153.568348	Maintain	Level three access sign already in place

A10	Public Informal Pedestrian		Access from Fingal Headland down to the southern end of Fingal Beach	-28.199800 153.570500	Strategy of redirection e.g. vegetation growth, man-made barriers, fencing etc.	No signage required
A11	Public Formal Pedestrian		Access from the Fingal Lighthouse track to southern end of beach	-28.200138 153.570130	Maintain	Level three access sign already in place
A12	Public Formal Pedestrian		Access from the Fingal Lighthouse track to southern end of beach. Track leads to 'A9'	-28.200481 153.569112	Maintain	Level three access sign already in place

Fingal Headland

Map Ref	Access Type	Photo	Access Location Description	GPS Position	Recommendation	Signage
A13	Public Formal Pedestrian		Access to Fingal Lighthouse walking track and both beaches. Emergency Vehicle access to the track is available. Not to beach though.	-28.201011 153.567745	Maintain	Level three access sign already in place
A14	Public Open Pedestrian		Informal open access to Fingal Headland from the Fingal Lighthouse track	-28.199861 153.570854	Maintain	Level three access sign already in place

Dreamtime Beach

Map Ref	Access Type	Photo	Access Location Description	GPS Position	Recommendation	Signage
A15	Public Informal Pedestrian		Informal access from Fingal headland down to Dreamtime beach	-28.200605 153.570481	No action required	No signage required
A16	Public Formal Pedestrian		Pedestrian access to Dreamtime beach from the Fingal Lighthouse walking track	-28.200116 153.570358	Maintain	Level three access sign already in place
A17	Public Formal Pedestrian		Pedestrian access to Dreamtime beach from the Fingal Lighthouse walking track	-28.200338 153.569806	Maintain	Level three access sign already in place

A18	Public Formal Pedestrian		Pedestrian access to Dreamtime beach from the Fingal Lighthouse walking track	-28.200560 153.569050	Maintain	Level three access sign already in place
A19	Public Formal Pedestrian		Pedestrian access to Dreamtime beach from the Fingal Lighthouse walking track	-28.200729 153.568710	Maintain	Level three access sign already in place
A20	Public Formal Pedestrian / Emergency Vehicle		Pedestrian access from carpark south of Fingal Headland. Emergency Vehicle access available – note there is a lockable gate	-28.202439 153.567827	Maintain	Level two access sign already in place

A21	Public Formal Pedestrian		Access from the end of Dune St. Gated vehicle access but path is overgrown and you can't drive onto beach. Pedestrian only.	-28.204016 153.566849	Continue strategy of redirection e.g. vegetation growth, man-made barriers, fencing etc. Redirect to 'A8'	No signage required If access is maintained level three access sign required
A22	Public Formal Pedestrian		Access from the southern end of Dune St.	-28.205308 153.566652	Maintain	Level three access sign already in place
A23	Public Informal Pedestrian		Old access from Fingal Rd to Dreamtime Beach. Access is very overgrown and almost unusable.	-28.210353 153.564166	Continue strategy of redirection e.g. vegetation growth, man-made barriers, fencing etc. Redirect to 'A10'	No signage required

A24	Public Formal Pedestrian / Gated vehicle access		Pedestrian access from Fingal Road. Locked vehicle gate however would struggle to get a vehicle down this path	-28.212919 153.563640	Maintenance required: Vehicle access unavailable without maintenance.	Level three access sign already in place

Public Rescue Equipment

Life Rings (Angel Rings™[1]):
Life rings are an instantly recognised lifesaving mechanism and their functionality is easily understood by both a rescuer and the casualty. The national 'Angel Ring ™ Project' has seen the installation of rings across NSW and consideration should be given to the installation of a life ring at Fingal Headland.

Figure 31 Example of a life ring installation (Perpendicular Point).

In regards to any maintenance issues that may arise, ANSA NSW has stated the following:

> *"ANSA NSW will maintain contact with the local clubs, NSW Government agencies and individuals who have installed or agreed to manage the angel rings and continue communication to ensure that management targets are met.*
>
> *As a minimum ANSA NSW or its nominated management team must complete a visual check at least every 2 months to determine the rings status."* (ANSA, 2013)

Global Positioning Satellite (GPS):
GPS technology is available to be used within public rescue equipment such as life rings. Recreational fishing bodies have already trialled certain tracking devices in some areas and should be consulted with in relation to this matter. This technology may be beneficial by the way of a daily audit that can record when a life ring has been washed away or stolen as part of an asset management system.

Beach Public Rescue Equipment:
There are currently reviews being undertaken analysing the effectiveness of beach public rescue equipment. If these reviews have positive outcomes consideration should be given to the installation of public rescue equipment at Dreamtime beach. SLSNSW will provide additional information about these reviews once they are completed.

[1]Angel Ring is a registered trade mark of the Australian National Sport fishing Association.

Emergency Response Beacons

Emergency Response Beacons (ERB) can be positioned in high use/risk areas. They are highly visible and once activated, link to a nominated contact/s. These contacts would need to be decided in consultation with council and local emergency response organisations; however it would be based on who is in a position to allocate the appropriate resources as efficiently as possible. Currently SLSNSW monitors and tasks response for ERB that are in use at other locations in the state and would be available to provide this service at Dreamtime beach if a unit was installed.

There are various types of ERB available which meet differing needs and price parameters. Consultation would need to occur before finalising what would be needed at Dreamtime beach. Due to the type of access and resources available in the Fingal Head area, Australian CoastSafe recommends that an ERB at Dreamtime Beach is permanent to reduce the amount of manual labour required in the management of a temporary beacon. More information about ERB can be provided by Surf Life Saving New South Wales.

Figure 32 Example of a mobile emergency response beacon on a beach

Dreamtime beach can attract high levels of visitation and has had multiple coastal drownings in recent years. An ERB at this location will improve response time however patrons need to be aware that the beacon may not be monitored at all times (e.g. overnight) and that there is an alternate method of contact emergency response if required (e.g. triple 0).

System of Supervision

The supervision of aquatic coastal locations is often required to manage the risk of the location, whether due to prevailing weather and beach conditions, the proximity to large population bases, or the attendance of the beach/coastal area due to its location or attractiveness (Tipton & Wooler 2016).

The primary decision to be made by Land Managers before establishing a lifesaving/lifeguard service is to determine which areas will be patrolled or unpatrolled. A patrolled beach 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.

Uncertainties may exist when deciding whether supervision at a given location is appropriate, since:

- The provision of a service may encourage attendance at a non-suitable location, such as when the beach topography and morphology create a highly hazardous location. This factor would be reflected in the ABSAMP beach hazard rating;
- Such services may be deemed too expensive and therefore not provided by the responsible land manager;
- The patronage of the location is low and the assessed risk level is minimal.

There are a range of aquatic supervisory services that should be considered, as it is not "one size fits all". They include:

- Full time comprehensive lifesaving/lifeguard service with appropriate levels of trained personnel, fixed and portable facilities, equipment, craft, vehicles and links to central command and emergency services.
- Seasonal lifesaving/lifeguard service with appropriate levels of trained personnel, portable facilities, equipment, craft, vehicles and links to central command and emergency services.
- Seasonal lifesaving/lifeguard service with trained personnel, portable facilities, some equipment and craft, and links to a command centre.
- A flexible demand based service with trained personnel provision which allocates resources to where they are most needed.
- Surveillance cameras.
- No service, but the provision of safety signs and controlled access.

Volunteer Lifesaving Service - Existing:
Below are the patrol dates and hours for the 2017/2018 season over weekends and public holidays.

Table 28 Volunteer Lifesaving Services at Fingal Rovers SLSC.

Club	Patrol Dates	Saturdays	Sundays & Public Holidays
Fingal Rovers SLSC	23/09/17 - 14/12/17	10am – 3pm	10am - 4pm
	16/12/17 – 28/01/18	10am – 5pm	10am – 5pm
	03/02/18 – 29/04/18	10am – 3pm	10am - 4pm

Regular roving patrols are also encouraged as part of SLSNSW Standard Operating Procedures. Roving patrols can be conducted by ATV, IRB/RWC or walking and should continue to be conducted at the following location throughout a patrol.

- Fingal Rovers SLSC: Fingal Holiday Park (north)
- Dreamtime Beach: This location should be monitored when conditions may encourage people to move from Fingal Head beach to Dreamtime *and* when there are sufficient personnel to maintain coverage at Fingal Beach as well. Dreamtime beach is one of the only nearby locations that is protected from northern winds which, in addition to attracting local crowds, can also bring people in from the Gold Coast and creates a hazardous, highly attended unpatrolled location.

RWC Patrols:
It is also acknowledged that the Far North Coast Branch through its support services may assist with roving patrols with an RWC, however this service is intermittent depending on available resources in the Tweed Shire LGA. This service is also available for callouts that occur through the surf emergency response system.

Paid Lifeguard Service – Existing:
The Fingal Beach lifeguard patrol dates and hours for the 2017/2018 season are provided below.

Table 29 Paid Lifeguard Services at Fingal Beach.

Beach	Patrol Dates	Days of Service	Patrol Times
Fingal Beach	25/09/17 - 6/10/17	5 days	9am - 5pm
	18/12/17 - 25/01/18	5 days	9am - 6pm
	16/04/18 - 27/04/18	5 days	9am - 5pm

Marine Rescue:
Marine Rescue plays a key role in boating safety and response within the Tweed Shire LGA and a unit is stationed at Tweed Heads. This unit is able to respond to incidents via a number of vessels.

Roads and Maritime Services (RMS):
The RMS website lists coastal bars at http://www.rms.nsw.gov.au/maritime/using-waterways/navigation-communication/coastal-bars.html. Some have web cam vision which can be accessed http://www.rms.nsw.gov.au/maritime/using-waterways/web-cameras/index.html

Paid Lifeguard Service – Recommended:

The lifeguard treatment options listed below are based upon the research and data contained within this coastal public safety risk assessment:

- Historical drowning and emergency response incidents,
- Historical beach visitation data (where available), and
- Tourism NSW and ABS population data.

Dreamtime Beach:
In 2013 as part of Project Blueprint, Australian CoastSafe completed coastal risk assessments at all coastal locations in the Tweed Shire LGA. In this assessment there were five locations with a recommendation for an increased level of lifeguard supervision as funding became available. In addition there were two other locations where existing levels of lifeguard supervision needed to be maintained. The action planning priority rankings from this report indicates that a lifeguard service at Dreamtime beach should only be considered once these other locations have had their lifeguard service recommendations met.

For further information on the 2013 report please visit the NSW Government Water Safety website at http://www.watersafety.nsw.gov.au/Pages/Resources/project-blueprint.aspx.

Risk Register -Surf Life Saving Risk Assessment Ranking Tool

IMPACT TABLE

DESCRIPTOR	Financial	Operational	Brand/Reputational	Physical/safety	Regulatory/Legal	People/Member
Extreme	More than $1,000,000	Unable to deliver lifesaving services in a region. Widespread migration of members to competitor organisation. Prohibited from delivering competition at any level.	Collapse of federation. Major inquiry into systemic misconduct. Wholesale resignation of Board Members or Senior Management.	Death or total permanent disability of member due to compromised safety standards. Preventable death of a member of the public.	Criminal prosecution of SLSA and/or Board due to failure to comply with the law.	Net active membership declines by more than 25%.
High	More than $100,001, but less than $1,000,000	Widespread failure or loss of service agreements and standards. Increasing migration of members to competitor organisations. Unable to deliver the Australian Championships.	Withdrawal from federation (club/branch). Investigation of serious individual misconduct. Loss of significant skills from Board or Senior Management.	Serious injury of member due to compromised safety standards. Preventable serious injury of member or public.	Civil action against SLSA and/or Board due to negligence. New regulations that impede operations.	Net active membership declines by more than 20%, but less than 25%.
Medium	More than $25,001, but less than $100,000	Repetitive patrol breaches at Regional or State level. Unable to deliver State and/or Regional competitions. Widespread discontent by members.	Threats of withdrawal from federation (club/branch). Failure of prominent branded project or product. Failure of a club or service. Individual or group misconduct. Sustained public criticism of the organisation.	Systemic injuries of members and/or public. Increased frequency of near misses.	Regulatory/police investigation with adverse findings against SLSA and/or Board.	Net active membership declines by more than 10%, but less than 20%.
Minor	More than $10,001, but less than $25,000	Repetitive patrol breaches at Club level. Competitive threats to membership. Constrained capacity to meet the demands of existing or new members.	Localised negative media coverage.	Minor injuries of members and/or public.	Regulatory/police investigation of SLSA and/or Board without adverse findings.	Stable net active membership.
Insignificant	Less than $10,000	Occasional patrol breaches at Club level.	Media interest in local issue.	Insignificant injuries of members and/or public.	Persistent complaints against SLSA and/or Board.	Net growth in membership.

LIKELIHOOD TABLE

DESCRIPTOR	DESCRIPTION
Almost Certain	Will probably occur more than once / 100% chance of occurrence / Common or Frequent Occurrence / Is expected to occur in most circumstances
Likely	High probability that will occur at least once / 1 in 10 chance of occurrence (10%) / Likely to occur or "has happened to us a number of times in the past" / Might occur in a 2-3 year timeframe
Possible	Reasonable likelihood that could occur more than once / 1 in 100 chance of occurrence (1%) / Could occur or "I've heard of it happening elsewhere" / Might occur in a 5 year timeframe
Unlikely	May occur once or less / 1 in 1000 chance of occurrence (0.1%) / Not likely to occur / Might occur in a 10 year timeframe
Rare	May occur in exceptional circumstances / Practically impossible / 1 in 10,000 chance of occurrence (0.01%) /Could happen but probably never will

RISK SCORE MATRIX*

LIKELIHOOD \ IMPACT	1. INSIGNIFICANT	2. MINOR	3. MEDIUM	4. HIGH	5. EXTREME
5. ALMOST CERTAIN	M5	H10	H15	E20	E25
4. LIKELY	L4	M8	H12	E16	E20
3. POSSIBLE	L3	M6	H9	H12	E15
2. UNLIKELY	L2	L4	M6	H8	H10
1. RARE	L1	L2	L3	M4	M5

RISK TOLERANCE

RISK LEVEL	ACTION YOU SHOULD TAKE
EXTREME – (E15-25)	**Intolerable.** Activity should be discontinued until level of risk is able to be reduced. Executive Committee/Board to be informed and provide urgent attention.
HIGH - (H8 –H15)	**Tolerable level of risk.** Action should be taken to ensure risk level is As Low As Reasonable Practicable (ALARP). If level of risk is ALARP continue to manage using SLSA WHS and Risk Management Framework.
MODERATE – (M4 - M8)	**Tolerable level of risk.** Ensure risk level is As Low As Reasonable Practicable (ALARP). If level of risk is ALARP continue to manage using standard operating procedures, WHS codes of practice, intuitive risk management.
LOW – (L1 – L4)	**Tolerable level of risk.** No change required.

Notes to Tables

When referring to the below tables please note:

- C = Consequence and L = Likelihood

- If there is an opportunity for improvement, treatment options may be displayed in both the existing treatment column and the recommended treatment column. For example, safety signage may be an existing control but if there are recommended locations for signage this will also appear in the recommended column.
- The risk framework and descriptors used in the risk ranking tool are based on Surf Life Saving Australia's risk management framework. Specific mentions of Surf Life Saving in the descriptors should be used as to provide clarification on what the different ratings for consequence and impact may equate to for the specific circumstances of the Land Manager. If necessary, Land Managers may wish to translate these ratings to their own risk management framework in order to align assessed risks with their existing enterprise risk management frameworks.
- Risks assessed in this report are specific to injury and death along the coast. As a result this report and assessment is usually aligning to the descriptors used for 'physical/safety' in the risk assessment tool on p.77.

Appendix B column header descriptions

Hazard Description – A hazard that has been identified during the risk assessment process at the location.

Photo - A photo of the identified hazard. If there a multiple instances of the same hazard an example photo is selected.

Risk(s) – A list of threats to public safety as a result of participating in activities near the identified hazard.

Risk Matrix's – The current risk level determined as a result of a consequence (C) and likelihood (L) rating where consequence is the severity of an impact and likelihood is the chance of the impact occurring. The risk level takes into account the existing controls / treatment plans when being assessed.

Risk Groups – A list of the demographic user groups that are most likely to be affected by the identified hazards.

Existing Controls / Treatment Plans – Risk mitigation strategies that are currently in place.

Recommended Additional Controls / Treatment Plans – Proposed risk mitigation strategies - more information about these strategies can be found in the main report.

Action Priority and Residual Risk Level – The residual risk level once the proposed risk mitigation strategies have been taken into account (on top of the existing mitigation strategies)


Facilities Audit - Fingal Head
N
Legend
Deep Water
Inshore Gutters
Rips
Shallow Sandbanks
Slippery Rocks
Steep Cliffs
Strong Currents
Submerged rocks
Topographic Rips
Waves
Waves Overwashing
Source: Esri, DigitalGlobe, GeoEye, i-cubed, USDA, USGS, AEX, Getmapping, Aerogrid, IGN, IGP, swisstopo, and the GIS User Community
0
155
310
620
Meters
1:10,000

Letitia Spit / Fingal Beach

Hazard Description (Location)	Photo	Risk(s)	Risk Matrix's			Risk Groups	Existing Controls/Treatment Plans	Recommended Additional Controls/Treatment Plans	Action Priority & Residual Risk Level
			C	L	Risk Level				
Rips		Drowning Death Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems	Extreme	Unlikely	**High (H10)**	16-24 year olds 55+ year olds Children Inexperienced Surfers Males Physically Unfit TVM Weak swimmers	Lifeguard Service (Good) Emergency Marker Sign (Good) SLS After Hours Response (Good) Volunteer Lifesaving Service (Good)	Education Program Safety Signage	**Medium (M5)**

Rips		Drowning Death Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems	Extreme	Unlikely	**High (H10)**	16-24 year olds 55+ year olds Children Inexperienced Surfers Males Physically Unfit TVM Weak swimmers	Lifeguard Service (Good) Emergency Marker Sign (Good) Safety Signage (Good) SLS After Hours Response (Good) Volunteer Lifesaving Service (Good)	Education Program	**Medium (M5)**
Topographic Rip		Drowning Death Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems	Extreme	Unlikely	**High (H10)**	16-24 year olds 55+ year olds Children Inexperienced Surfers Males Physically Unfit TVM Walkers Weak swimmers	Lifeguard Service (Good) Emergency Marker Sign (Good) Safety Signage (Good) SLS After Hours Response (Good) Volunteer Lifesaving Service (Good)	Education Program	**Medium (M5)**

Waves		Drowning Death Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems Spinal Injury	Extreme	Unlikely	**High (H10)**	16-24 Year Olds 55+ Year Olds Boat Users Children Inexperienced Surfers Males Physically Unfit Swimmers TVM Weak Swimmers	Lifeguard Service (Good) Emergency Marker Sign (Good) SLS After Hours Response (Good) Volunteer Lifesaving Service (Good)	Education Program Safety Signage	**Medium (M5)**
Waves		Drowning Death Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems Spinal Injury	Extreme	Unlikely	**High (H10)**	16-24 Year Olds 55+ Year Olds Boat Users Children Inexperienced Surfers Males Physically Unfit Swimmers TVM Weak Swimmers	Lifeguard Service (Good) Emergency Marker Sign (Good) Safety Signage (Good) SLS After Hours Response (Good) Volunteer Lifesaving Service (Good)	Education Program	**Medium (M5)**

Shallow Sand Banks / Shore Dump		Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Spinal Injury Cuts and Abrasions	Medium	Possible	**High (H9)**	16-24 Year Olds 55+ Year Olds Boat Users Children Males Surfcraft Users Swimmers TVM Walkers	Lifeguard Service (Good) Emergency Marker Sign (Good) SLS After Hours Response (Good) Volunteer Lifesaving Service (Good)	Education Program Safety Signage	**Medium (M6)**
Shallow Sand Banks / Shore Dump		Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Spinal Injury Cuts and Abrasions	Medium	Possible	**High (H9)**	16-24 Year Olds 55+ Year Olds Boat Users Children Males Surfcraft Users Swimmers TVM Walkers	Lifeguard Service (Good) Emergency Marker Sign (Good) Safety Signage (Good) SLS After Hours Response (Good) Volunteer Lifesaving Service (Good)	Education Program	**Medium (M6)**

Submerged Rocks		Cuts And Abrasions Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Spinal Injury	Medium	Possible	**High (H9)**	16-24 year olds 55+ year olds Boat Users Children Males Surfcraft Users Swimmers TVM Walkers	Lifeguard Service (Good) Emergency Marker Sign (Good) Safety Signage (Good) SLS After Hours Response (Good) Volunteer Lifesaving Service (Good)	Education Program	**Medium (M6)**
Slippery rocks		Cuts And Abrasions Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Spinal Injury	Medium	Possible	**High (H9)**	16-24 year olds 55+ year olds Boat Users Children Males Surfcraft Users Swimmers TVM Walkers	Lifeguard Service (Good) Emergency Marker Sign (Good) Safety Signage (Good) SLS After Hours Response (Good) Volunteer Lifesaving Service (Good)	Education Program	**Medium (M6)**

Inshore gutter		Drowning Death Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems	High	Unlikely	**High (H8)**	16-24 Year Olds 55+ Year Olds Children Inexperienced Surfers Males Physically Unfit TVM Weak Swimmers	Lifeguard Service (Good) Emergency Marker Sign (Good) SLS After Hours Response (Good) Volunteer Lifesaving Service (Good)	Education Program Safety Signage	**Medium (M4)**
Inshore gutter		Drowning Death Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems	High	Unlikely	**High (H8)**	16-24 Year Olds 55+ Year Olds Children Inexperienced Surfers Males Physically Unfit TVM Weak Swimmers	Lifeguard Service (Good) Emergency Marker Sign (Good) Safety Signage (Good) SLS After Hours Response (Good) Volunteer Lifesaving Service (Good)	Education Program	**Medium (M4)**

Fingal Headland

Hazard Description (Location)	Photo	Risk(s)	Risk Matrix's			Risk Groups	Existing Controls/Treatment Plans	Recommended Additional Controls/Treatment Plans	Action Priority & Residual Risk Level
			C	L	Risk Level				
Waves		Drowning Death Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems Spinal Injury	Extreme	Unlikely	**High (H10)**	16-24 Year Olds 55+ Year Olds Children Inexperienced Surfers Males Physically Unfit Swimmers TVM Weak Swimmers	Safety Signage (Good) SLS After Hours Response (Good)	Education Program Emergency Marker Sign	**Medium (M5)**

Waves overwashing		Cuts And Abrasions Drowning Death Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Spinal Injury	Extreme	Unlikely	**High (H10)**	16-24 year olds 55+ year olds Children Males Rock Fishermen TVM Walkers	Safety Signage (Good) SLS After Hours Response (Good)	Education Program Emergency Marker Sign	**Medium (M5)**
Deep Water		Drowning Death Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems	Extreme	Unlikely	**High (H10)**	16-24 Year Olds 55+ Year Olds Children Males Physically Unfit Rock Fishermen TVM Weak Swimmers	Safety Signage (Good) SLS After Hours Response (Good)	Education Program Emergency Marker Sign	**Medium (M5)**

Steep Cliffs		Broken Bones Coastal Death Cuts And Abrasions Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Slips, Trips, Falls Spinal Injury	Extreme	Unlikely	**High (H10)**	16-24 Year Olds 55+ Year Olds Children Males Rock Fishermen TVM Walkers	Safety Signage (Good) SLS After Hours Response (Good)	Education Program Emergency Marker Sign	**Medium (M5)**
Strong Currents		Drowning Death Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems	Extreme	Unlikely	**High (H10)**	16-24 year olds 55+ year olds Children Males Physically Unfit Rock Fishermen TVM Weak swimmers	Safety Signage (Good) SLS After Hours Response (Good)	Education Program Emergency Marker Sign	**Medium (M5)**

Slippery Rocks		Cuts And Abrasions Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Spinal Injury	Medium	Possible	**High (H9)**	16-24 year olds 55+ year olds Children Males Rock Fishermen TVM Walkers	Safety Signage (Good) SLS After Hours Response (Good)	Education Program Emergency Marker Sign	**Medium (M6)**
Submerged Rocks		Cuts And Abrasions Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Spinal Injury	Medium	Possible	**High (H9)**	16-24 year olds 55+ year olds Children Males TVM Rock Fishermen Walkers	Safety Signage (Good) SLS After Hours Response (Good)	Education Program Emergency Marker Sign	**Medium (M6)**

Dreamtime Beach

Hazard Description (Location)	Photo	Risk(s)	Risk Matrix's			Risk Groups	Existing Controls/Treatment Plans	Recommended Additional Controls/Treatment Plans	Action Priority & Residual Risk Level
			C	L	Risk Level				
Waves		Drowning Death Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems Spinal Injury	Extreme	Unlikely	**High (H10)**	16-24 Year Olds 55+ Year Olds Children Inexperienced Surfers Males Physically Unfit TVM Weak Swimmers	Safety Signage (Good) SLS After Hours Response (Good)	Lifeguard Service or ERB Education Program Emergency Marker Sign Safety Signage	**Medium (M5)**

Steep Cliffs		Broken Bones Coastal Death Cuts And Abrasions Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Slips, Trips, Falls Spinal Injury	Extreme	Unlikely	**High (H10)**	16-24 Year Olds 55+ Year Olds Beach Users Children Males Surfcraft Users TVM Walkers	Safety Signage (Good) SLS After Hours Response (Good)	Lifeguard Service or ERB Education Program Emergency Marker Sign Safety Signage	**Medium (M5)**
Topographic Rips		Drowning Death Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems	Extreme	Unlikely	**High (H10)**	16-24 year olds 55+ year olds Children Males Physically Unfit TVM Weak swimmers	Safety Signage (Good) SLS After Hours Response (Good)	Lifeguard Service or ERB Education Program Emergency Marker Sign Safety Signage	**Medium (M5)**

Rips		Drowning Death Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems	Extreme	Unlikely	**High (H10)**	16-24 year olds 55+ year olds Children Inexperienced Surfers Males Physically Unfit TVM Weak swimmers	Safety Signage (Good) SLS After Hours Response (Good)	Lifeguard Service or ERB Education Program Emergency Marker Sign Safety Signage	**Medium (M5)**
Submerged Rocks		Cuts And Abrasions Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Spinal Injury	Medium	Possible	**High (H9)**	16-24 year olds 55+ year olds Boat Users Children Males Surfcraft Users Swimmers TVM Walkers	Safety Signage (Good) SLS After Hours Response (Good)	Lifeguard Service or ERB Education Program Emergency Marker Sign Safety Signage	**Medium (M6)**

Shallow Sandbanks / Shore dump		Head Injury Major Injuries / Hospitalisation Minor Injuries / First Aid Spinal Injury Cuts and Abrasions	Medium	Possible	**High (H9)**	16-24 Year Olds 55+ Year Olds Children Males Surfcraft Users Swimmers TVM	Safety Signage (Good) SLS After Hours Response (Good)	Lifeguard Service or ERB Education Program Emergency Marker Sign Safety Signage	**Medium (M6)**
Inshore gutters		Drowning Death Major Injuries / Hospitalisation Minor Injuries / First Aid Non-Fatal Drowning Respiratory Problems	High	Unlikely	**High (H8)**	16-24 Year Olds 55+ Year Olds Children Inexperienced Surfers Males Physically Unfit TVM Weak Swimmers	Safety Signage (Good) SLS After Hours Response (Good)	Lifeguard Service or ERB Education Program Emergency Marker Sign Safety Signage	**Medium (M4)**

Monitor and Review

The process of monitor and review ensures that risk treatment options are meeting their objectives, new hazards and risks are identified in a timely manner and evolving strategies are in line with community expectations.

Land Managers are encouraged to ensure that a there is a process of regular review of the effectiveness of any risk mitigation strategies that have been implemented. This can include a process for the review of any drowning or emergency response incidents affecting public safety at the locations assessed. The treatment options outlined in this report can also be used as a benchmark as future funding opportunities become available and when budget preparations occur annually.

Land Managers may determine to further engage peak water safety organisations to assist with the monitor and review process. The process should include the review of all incident data, access points, signage, education, public rescue equipment, supervision and emergency response.

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