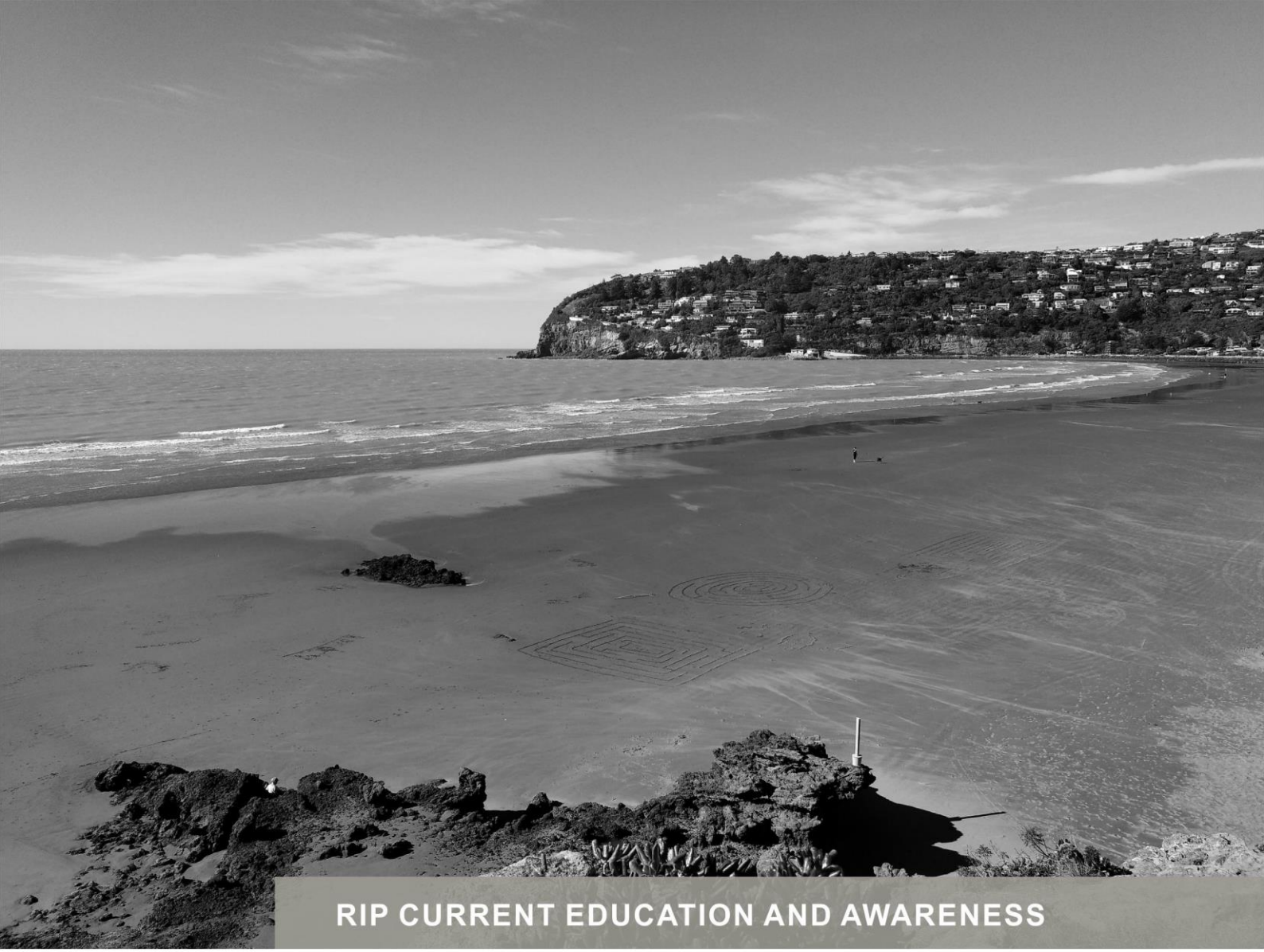

RIP CURRENT EDUCATION AND AWARENESS: SUMNER BEACH AND SCARBOROUGH BEACH

Report prepared for Christchurch City Council

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Rip Current Education and Awareness: Sumner Beach and Scarborough Beach

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1 Introduction

This report summarises the rip current hazard present at Sumner Beach and Scarborough Beach. It then details recommended education and awareness strategies designed to help reduce the risk of drowning as a result of rip currents at Sumner Beach and Scarborough Beach.

The report is based on a review of the site and analysis of the rip currents and other associated environmental hazards. The data used in the assessment was gathered on-site, provided by local stakeholders, and passed on by water safety agencies and emergency services. This report was commissioned by Christchurch City Council's Park Unit.

1.1 Aim

To reduce the incidence of drowning at Sumner Beach and Scarborough Beach by informing best-practice education and awareness strategies to manage the risks posed by rip currents; this includes a review of existing water safety signage and suggestions for improvement.

2 Drowning and Injury Prevention Strategy

The *Drowning and Injury Prevention Strategy* conceptualises the key reasons why drowning and injury continue to occur and identifies approaches to reduce their risk of occurrence.

There are six overarching factors that could lead to drowning in aquatic environments, and as such there are six corresponding strategies that can be applied to mitigate the risk, and therefore the incidence of drowning and injury. These are outlined below and shown conceptually in Figure 2-1 (Mulcahy, 2014).

Factors leading to drowning and injury:

1. Exposure to the hazard
2. **Ignorance or misunderstanding of the hazard**
3. Disregard for the hazard
4. Inability to cope when exposed to the hazard
5. Lack of surveillance and advice when exposed to the hazard
6. Inability to affect a rescue prior to succumbing to the hazard

Strategies designed to address each of these factors:

1. Eliminate or isolate the hazard

Where the hazard cannot be fully eliminated or isolated, the following additional strategies should be considered:

2. **Increase awareness and understanding**
3. Legislate, monitor, and enforce
4. Enable and equip
5. Increase supervision and surveillance
6. Increase efficiency and effectiveness of response

The *Drowning and Injury Prevention Strategy* can be used as a conceptual framework for managing the risk of drowning and injury. However, this report only considers strategies that seek to increase awareness and understanding of rip currents among water users of Sumner Beach and Scarborough Beach.

Figure 2-1: *Drowning and Injury Prevention Strategy* (Mulcahy, 2014).

3 Regional setting

Sumner Beach and Scarborough Beach are situated approximately 10 km southeast of the Christchurch city centre. The surrounding area is home to 6,534 permanent residents; however, Sumner Beach and Scarborough Beach are easily accessible to much of Christchurch City, which has a population of 341,469 (Statistics New Zealand, 2013).

Sumner Beach and Scarborough Beach are oriented towards the northeast and are situated south of the entrance to the Avon-Heathcote Estuary. Sumner Beach stretches between Rapanui (Shag Rock) in the northwest and Cave Rock in the southeast, while Scarborough Beach is situated between Cave Rock and Whitewash Head (Figure 3-1).

Sumner Beach and Scarborough Beach are popular for recreational activities, such as swimming, bodyboarding, surfing, stand up paddleboarding, fishing, and walking, particularly over mid to late summer.

3.1 Beach morphology and nearshore hydrodynamics

Sumner Beach and Scarborough Beach are classified as wave-dominated intermediate beaches. The nearshore zone is characterised by subaqueous sand bars and channels that shift in response to changes in wave energy and other hydrodynamic conditions, such as the variable outflow from the Avon-Heathcote Estuary.

Sumner Beach and Scarborough Beach are characterised by moderate to high wave energy, and are exposed to waves from south to northeast bearings that typically range in amplitude from 0.6 to 2.1 m (Siemelink, 1984; Leckie, 1994). Waves from the south and southeast are often generated by low-pressure systems; these high-energy long period waves refract around the coastline into Sumner Beach and Scarborough Beach. Waves approaching from the east and northeast are typically generated locally and are less energetic.

Rip currents, which are narrow seaward-directed flows of water, can form anywhere along Sumner Beach and Scarborough Beach, but are particularly prominent near the mouth of the Avon-Heathcote Estuary, Shag Rock, Cave Rock, Whitewash Head, and stormwater outlets. Rips and currents are stronger during large surf and outgoing tides and are the leading cause of water users getting into difficulty (see Section 3.2). Rips and currents are also closely associated with inshore holes and channels; sudden changes in water depth can result in water users getting out of their depth and into difficulty. Inshore holes and channels are particularly prominent at Sumner Beach and around Cave Rock.

3.2 Fatal and non-fatal incident statistics

Since 1986, there have been five recorded fatal drowning incidents at Sumner Beach and Scarborough Beach attributed to rip currents (Water Safety New Zealand, 2018). Four of the victims were male and one was female; all victims were aged between 5 and 34 years old.

In addition, surf lifeguards recorded 151 rescues, 30 searches, and 107 first aid incidents at Sumner Beach and Scarborough Beach between July 2008 and June 2018 (Surf Life Saving New Zealand, 2018). Rip currents and/or holes were recorded as a contributing factor in 77% of rescues. Poor swimming and exhaustion also contributed to 58% and 46% of incidents respectively. More males are rescued at Sumner Beach than females (62%), and most rescues involve persons aged under 30 years old (87%).

Of note, there are also likely to be a considerable number of other incidents that were not formally recorded, i.e. surfers rescuing other water users.

Figure 3-1: Map of Sumner Beach and Scarborough Beach.

4 Findings

People who enter the water at Sumner Beach and Scarborough Beach are exposed to multiple hazards posed by the physical environment, including (but not limited to): rip currents, large waves, sudden changes in water depth, and alongshore currents.

4.1 The hazardousness of the environment varies with changing tide, wind, and wave energy. The risk posed to individuals under these conditions differs depending on their ability to identify and avoid hazards, as well as their competence in the surf, and/or level of competence if they are using water craft, i.e. surfing.

Rips and currents are strongest during large surf and/or an outgoing tide. People who swim during these conditions and/or enter the water in or near one of the rip currents along Sumner Beach or Scarborough Beach are at elevated risk of getting into difficulty.

4.2 The risk of an incident increases over summer when a larger number of people swim at Sumner Beach and Scarborough Beach. People who swim without a form of flotation, i.e. a bodyboard, and/or have limited competence in the surf are most at risk of drowning in a rip current.

During autumn, winter, and spring, a larger proportion of the water users are surfers and stand up paddleboarders; these users are less likely to get into difficulty in a rip current, as many are competent in the water and have a form of flotation. However, some swimmers with limited competence may still enter the water at these times.

4.3 Furthermore, many water users are not aware of or misunderstand the environmental hazards present at Sumner Beach and Scarborough Beach. It is likely that many water users are unable to spot rip currents.

The perception of risk by many users of Sumner Beach and Scarborough Beach appears to be considerably lower than the actual risk at the site; poor swimming and exhaustion contribute to a considerable proportion of rescue incidents (58% and 46% respectively). In addition, some people enter the water wearing clothes, i.e. baggy t-shirts and pants.

4.4 While some people display a lack of awareness and understanding of the hazards at Sumner Beach and Scarborough Beach, others choose to disregard warning information and advice, and engage in risk-taking behaviour.

Some members of the public may enter the water despite knowing that the conditions are hazardous and/or despite having limited competence in the surf. Furthermore, some water users enter the water after drinking alcohol; drugs and/or alcohol have been contributing factors in a small number of rescues performed by surf lifeguards at Sumner Beach and Scarborough Beach (Surf Life Saving New Zealand, 2018).

Existing education and awareness strategies

4.5 Christchurch City Council has installed water safety and information signage at many access tracks to Sumner Beach and Scarborough Beach. The signage complies with the water safety signage standard, AS/NZS 2416:2010 (Standards New Zealand, 2010), and conveys hazards in an effective manner. However, there are some beach access tracks that do not have water safety signage, but have other bylaw and information signage.

4.6 Surf Life Saving New Zealand delivers a surf safety education and awareness programme, *Beach Ed*, to some schools in Christchurch City. Surf lifeguards educate children predominately aged between 5 and 12 years old about surf safety practices and provide them with the opportunity to experience the water in a managed environment. However, this programme is not run at all schools in Christchurch City.

4.7 Learn to Surf delivers a surf safety education and awareness programme, *Surf Safe*, to some schools in Christchurch City. Surfing instructors educate children predominately aged between 10 and 14 years old about surf safety practices and teach them to surf and/or bodyboard.

4.8 Water safety education and awareness programmes are run by water safety stakeholders and associated partners, particularly over summer. For example, Surf Life Saving New Zealand and TSB delivered a rip current safety campaign over the 2018/19 summer.

4.9 Surf safety information regarding the use of Sumner Beach and Scarborough Beach can be found on Surf Life Saving New Zealand's *Find a Beach* website (www.findabeach.co.nz).

5 Recommendations

A range of recommendations have been formulated to increase the awareness and understanding of rip currents among water users of Sumner Beach and Scarborough Beach. Christchurch City Council should work with Surf Life Saving New Zealand, Sumner Surf Life Saving Club, Sumner Lifeboat Institution, community members, and other water safety stakeholders to implement these recommendations.

5.1 The water safety signage at Sumner Beach and Scarborough Beach meets the current standard, AS/NZS 2416:2010 (Standards New Zealand, 2010). However, integrating maps showing the prominent rip currents at Sumner Beach and Scarborough Beach, and outlining some response strategies, would be of considerable value. Other hazards, such as inshore holes, channels, and falling rocks, should also be outlined on the map.

In addition, other factors contributing to risk at Sumner Beach and Scarborough Beach, could also be managed through updated water safety and information signage. For example, surf etiquette information could be displayed to reduce the risk of collision between different types of surf craft.

Furthermore, Christchurch City Council should ensure water safety signage is installed at all remaining access tracks; care should be taken to avoid signage clutter, which reduces the impact of the most important information.

5.2 Surf safety education and awareness programmes should continue to be run targeting children and teenagers in Christchurch City. Existing programmes, as outlined in Section 4, could be expanded to ensure all students receive sufficient water safety education through the schooling system. Programmes targeting international students and new migrants should also be considered.

5.3 Water safety education and awareness programmes should continue to be run through social media and other platforms, particularly over the summer period. For example, the Swim Reaper campaign, run by Water Safety New Zealand (WSNZ) and supported by the Accident Compensation Corporation (ACC), managed to engage many teenagers and young adults via Facebook, Instagram, and Twitter.

More specifically, Christchurch City Council should partner with other organisations to extend the reach of existing campaigns. Specific material focusing on rip currents at Sumner Beach and Scarborough Beach could be generated and shared on a range of platforms.

5.4 In addition, rip current safety initiatives could be delivered on site at Sumner Beach and Scarborough Beach. Such initiatives should aim to engage and educate water users in a fun and informative manner. For example, non-toxic dye could be released into one of the rip currents to demonstrate how they operate. Members of the public could be educated about appropriate response strategies if caught in a rip current, and footage could subsequently be shared through various media channels.

5.5 It is recommended that the concept of a volunteer ‘Community Educator’ be investigated. These personnel could help educate members of the public about rip currents and other hazards at Sumner Beach and Scarborough Beach. They could also provide surveillance of water users, particularly at times when there is no surf lifeguarding service, and erect temporary rip current signs and/or dangerous conditions signs as required.

6 Conclusion

This report summarises the rip current hazard present at Sumner Beach and Scarborough Beach. It then details recommended education and awareness strategies designed to help prevent the future incidence of drowning as a results of rip currents at Sumner Beach and Scarborough Beach.

At Sumner Beach and Scarborough Beach, water users are exposed to a considerable number of hazards, including (but not limited to): rip currents, large waves, sudden changes in water depth, and alongshore currents. The risk posed to individuals differs depending on their ability to identify and avoid hazards, their competence in the surf, and the extent to which they may disregard warning information and advice.

A range of strategies should be implemented to increase the awareness and understanding of rips and currents among water users at Sumner Beach and Scarborough Beach. Additions to water safety signage could be made, and existing surf safety education and awareness programmes should be expanded. Safety messages about rip currents should be shared widely through social media and other channels, and rip current safety initiatives could be delivered at Sumner Beach and Scarborough Beach. Members of the community could also be trained as 'Community Educators' to help educate members of the public about rip currents and provide some surveillance of water users.

Christchurch City Council should work with Surf Life Saving New Zealand, Sumner Surf Life Saving Club, Sumner Lifeboat Institution, community members, and other water safety stakeholders to implement these recommendations.

6.1 Other strategies to reduce the risk of drowning and injury

It should be noted that increasing education and awareness is only one of a number of strategies that can be implemented to reduce the risk of drowning, as outlined in the *Drowning and Injury Prevention Strategy* (see Section 2). To ensure a holistic approach to drowning and injury prevention at Sumner Beach and Scarborough Beach, it is recommended that Christchurch City Council consider investigating a range of other strategies to manage the risks to water users.

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