Coastal Adaptation

Action Plan | 2024–30

CITY OF ONKAPARINGA

Kaurna acknowledgement

We acknowledge the Kaurna Nation and its people as the traditional owners and custodians of the land in the area now known as the City of Onkaparinga.

We recognise this local living culture has developed over tens of thousands of years and that, in today's contemporary context, Kaurna and Aboriginal people are actively engaged in community life and bring their rich cultural heritage to the connected community and sustainable future we strive for.

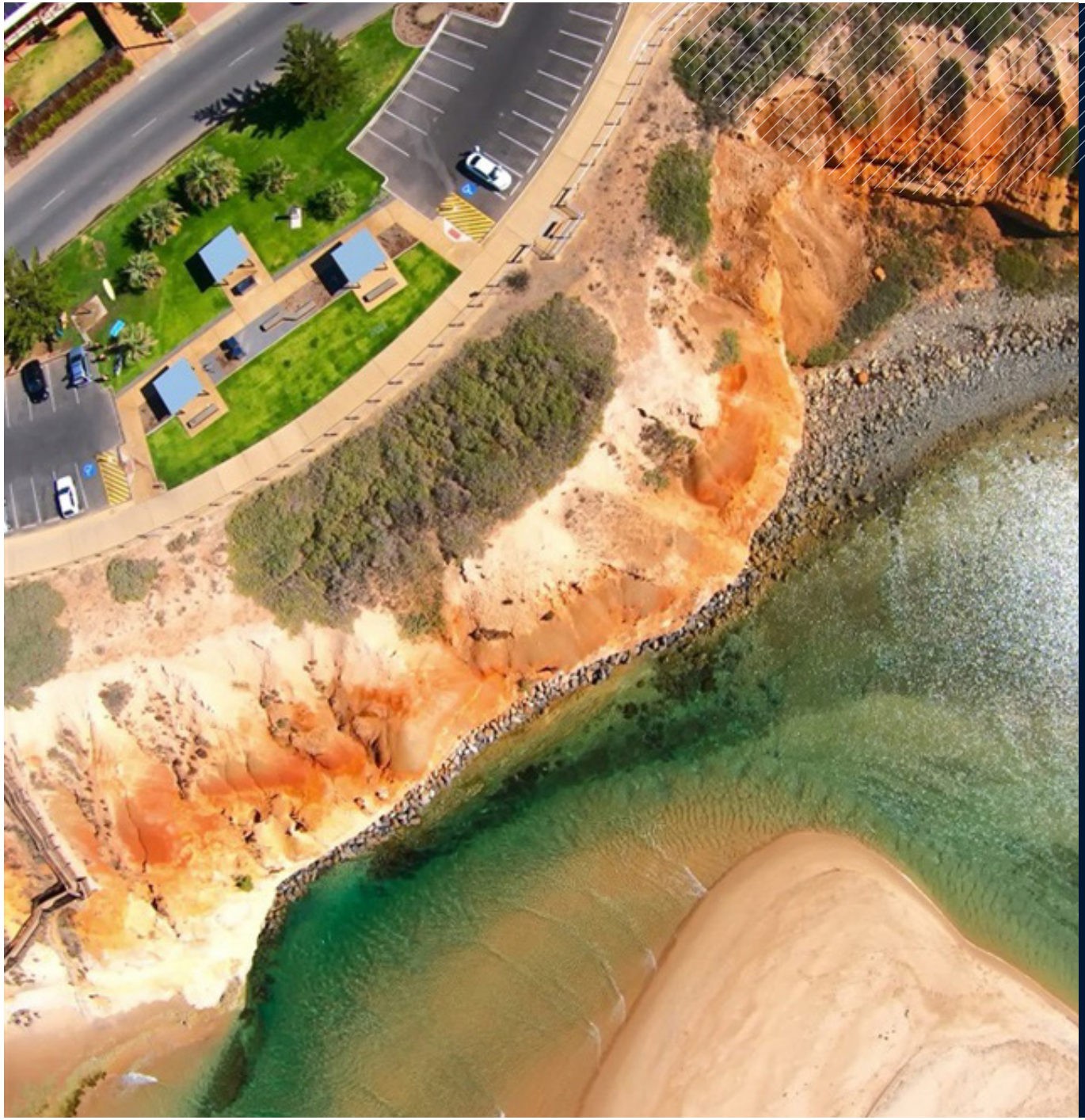
We remember Kaurna people's spiritual relationship with country when we make decisions about our region and that protecting places of importance to Kaurna culture has an impact on the wellbeing and prosperity of Kaurna and other Aboriginal people.

We recognise our leadership responsibility to Aboriginal and non-Aboriginal communities, local businesses, and service agencies by actively engaging in a shared journey towards reconciliation.

In delivering projects, programs and services it is important to fulfil this acknowledgment through real action to achieve community outcomes that are informed by Kaurna perspectives.

Contents

This plan was prepared for the City of Onkaparinga by BRM Advisory and Integrated Coasts. It has been informed by technical investigations summarised in the City of Onkaparinga Coastal Adaptation Study prepared by Integrated Coasts in 2021.



Our plan

The City of Onkaparinga's Coastal Adaptation Plan details what we will do from 2024–30 to anticipate and respond to risks to our coast arising from climate change and sea-level rise.

The plan will help us achieve our vision of a coastline that is beautiful, healthy, resilient, safe and cared for by all.

The seven-year plan is about being on the front foot, working with the evidence, and choosing options that are cost-effective, appropriate and mindful of community expectations.

It is yet another step in our ongoing journey of adaptation that will take place over the coming years, decades and even centuries. We have already undertaken a range of activities to support coastal adaptation, such as replenishing dunes, managing outlet flows from rivers and creeks, revegetating cliffs, installing sandbag groynes, and building sea walls.

Port Noarlunga

What this plan will do

Projections show that most impacts will be realised in the second half of this century, which means our planning and action must be flexible and respond to new evidence as it arises.

To make this happen, we have adopted an adaptive management approach to coastal adaptation. This means we will make decisions and adjustments in response to new information or changes in context.

Our Coastal Adaptation Plan:

- outlines how the City of Onkaparinga will manage changes to our coastline over time
- explains our adaptive management approach to anticipate and respond to the impacts of climate change and sea-level rise
- details our goals and actions for the next seven years.

While this plan will guide approaches to 2030, it has been informed by research, investigations and risk assessments that have considered possible changes up to 2100. It recognises the long-term nature of coastal change, the long lifespan of things we build near the coast, and the benefits of proactive and early action.

Esplanade, Moana during storms in September 2016. *Monitoring the impacts of storms helps us understand how resilient our coast is, how long it takes for the coast to recover, and how storms change the coast over time.*

Plan focus

Unlike coastal management – which is about our day-to-day management of our coast – our Coastal Adaptation Plan focusses solely on our responses to climate change.

It specifically addresses the potential impacts from rising sea levels. In particular, it focusses on the risks of erosion and inundation (flooding) that we anticipate will result from climate change, with a greater focus on erosion.

Earlier studies, including our 2021 Coastal Adaptation Study, find that erosion poses a higher risk than inundation. This is because most of our coastline and our coastal infrastructure and resources are elevated. Importantly, the studies show the main threat is to public assets because most private assets are set behind public roads.

Goals

We have developed four goals to achieve coastal adaptation.

Goal 1: Information and evidence

We have the information that we need to make good decisions about our coast. We draw on the best information from local and statewide datasets, historical records, coastal monitoring, and projections to effectively manage our changing coastal risks.

Goal 2: Resilience

Our natural environment, infrastructure and people are resilient to coastal change. We take action when it is needed to strengthen the ability of our coastal systems to manage changing risks.

Goal 3: Community knowledge and action

Communities understand coastal change and work with us in taking action. We support the community to understand coastal change and the information on which we base our decisions. We involve them in monitoring coastal change and taking action.

Goal 4: Resources and capability

We have the skills, resources and capability to respond to coastal change. We work as active partners in the coastal management sector and proactively support, and seek support from, other organisations.

Actions

We have identified 25 actions to achieve these goals. These are provided in detail at the end of this document.

Some of the actions are planned or are under way and are being funded through our existing operational and capital budget allocations.

Others will require grant funding from the state or federal governments, while others will be largely met only through staff time.

Port Noarlunga boardwalk to the river mouth

Guiding principles

To ensure we remain focussed on results in an ever-changing environment, our plan is underpinned by six guiding principles:

1 Always local

Sea-level rise, erosion and other coastal changes impact different areas in different ways. We will consider coastal adaptation in a fine-grained way to respond to specific local impacts.

2 Data driven

Coastal adaptation decision-making will be informed by the best available information from federal, state and local datasets, historical records, coastal monitoring, projections, and risk assessments.

3 Flexible

We have adopted an adaptive management approach, which means we remain flexible and can adjust our plans as new information and conditions emerge. This means we are committed to monitoring changes along our coast, and that our triggers for action tend to be driven by actual conditions and observed changes in data.

4 Strategic and long term

Coastal adaptation will take place over decades and centuries, which means we are committed to considering long-term coastal risks in our decision making. We will not consider coastal issues in isolation but regularly consider how coastal change impacts, and is impacted by, what is happening in broader land-based and marine systems.

5 Use local knowledge

Community members and other stakeholders have valuable information about the coast and how it changes. Citizen science has a role to play in monitoring coastal change.

6 Prioritise nature-based solutions

Wherever possible, we will prioritise nature-based solutions over built infrastructure when intervening in the coast. This is because they offer many biodiversity and ecosystem benefits, are often more cost effective, are more flexible and are less likely to impact the amenity and function of surrounding areas. Hard infrastructure, on the other hand can sometimes cause new problems such as increased erosion elsewhere.

Our role in adapting to coastal change

In responding to coastal change, we consider our direct roles and responsibilities as a local government, as well as the things we can influence. As climate change is a global issue, we also recognise the value of partnership and collaboration.

Direct role

We have a direct role and responsibility to:

- integrate current and future coastal risk into council strategic planning, asset planning and risk management processes to ensure long-term financial sustainability
- manage council assets along the coast
- enhance and improve the resilience of coastal ecosystems and natural areas for which we own or have care and control
- plan our response based on evidence, advice and information from reputable and trusted sources
- ensure council staff have the knowledge, tools and expertise they need to integrate coastal risk considerations into their role
- share information about coastal impacts and hazards with the community
- report to the community on our coastal adaptation efforts and progress against our goals.

Influence and advocacy

When an identified need is outside our role as local government we will:

- work in partnership with state and federal government agencies and not-for-profit organisations to deliver coastal action
- advocate on behalf of our community for changes to policy, regulations, practices, service delivery and funding.

Working in partnership

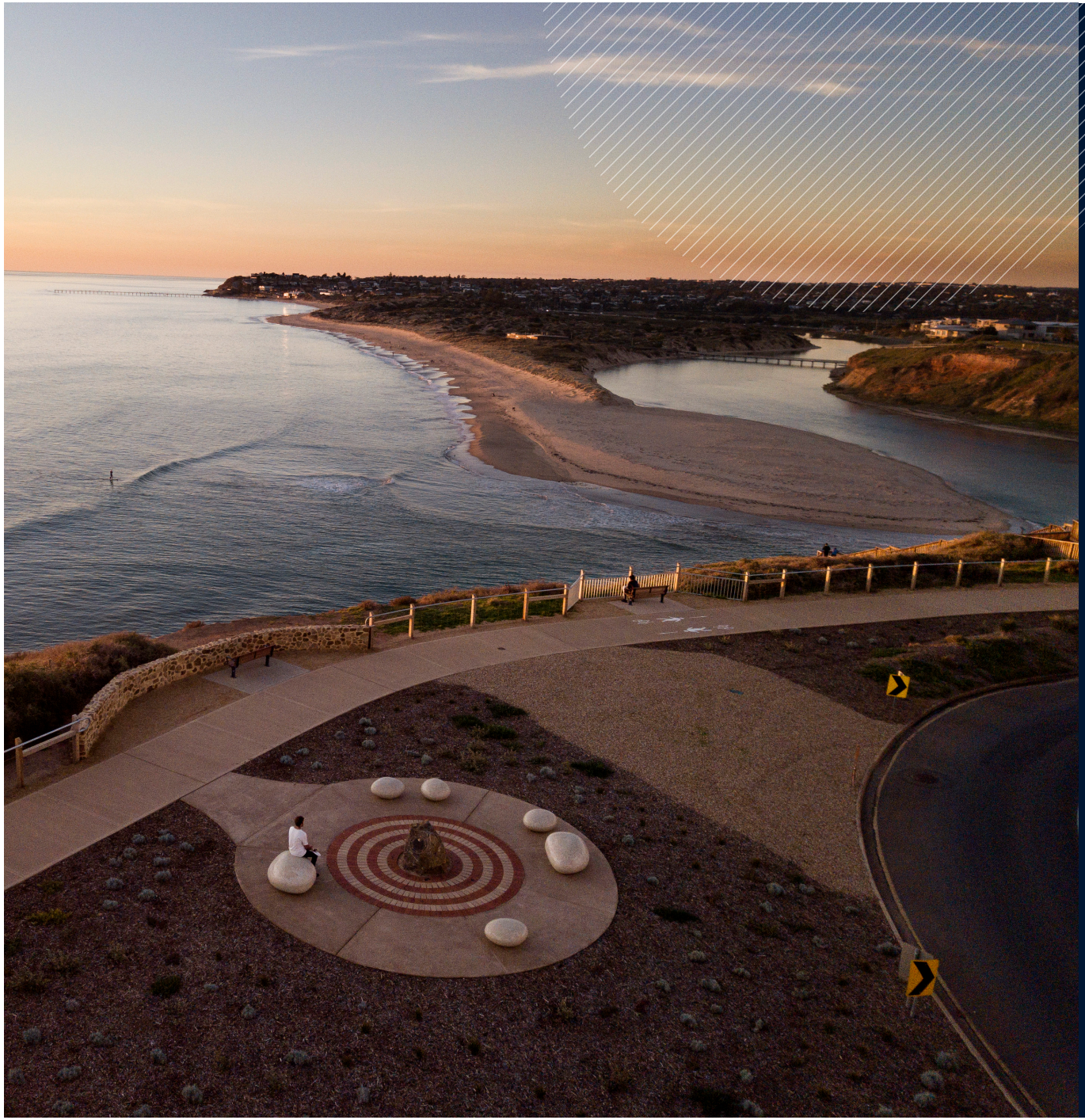
Managing long term changes along our coast is a cross-cutting issue that affects policy, urban planning, infrastructure design and construction, environmental and social programs, financial planning, and risk management.

There are many agencies in the region that have a role to play. We work closely with Green Adelaide, the SA Coast Protection Board, the Department for Environment and Water, and the Local Government Association SA. We have developed strong networks through:

- the Adelaide Coastal Councils Network (ACCN), which provides a forum for leadership, influence and coordination between metropolitan Adelaide's coastal councils
- the SA Climate Ready Coasts Program being led by the Local Government Association, which is accelerating coastal adaptation planning and driving a strategic and more coordinated approach across the state
- the Australian Coastal Councils Association which provides a forum for national leadership and action with coastal councils from around Australia
- Resilient South which is one of four regional climate partnerships across greater Adelaide delivering practical climate action with the Cities of Marion, Mitcham and Holdfast Bay, Green Adelaide, and the Department for Environment and Water.

Reporting and evaluation

Our progress in delivering the goals and actions within this Coastal Adaptation Plan will be reported annually to the Council. The plan will be reviewed in 2030.



Onkaparinga's coast

We are the largest metropolitan local government area in South Australia, home to 178,550 residents, which equates to approximately 10 per cent of the state's population.

Located on the southern urban fringe of the greater Adelaide area, the City of Onkaparinga contains 31 kilometres of coast, with coastal settlements ranging from established and growing suburbs to villages, holiday settlements and rural living. These settlements were established at different times, which means they contain different urban layouts and provide different coastal access arrangements.

Port Noarlunga river mouth

A varied and valued coastline

The City of Onkaparinga's 31 kilometres of coastline is highly valued by the local community, is of cultural significance to the Kaurna people, supports the regional economy and contains significant environmental assets.

Our beaches and foreshores are our most visited open spaces and our community tell us that they're one of the best things about living here.

The nature of our coast varies from place to place. The coastline on our northern border in Lonsdale is characterised by old hard rock cliffs, while our southern border at Sellicks Beach contains soft sediment cliffs above sandy beaches. Situated between these are a range of sandy beaches, limestone cliffs, headlands, shrublands and estuaries. Our coastline continually changes and does so in different ways and at different rates, depending on location.

The City of Onkaparinga has already completed extensive coastal adaptation work, ranging from softer measures such as community education and replenishing dunes and revegetation to harder works such as constructing rock walls and stabilising eroding cliffs with piling.

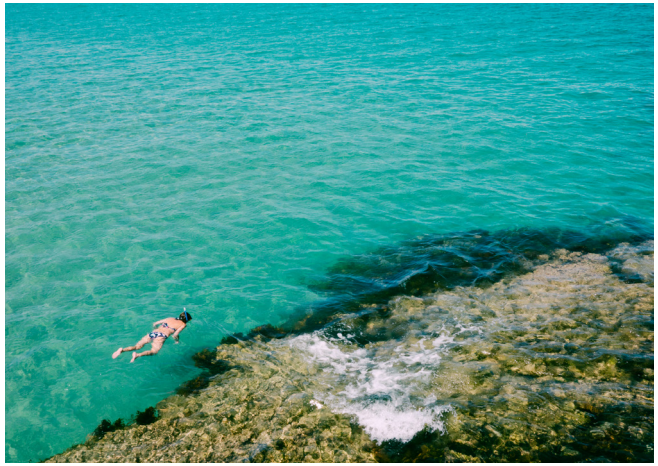
Our long history of proactive coastal adaptation means that we have built a solid foundation upon which to respond to future coastal hazards and potential climate risks.

However, the rate of coastal change may increase in the future because of projected sea-level rise and changes in storm frequency and intensity. These are expected to exacerbate existing coastal hazards of erosion and inundation (flooding). That is why we are planning for it now.

Aldinga Beach
Conservation work along Onkaparinga's coastline has helped protect beaches from the impacts of erosion and inundation.

Community priorities

Port Willunga beach



Community views

The community has told us what they value in the coast.
Coastal adaptation planning seeks to protect and enhance these values.

Coastal identity

Coastal 'way of life' that is shared by Onkaparinga's coastal communities.

Natural beauty

Visual appeal and the scenic qualities of our sandy beaches, clear waters and dramatic cliffs.

Recreation and leisure

Ability to access beaches and the coast to meet with friends and family, and enjoy activities such as swimming, surf life saving, surfing, fishing and snorkelling.

Open space

The coastal trails, parks, reserves along the coast, and the open space and fresh air these provide.

Environmental sites

Protecting coastal ecosystems and areas of environmental significance, such as sand dunes, nesting sites (including for Hooded Plovers) and estuaries.

Cultural significance

Preserving places of cultural significance to First Nations peoples.

Local economies

Supporting tourism, local businesses and other economic opportunities associated with the coast.

Infrastructure

Coastal infrastructure that harmonises with traditional coastal landforms.

Safety

Keeping people as safe as possible along our coastline, including around our cliffs.

***Top**: snorkelling at Port Noarlunga reef. **Middle**: Coast park trail, Aldinga Beach. **Bottom**: Moana beach*

Alignment with our Community Plan

The Coastal Adaptation Plan is central to achieving our Community Plan 2030 vision of 'strong, vibrant communities' and responds directly to the following Community Plan outcomes:

- We respond to the impacts of climate change, reducing emissions and building community resilience.
- We champion our environment, reinforcing its strengths, regenerating its losses and protecting its vulnerabilities.
- We efficiently and effectively deliver services, balancing cost, quality and responsiveness to community needs.
- We make financially sustainable choices for the long term.
- We are transparent and accountable, sharing information in clear, accessible and timely ways.

***Top**: artist impression of Port Willunga coast path*

***Bottom left**: Aldinga Bay Surf Life Saving Club members at Silver Sands beach*

***Bottom right**: Cactus Canyon, Sellicks Beach*

Research and evidence

Sellicks Hill

Sea-level rise

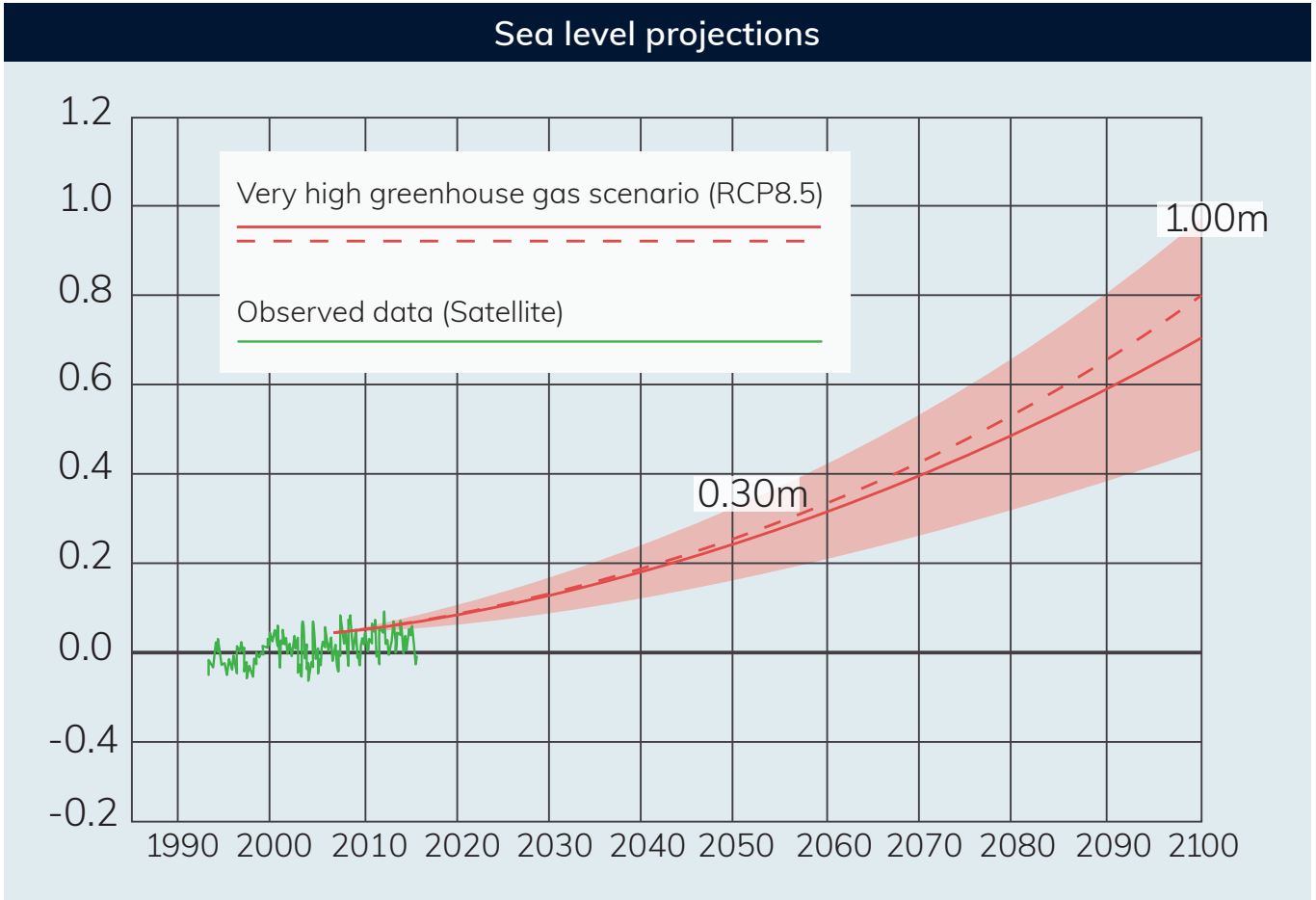
Scientific consensus is that climate change is causing rising sea levels and is projected to cause more frequent and intense storms.

These changes are expected to exacerbate the existing coastal hazards of erosion and inundation. There is a degree of uncertainty around the exact nature and timing of these impacts which makes it challenging for us to plan for the future with certainty.

Sea levels have been generally stable over the last few thousand years but began to rise again around 1850. In the last century, sea levels rose globally on average at approximately 1.7mm per year but this rise varied according to decade and according to location. Larger rates of rises have occurred since the 1990s, averaging 3-4mm per year in our region.

In 1993, the South Australian Coast Protection Board adopted a sea-level rise policy assuming 0.3m rise by 2050 and 1m rise by 2100, which was based on the best available advice at the time, including advice from the Intergovernmental Panel on Climate Change (IPCC). These sea-level rise projections have been incorporated into planning policies that the City of Onkaparinga is required to consider in its decision making around new development.

More recently in 2014, the IPCC adopted four projections for sea-level rise that related to various outcomes in greenhouse gas scenarios. The projected rate of rise for the IPCC's 'very high greenhouse gas scenario' (see below) is similar to the sea-level rise policy adopted by the Coast Protection Board.



Sea-level rise scenarios prepared by the Intergovernmental Panel on Climate Change with the South Australian Coast Protection Board's sea-level rise policy noted. The diagram illustrates the difficulty in making decisions in the context of these projections as most impacts will be realised in the second half of this century.

The scientific basis for coastal adaptation is summarised by Coast Adapt – coastadapt.com.au

Evidence underpinning this plan

We take our coastal adaptation responsibilities seriously and plan our responses based on evidence, advice and information from reputable and trusted sources.

This plan is the culmination of research and investigations over several years, including:

- undertaking a detailed Coastal Adaptation Study from 2018 to 2021, which provided a baseline understanding of how the coast currently operates and assessed the coastal risks and vulnerabilities from sea-level rise
- developing a Coastal Decision-making Framework to help ensure decision making associated with the coast considers the current and future coastal context and is repeatable and transparent
- undertaking an options analysis to identify, evaluate and prioritise the options available to us in responding to the risks identified in the Coastal Adaptation Study 2021
- engaging with the community to understand their priorities.

The City of Onkaparinga has also commissioned a range of studies addressing issues relevant to the coast including (but not limited to) cliff stability, climate change, floodplain modelling (and its relationship to sea-flood risk), asset management, coastal vegetation, car parking, disability access, recreational trails, vehicles on beaches and tourist parks.

Terrain maps captured at separate intervals can be compared and changes in cliff locations can be analysed. The colours indicate where the terrain has changed as a result of erosion or other coastal processes.

The first comprehensive study into the impacts of climate change on Onkaparinga's coastline was the Climate Change Impacts on the Coastal Lands of the City of Onkaparinga by Brian Caton in 2007.

This led us to undertake further studies to evaluate impacts at Christies Beach and Snapper Point, undertake detailed analysis of risks within cliff locations, and commission a high-resolution 3D terrain model of the entire coastline.

Case study:

3D model of our entire coastline

The City of Onkaparinga commissioned cliff studies in 2005, 2007 and 2016 which identified a range of risks. We engaged Aerometrex in 2015 and 2023 to map the area's coastline and produce a high-resolution 3D digital model. A smaller capture was made in 2018 to compare changes in locations that were considered hotspots. This technique enables accurate comparisons to be made about changes in cliff locations which are difficult to access and observe. Over time we can track changes to identify if sea-level rise or increased rain fall is having an increasing impact on cliff locations.

2021 Coastal Adaptation Study

Between 2018 and 2021, we engaged consultants Integrated Coasts to prepare a Coastal Adaptation Study to bring together all previously undertaken studies about the coast, provide a baseline understanding of how the coast currently operates, and assess the coastal risks and vulnerabilities from sea level rise.

The Coastal Adaptation Study shows how people, the natural environment and built assets might be impacted by rising sea levels and other coastal changes so that council and other stakeholders, such as the state government and private landowners, can plan now for possible future impacts.

The study developed risk assessments that evaluated current and future risk to public assets, private assets, safety of people and disruption to ecosystems.

The cliffs at Seaford have a high erodibility risk. The Coastal Adaptation Study found that the main coastal hazard in the City of Onkaparinga is erosion rather than inundation because most areas are set within elevated locations.

Key findings of the study

The key findings from the Coastal Adaptation Study are that:

- the coastline has been largely stable over a 70-year period (2-4m recession overall in some southern areas)
- the coastline undergoes cycles of accretion (build-up) and erosion that take place over decades, which are now better understood
- the predominant hazard is erosion rather than inundation because much of the City of Onkaparinga is set within elevated locations
- of the four hazard impact categories, the main threat is to public assets because most private assets are set behind public roads
- the timing of the threat to these assets varies but will primarily be related to sea-level rise that is projected to occur in the future
- there are locations of interest that are likely to require intervention (such as Snapper Point at Aldinga) and locations that will require careful monitoring over time (for example the Seaford cliffs) due to ongoing coastal processes which will be exacerbated by sea-level rise.

Case study: **Understanding coastal change**

To understand how the coast has changed, we used photography to compare the coast over time. In the areas north of the Onkaparinga River there was very little change, while in southern areas there was generally 2–4m recession. However, every location was a little different (see examples below).

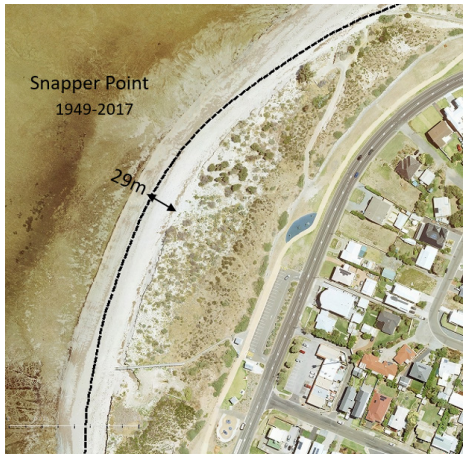
Example 1 – Port Willunga

Comparing photographs from 1909 to 2020 shows that this section of beach has undergone very little change. However, when we compare aerial photographs over time, we can observe that the beach and dunes erode and accrete (build up) in a cycle that takes place over decades.

Example 2 – Snapper Point, Aldinga reef

Snapper Point—2 kilometres to the south of Port Willunga—eroded quickly after 2005, and it has never rebuilt. This erosion may be a result of increased storm conditions or may be a result of increased depth of water over Aldinga Reef due to sea-level rise. Even small increases in depth of water may allow for increased wave energy to impact the beach.

Example 1 *Top: Port Willunga, 1909, State Library of SA.* *Bottom: Port Willunga, 2020, M. Western*



Example 2
Left: Snapper Point, 2017, Metromap

Areas most at risk

To effectively study and plan for the different locations along our varied coastline, we divided the coast into 12 sections or coastal cells. Larger cells were divided further into minor cells.

Dividing the coast into cells gives us a systematic way to collect and manage coastal data and helps us focus on locations that are experiencing more coastal change than others. The 2021 Coastal Adaptation Study evaluated the risk of coastal inundation and erosion for each coastal cell and the majority of minor cells.

Coastal inundation refers to the flooding of coastal areas due to various factors such as high tides, storm surges, or sea-level rise. It's often a consequence of storms, or long-term changes such as sea-level rise due to climate change.

Erosion occurs when the land along the coast is worn away by the actions of waves, currents, and wind. This natural process can lead to the loss of beaches, cliffs, and other coastal features over time.

Fact sheets and summary reports provide detailed information about coastal hazards, risks and vulnerabilities at each location (for each cell). These are available at onkaparingacity.com/coast

- ○ No risk
- Low risk
- Medium risk
- High risk
- Very high risk

Cell	Location	Inundation risk	Erosion risk
1	Lonsdale	○	●
2.1	O'Sullivan Beach	○	● ●
2.2	Christies Beach	○	●
3.1	Witton Bluff - North	○	● ●
3.2	Witton Bluff - South	○	● ●
4.1	Port Noarlunga - foreshore	○	● ●
4.2	Port Noarlunga - Esplanade	○	● ●
4.3a	Port Noarlunga - south port	○	● ●
4.3b	Port Noarlunga - estuary	○	● ●
4.4	Port Noarlunga - township	●	n/a
5.1	Seaford cliffs to Cliff Avenue	○	● ●
5.2	Seaford cliffs to Seaford Road	○	● ●
5.3	Seaford cliffs to Robertson Road	○	● ●
6.1	Moana - foreshore	●	●
6.2	Moana - Pedler Creek	●	●
6.2	Moana - conservation park	○	●
6.3	Moana Heights	○	●
7	Ochre Point	○	● ●
8.1	Maslin Beach - north	○	● ●
8.2	Maslin Beach - south	○	●
9.1	Port Willunga - north	○	● ●
9.2	Port Willunga - creek	●	● ●
9.3	Port Willunga - south	○	●
10.1	Aldinga reef to Chenoweth Street	○	● ●
10.2	Aldinga reef to Aldinga Beach Road	○	● ●
10.3	Aldinga reef to Ocean Street	○	● ●
11.1	Aldinga Beach	○	● ●
11.2	Aldinga Beach	○	● ●
11.3	Aldinga Beach - washpool	●	● ●
12	Sellicks Beach	○	● ●

Understanding coastal adaptation

Coastal adaptation involves adjusting our practices in response to the impacts of our current and expected climate.

This means identifying actions to manage risks to our coastline that provide benefits across many sectors such as safety, tourism, health, environment and recreation.

Coastal adaptation is focussed on the adjustments needed because of the potential impacts of climate change and sea-level rise.

In contrast, coastal management relates to a wider range of activities such as managing access, controlling weeds, stabilising dunes, regulating development, and constructing and maintaining public facilities and infrastructure. While coastal management techniques are sometimes used in adapting to the impacts of climate change, it is not the role of a coastal adaptation plan to offer solutions for every coastal management issue.

Launching kayaks at Wearing Street Aquatic Precinct, Port Noarlunga

Coastal adaptation options

When coastal adaptation is needed to manage the increasing impacts of erosion and inundation, there are several options available to us:

1 Avoidance
Avoid the impacts of coastal hazards by ensuring that assets or services are not in areas that could be impacted now or in the future.

2 Managed retreat
Progressively move assets or services away from areas that could be impacted by coastal hazards now or in the future.

3 Accommodate
Modify how assets are built or services delivered to reduce the impact of coastal hazards.

4 Hold the line
Install protection infrastructure that reduces the impact of coastal hazards or use environmental practices to strengthen natural protective forms such as dunes.

5 Loss acceptance
Accept that coastal hazards will cause negative impacts on assets and services and that, when this occurs, they will not be replaced.

6 Defer decision-making and monitor
The threat to infrastructure or services is identified but instead of taking action, closely monitor the hazard because it is likely that the threat will only be realised if seas rise as projected.

Within each of the first four categories, there is a range of potential adaptation options in the areas of planning, engineering, environmental management, and community awareness and education.

Some of the coastal adaptation activities we already use include:

- replenishing dunes
- managing outlet flows from rivers and creeks
- revegetating cliffs and dunes
- fencing to reduce sand drift
- installing sandbag groynes
- building geofabric sea walls
- building rock sea walls
- stabilising eroding cliffs from the top with piling
- moving roads and footpaths inland to accommodate current and future erosion
- planning rules that consider a sea-level rise of 1 metre
- community messaging, signage, fencing and by-laws that encourage people not to access highly erodible areas.

***Moana Sands Conservation Park**. Revegetation programs are an example of coastal adaptation in action.*

An adaptive management approach

Adaptive management is defined as 'an intentional approach to making decisions and adjustments in response to new information or changes in context'.

Adaptive management in the coastal context means that our decision-making will be guided by monitoring changes in the coast, comparing this information against a known baseline, and regularly re-evaluating the risks and the options available to manage these risks.

The main reason to adopt an adaptive management approach is that it provides an effective way to deal with uncertainty. While sea-level rise projections are based on the best available science, how and when these projections will play out is uncertain. The larger impacts are projected to occur after 2050. This means that there are several decades over which we can gather information and establish a more certain outlook – and ultimately make better decisions.

In our case, the Coastal Adaptation Study prepared between 2018 and 2021 helped us to:

- establish a baseline for how the coast has operated historically
- assess coastal risks and vulnerabilities based on current conditions and sea-level rise projections.

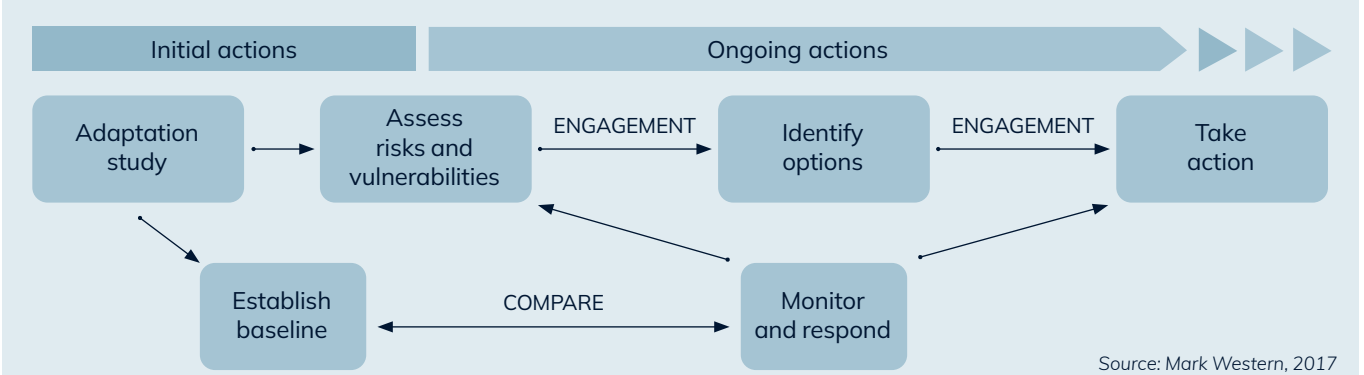
Through the preparation of this Coastal Adaptation Plan, we have identified how we will:

- take action, identifying our options
- monitor coastal changes to inform how we act and adapt our strategies.

Monitoring will improve our knowledge about how the coast operates, including the impact of storms, and provide us with warning when the coast may be operating outside of its normal parameters due to climate change.

The way in which these processes interrelate is summarised in the below diagram.

Model of adaptation



Source: Mark Western, 2017

Sellicks Beach

Christies Beach

Case study:
Adaptive management in Christies Beach

Background

In the late 1990s, Christies Beach experienced erosion that caused significant concern to the City of Onkaparinga and the community. It was not known what caused the erosion, but possibilities included offshore dredging, sea-level rise or changing seasonal conditions (natural variability).

Projections

A climate change study completed in 2007 projected that sea-level rise would cause the loss of the recreational beach by 2030. Further detailed studies in 2009 and 2011 found that sand was moving northward and was not expected to be replaced. It was projected that sea-level rise would make these problems worse, and by 2030 sand nourishment and other measures would be required.

Coastal Adaptation Study

The Coastal Adaptation Study completed between 2018 and 2021 found that there had not been further decline in sand levels, but rather, they had recovered and were at similar levels to the 1970s. The reasons for the recovery may include the longer-term impact of the installation of O'Sullivan Beach boat ramp which keeps sand within the coastal cell and a change in climatic conditions that tended to support sand build up on the beach, rather than erosion. At this stage, sea-level rise is not observed to be having any significant impact.

Monitoring informs decision making

Ongoing monitoring of Christies Beach will improve our understanding as to what climatic conditions drive the cycles of sand accretion and erosion on the beach, and also provide the basis from which to determine if and when sea-level rise is having an increasing impact on the beach.

Coastal Adaptation Action Plan 2024–30

Our Coastal Adaptation Action Plan details what we will do from 2024–30 to anticipate and respond to risks to our coastal environment arising from climate change.

It identifies 25 actions to achieve our four goals.

Implementation of these goals will be subject to budget approvals and successful grant submissions.

Port Noarlunga jetty and northern cliffs

Goal 1

Information and evidence

We have the information that we need to make good decisions about our coast.

We draw on the best information from local and statewide datasets, historical records, coastal monitoring, and projections to effectively manage our changing coastal risks.

Action 1.1

Coastal Monitoring Project

Implement an initial coastal monitoring project between 2024–30 focussed on capturing and evaluating data to understand how coastal processes interact with the coastline in the current period.

This will build on the baseline established in the Coastal Adaptation Study (2021).

The project has a focus on monitoring:

- changes in shoreline position
- accretion and erosion trends
- impact of sea storms and rainstorms
- evaluation of the storm climate
- changes in coastal terrain, especially in cliff locations.

The monitoring will assist in more accurately determining when the coast may be operating outside of its normal parameters for a sustained period due to sea-level rise or other climate related impacts.

The monitoring will also review specific locations identified through the coastal adaptation options analysis process in 2023 as requiring a specific monitoring focus because:

- actions of the sea are having a higher impact on coastal infrastructure; or
- infrastructure is likely to be at risk in the future.

This monitoring will inform contemporary decision making in these locations.

At the conclusion of the monitoring project, it will be evaluated for its effectiveness and an updated baseline understanding of the coast (including risk analysis) will be established.

Project owner

- Sustainability
- Coastal Assets

Resourcing

- Staff time
- Capital works
- Grants

Timing

- Set-up 2024–25
- Delivery 2025–29
- Evaluation 2029–30

Action 1.2

Coastal risk assessments

Coastal risk assessments were undertaken as part of the Coastal Adaptation Study (2021) and updated as part of the preparation of this plan.

Over the life of this plan, City of Onkaparinga will maintain coastal risk assessments.

The monitoring program (action 1.1) will record coastal incidents and coastal changes.

Normally, a change in risk assessment would be left to the end of the monitoring period, but if the risk was deemed significant enough, then an update to the Climate Risk Register could be made before the end of the monitoring period.

Towards the end of the plan (2029–30) City of Onkaparinga will update the Coastal Adaptation Study cell reports prepared in 2021, re-evaluate all coastal risk assessments, and update the Climate Risk Register.

Project owner

- Risk
- Sustainability
- Coastal Assets

Resourcing

- Staff time

Timing

- Life of plan

Action 1.3

Coastal adaptation options analysis

An evaluation of coastal adaptation options was undertaken to develop this plan. The results are documented in the options analysis report.

City of Onkaparinga will re-evaluate the coastal adaptation options for each cell (or minor cell) if the coastal monitoring program and/or changes to the coastal risk assessment result in a material change to the evaluation of the coastal risk.

When coastal risk assessments are reevaluated towards the end of the coastal adaptation planning period, City of Onkaparinga will also update the coastal adaptation options analysis for all coastal cells.

Project owner

- Risk
- Sustainability
- Coastal Assets

Resourcing

- Staff time

Timing

- Life of plan

Action 1.4

Coastal Decision-making Framework

The City of Onkaparinga has developed a decision-making framework for council officers to use when considering projects and activities within the coast.

It aims to assist staff to systematically think through decisions that relate to the coast with the goals of ensuring that our coastal decisions today consider the current and future coastal context, are repeatable and transparent, and do not create unexpected problems for us in the future.

The tool is not expected to be used for coastal decisions that are temporary or easily reversable.

To support its use, key elements of the decision-making framework have been embedded within City of Onkaparinga's project management templates used in the scoping and planning of projects in accordance with the Project Management Framework. Relevant staff will be trained in the use of this framework.

Project owner

- Risk
- Sustainability
- Coastal Assets

Resourcing

- Staff time

Timing

- Life of plan

Action 1.5

Coastal information management

To support the implementation of this plan, City of Onkaparinga will maintain a coordinated approach to coastal information management.

A central repository for each coastal cell will contain all information about coast change, risk, and hazard. This includes all information captured through the preparation of the Coastal Adaptation Study (2021), along with risk assessments, options analysis and actions (including monitoring actions).

The coastal cell repositories will also be used to capture relevant knowledge about the coast over the life of the plan, arising from monitoring, coastal incidents, 'near-miss' events that were close to becoming a coastal incident, and any relevant local studies progressed. The information collected in these cell repositories will form the basis of the update of this Coastal Adaptation Plan in 2030.

While the Coastal Cell Repositories are the primary mechanism for managing coastal information management, coastal risk assessment will also be maintained within Onkaparinga's Climate Risk Register, and spatial datasets within the GIS.

Project owner

- Risk
- Sustainability
- Coastal Assets
- Spatial Services

Resourcing

- Staff time

Timing

- Life of plan

Goal 2

Resilience

Our natural environment, infrastructure and people are resilient to coastal change.

We take action when it is needed to strengthen the ability of our coastal systems to manage changing risks.

Actions 2.1 to 2.11 were identified through the Coastal Adaptation Options Analysis undertaken in 2023 as part of the development of this Coastal Adaptation Plan. In accordance with the 'adaptive management' approach to coastal adaptation, it is expected that the Coastal Monitoring Project (Action 1.1) may identify additional actions that need to be implemented and provide new evidence which results in the re-evaluation of coastal risk and adaptation options.

Action 2.1

Christies Beach

Main beach

Cell

2.2

Adaptation option

Hold the line

Action details

Progressively upgrade and maintain rock revetment to manage sea-flood height projected for 2050.

Implement nature-based solutions (i.e. sand dune creation) to the north in lieu of installing additional rock revetment.

Project owner

- Coastal Assets

Resourcing

- Staff time
- Capital works
- Grants

Timing

- 2029–30

Action 2.2

Witton Bluff north

Rock revetment section

Cell

3.1

Adaptation option

Hold the line

Action details

Progressively upgrade and maintain rock revetment which is nearing the end of its design life, vulnerable to overtopping and damage in 1 in 50 year events, and will be increasingly vulnerable to sea-level rise.

We note that the new southern section of the Witton Bluff walking trail has been designed to minimum 0.6m of sea-level rise to accommodate a 50-year design life.

Project owner

- Coastal Assets
- Projects

Resourcing

- Staff time
- Capital works
- Grants

Timing

- 2024–27

Action 2.3

Port Noarlunga township
Saltfleet Street

Cell
4.4

Adaptation option
Hold the line

Action details
Install protection structure on western side of Saltfleet Street as part of the Wearing Street upgrade project. Investigate other flow paths that impact Saltfeet street.

Project owner
- Coastal Assets
- Projects

Resourcing
- Staff time
- Capital works
- Grants

Timing
- 2024–26

Action 2.4

Seaford cliffs
Near Gulf Street

Cell
5.3a

Adaptation option
Hold the line

Action details
Install retaining and protection items at the top and the bottom of the cliff to progressively manage erosion issues as they arise.

Installation of cliff top retaining structures is currently in progress.

Project owner
- Coastal Assets

Resourcing
- Staff time
- Capital works

Timing
- 2023–24

Action 2.5

Seaford cliffs
Tiller Drive

Cell
5.3b

Adaptation option
Managed retreat

Action details
Retreat carpark and shared path infrastructure.

Project owner
- Coastal Assets

Resourcing
- Staff time
- Capital works

Timing
- Complete

Action 2.6

Seaford cliffs

Walking path between
Tiller Drive and Robertson Road

Cell

5.3b

Adaptation option

Managed retreat

Action details

Plan for the relocation of the walking trail further away from the cliff top.

Progressively implement as the current walking trail reaches the end of its design life or if the cliff top recession impacts upon the path.

Project owner

- Coastal Assets
- Projects

Resourcing

- Staff time
- Capital works
- Grants

Timing

- Subject to path condition or outcomes of the monitoring program

Action 2.7

Moana

Surf life saving club

Cell

6.1

Adaptation option

Accommodate and hold the line

Action details

Modify stairs and ramp in front of the surf life saving club to prevent overtopping and wave runup. Install modifications to the base of the surf life saving club to manage infrequent storm wave runup. Hold the line with environmental-based solutions (i.e. creating sand dune buffer) to reduce frequency of inundation.

Project owner

- Coastal Assets

Resourcing

- Staff time
- Capital works

Timing

- 2029–30

Action 2.8

Moana

Foreshore

Cell

6.1

Adaptation option

Combination of hold the line, managed retreat and accommodate

Action details

At the time when foreshore renewal is contemplated, plan for coastal adaptation actions. Implement environmental solutions (i.e. creating sand dune buffer) to reduce frequency of inundation.

Project owner

- Coastal Assets

Resourcing

- Staff time
- Capital works
- Grants

Timing

- Subject to outcomes of monitoring

Action 2.9

Maslin Beach
Carpark

Cell
8.1

Adaptation option
Managed retreat

Action details
When carpark requires upgrade, consider reducing the carpark size to allow the coast to progressively retreat.

Project owner
- Coastal Assets

Resourcing
- Staff time
- Capital works

Timing
- Subject to carpark condition

Action 2.10

Aldinga reef
Snapper Point

Cell
10.2

Adaptation option
Hold the line

Action details
Install offshore rock revetment (bund) offset from the cliff as a buffer against actions of the sea.

Project owner
- Coastal Assets

Resourcing
- Staff time
- Capital works
- Grants

Timing
- 2029–30

Action 2.11

Aldinga Beach
Lower Esplanade

Cell
11.1

Adaptation option
Hold the line

Action details
Conduct trials on a nature-based solution to protect the Lower Esplanade through installing sand drift fencing that aims to support the establishment of a sand dune.

Project owner
- Coastal Assets

Resourcing
- Staff time
- Capital works

Timing
- 2025–26

Action 2.12

Metropolitan Adelaide and Northern Coastal Action Plan

Main beach

Cell

Whole coastline

Adaptation option

Hold the line

Action details

Continue to partner with Green Adelaide on implementing actions in the Metropolitan Adelaide and Northern Coastal Action Plan to proactively manage biodiversity values and erosion risk along our coastline.

Undertake a study specific to council's natural coastal assets and climate adaptation options.

Project owner

- Nature Conservation

Resourcing

- Staff time
- Operational maintenance

Timing

- Life of plan

Goal 3

Community knowledge and action

The community understands coastal change and works with us in taking action.

We work with our the community to help them understands coastal change and the information that we are basing our decisions on and involve them in monitoring coastal change and taking action.

Action 3.1

Coastal adaptation community engagement

Provide regular updates to the community on our progress in implementing the Coastal Adaptation Plan through our dedicated 'Coast and marine' website, Sustainable Onkaparinga and Green Adelaide education programs.

Regular updates should include sharing the results of coastal monitoring (Goal 1), implementation of coastal projects (Goal 2) and promoting participation in citizen science (Goal 3).

Project owner

- Sustainability
- Communications

Resourcing

- Staff time

Timing

- Life of plan

Action 3.2

CoastSnap

Implement CoastSnap as part of a collaborative project with the Adelaide Coastal Councils Network.

CoastSnap provides an opportunity for members of the public to take photos at defined locations, and upload to an online portal. The photos can be analysed to provide observations about beach changes and/or the impact of sea storms.

CoastSnap will provide data that will assist the implementation of the Coastal Monitoring Project (Action 1.1).

Project owner

- Sustainability

Resourcing

- Staff time
- Grants

Timing

- 2025–26

Action 3.3

Citizen Science Drone Project

Investigate the feasibility of delivering a Citizen Science Drone Project. Data from drones may be able to capture photography to help monitor changes in cliff locations in between scheduled digital terrain 3D model captures, and/or capture the impacts of sea storms.

Project owner

- Sustainability

Resourcing

- Staff time
- Capital works

Timing

- 2024–25 (alongside set up of monitoring project)

Action 3.4

Citizen Science CCTV Project

Investigate the feasibility of installing fixed cameras upon surf life saving clubs or other structures to record beach changes at regular intervals.

These cameras could record the impact of storms and/or capture beach changes to which photogrammetry technology could be applied if it was deemed that changes required quantification.

Consider delivering in partnership with the Adelaide Coastal Councils Network.

This project will provide data that will assist the implementation of the Coastal Monitoring Project (action 1.1).

Project owner

- Sustainability

Resourcing

- Staff time
- Capital works
- Grants

Timing

- 2024–25 (alongside set up of monitoring project)

Action 3.5

Citizen Science Storm Monitoring Project

Investigate the feasibility of delivering a Citizen Science Storm Monitoring Project. This would provide an opportunity for members of the community to be involved in the storm monitoring aspects of the overall Coastal Monitoring Project (action 1.1).

This opportunity could involve training community volunteers to:

1. Capture the impacts of storm events at CoastSnap locations where videos and photographs can be taken of the actual storm event.
2. Place markers along the beach (indicatively blue painted rocks) of seagrass strands to indicate the highest level of wave run up. Following this, a surveyor can then be engaged to capture data about the impacts of the storm.

This project could be delivered in parallel with a Citizen Science Drone Project (action 3.3), where there is an opportunity for volunteers to capture drone data following a storm event along a pre-programmed flight route.

Project owner

- Sustainability

Resourcing

- Staff time
- Capital works
- Grants

Timing

- 2024–25 (alongside set up of monitoring project)

Goal 4

Resources and capability

We have the skills, resources and capability to respond to coastal change.

We work as active partners in the coastal management sector, and proactively support, and seek support from, other organisations.

Action 4.1

Partnerships

Maintain relationships with the Adelaide Coastal Councils Network, Australian Coastal Councils Association, Climate Ready Coasts Program, Resilient South Regional Climate Partnership, Local Government Association of SA, and Australian Local Government Association, as appropriate and other partnerships as a means of effectively sharing learnings and practice and avoiding duplication of effort.

Project owner

- Sustainability

Resourcing

- Staff time

Timing

- Life of plan

Action 4.2

Advocacy

Advocate to the federal government for:

- national leadership funding and a long-term approach to coastal adaptation
- development of a National Coastal Adaptation Plan
- stronger and consistent funding for councils to undertake coastal adaptation planning (including coastal hazard data), and move towards a more strategic, long-term and consistent approach nationwide
- stronger and consistent funding to implement projects and works identified through coastal adaptation planning.

Advocate to the state government for:

- greater state government leadership in the collection, coordination and analysis of all coastal hazard data
- introduction of a consistent and funded statewide coastal monitoring program.

These advocacy items will be progressed with our partners.

Project owner

- Sustainability
- Strategy

Resourcing

- Staff time

Timing

- Life of plan

Action 4.3

Climate Ready Coasts

Continue to actively support the governance and delivery of the SA Climate Ready Coasts Program, which is being led by the Local Government Association of SA in partnership with the SA Coast Protection Board and the Department for Environment and Water.

This program is accelerating coastal adaptation planning and driving a strategic and more coordinated approach across the state.

We will also actively participate in the program's capacity building projects as a means of improving our organisational ability to lead coastal adaptation activities.

Project owner

- Sustainability

Resourcing

- Staff time

Timing

- Life of plan