

Napranum Aboriginal Shire Council

COASTAL HAZARD

ADAPTATION STRATEGY



ABN 43 593 215 992



ACKNOWLEDGMENT OF COUNTRY

We respectfully acknowledge the Traditional Owners, the Alngith Peoples, as the Custodians of this land. We pay respect to their Elders, past, present, and emerging and acknowledge their continued connection to the land and waters of this area.

We also acknowledge the historical people brought to Napranum from various places by government policies of the past.

We respect all Aboriginal and Torres Strait Islander peoples ways of being, knowing and doing and their role in caring for and maintaining land and sea country over thousands of years.





INPUT FROM ADJOINING COMMUNITIES

The local authority boundaries for Napranum, Mapoon and Weipa Town Authority are highly irregular and residents and visitors of the region often traverse these boundaries to utilise different areas of the coast.

To maximise efficiency and knowledge sharing, Council, Mapoon Aboriginal Shire Council (MASC) and Weipa Town Authority (WTA) have collectively prepared Coastal Hazard Adaptation Strategies (CHAS) for their respective areas of management. This approach supports a greater appreciation of community values and use of the entire coastline in the region, irrespective of Council boundaries. The responses received during engagement activities identify that community members from Napranum, Mapoon and Weipa utilise the coast in all of these areas in similar ways – particularly for recreational activities such as camping, fishing and recreational driving along the beach.

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1.0 INTRODUCTION

Napranum Aboriginal Shire Council (Council), with the support of the QCoast2100 program, has developed a Coastal Hazard Adaptation Strategy (the Strategy). This Strategy helps us to better understand emerging coastal hazard risks and proactively manage the impacts of those risks on our community, environment, cultural values, infrastructure, liveability and essential services. This Strategy is designed to strengthen our community both now and into the future (to 2100) so that our children and their children can maintain their connection to Land and Sea Country.

Napranum is home to a unique landscape, history and people. The coastal region is made up of estuaries and sandy beaches with well-defined but low profile dune systems, often fronted by wide, shallow nearshore areas.

The landscape has been shaped through the millennia by natural processes involving wind, water and waves. The continual cycles of sand loss (erosion), rebuilding (accretion) of the shoreline, and flooding of coastal areas by sea water during king tides and storms are all part of these natural processes. These processes are referred to as coastal hazards when they have the potential to negatively impact on infrastructure, access, services, our lifestyle and the economy.

Building the resilience of our coastline and community is one of our top priorities. To achieve this, we need to understand current and future coastal hazards, their risks and impact on our community. We can then proactively plan, prepare and respond to those risks over time.

This Strategy has been informed by the best available science and was a collaborative effort with members of our community, who have shared their experiences and knowledge to help us understand what is important to them.

2.0 WHY DO WE NEED A STRATEGY

Our coastal zone is dynamic and always changing. Many of us are familiar with coastal change having observed beach erosion, shifting sands and periodic inundation of low-lying areas from high tides and storm events. These natural processes are referred to as coastal hazards when they impact on how we use and enjoy our coastal areas.

Coastal hazard impacts can occur quickly during significant storm events or develop slowly, over several years in response to long term natural coastal processes. These impacts can result in temporary or permanent changes to our coastline, affecting our region's natural beauty and places of cultural and ecological significance as well as our community's infrastructure – our roads, services, drainage, homes, businesses and utilities.

The extent of coastal land vulnerable to coastal hazards, as well as the consequences of these coastal hazards, are expected to increase in the future as sea levels rise. Climate change is also expected to increase the severity, frequency and risk associated with coastal hazards over time.

This Strategy focuses on three coastal hazards that affect our coastline – storm tide inundation, coastal erosion and sea level rise.

STORM TIDE INUNDATION:

Storm tide is the temporary water level that results from the combination of normal tides and a storm surge from severe weather such as cyclones or strong winds. If a storm surge coincides with higher tides, the resulting storm tide and waves can submerge the open coastline or inundate land behind the open coastline through the overflow of waterways, estuaries and drains that connect to the ocean.

Our coast is exposed to storm tide inundation along our low-lying sandy foreshores and wetlands. A number of Napranum's important environmental and social assets are vulnerable to storm tide inundation now and in the years to come including beaches, middens, trees, memorials, graves, fish traps, park infrastructure and historical sites.

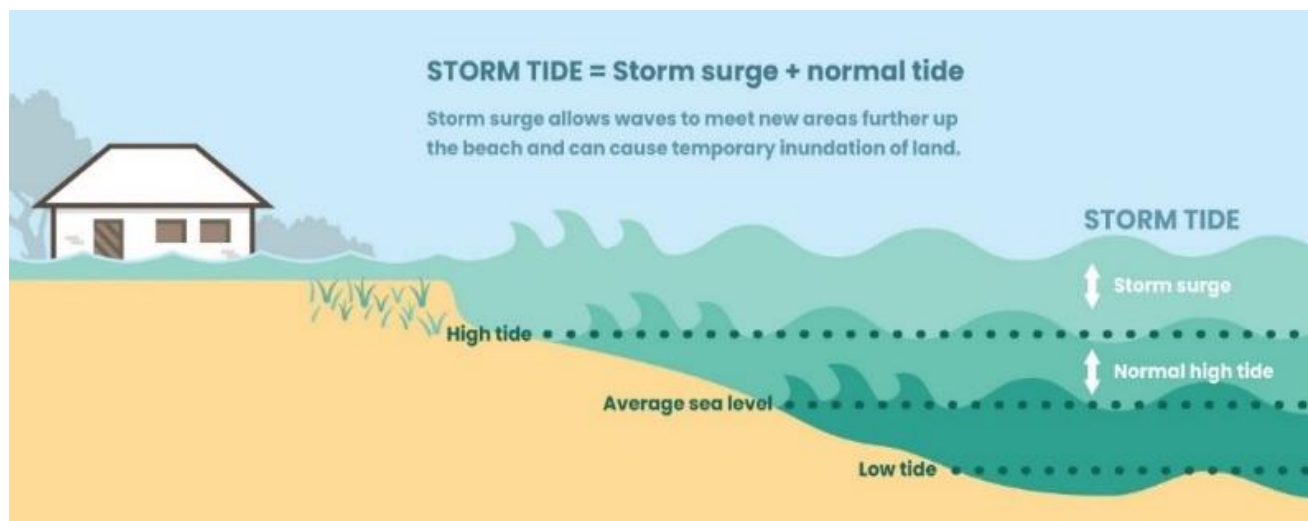


Figure 1. Storm-tide inundation process

COASTAL EROSION:

Coastal erosion is the temporary or permanent loss of coastal land, beaches or dunes by wave or wind action, tidal currents, water flows or sea level rise. Coastal erosion is often associated with extreme weather such as coastal storms, but many coastal foreshores also naturally undergo cycles of erosion and accretion (build up) over weeks and years.

Within Napranum township, key community infrastructure such as beach and dune areas, culturally significant sites, the boat ramp and its access road, and beachfront parkland (including the Napranum Splash Park) are vulnerable to erosion hazards between now and 2100.

Outside of the main town area, environmentally significant turtle and bird nesting areas, residences, traditional lands, cultural sites and beach and dune areas along Pennefather Beach are at extreme risk of erosion damage.

Over the long-term, sea-level rise is expected to exacerbate slow-onset coastal erosion along Napranum's beaches.

SEA LEVEL RISE:

Sea level rise is not a distinct process causing impact on its own, but rather, increases the extent of land subject to other coastal processes (including tidal inundation, coastal inundation, coastal erosion and shoreline recession)¹.

A projected rise in mean (average) sea level of 0.8 metres by the year 2100 has been adopted as a planning benchmark by the Queensland Government based on climate modelling. If effective coastal adaptation strategies are not implemented, this increase could result in permanent sea water inundation of low-lying areas and exposure of the places we love and value such as our beaches, parks, important community infrastructure like roads and drainage, and private assets.

In Napranum, several key assets are projected to be exposed to sea level rise between now and 2100. These include beach and dune areas along Pennefather; the Jessica Point boat ramp, its road access and parking; and the Napranum parkland including the Splash Park, nearby picnic shelters and basketball court. It is also anticipated that the grave memorial located close to the head of the boat ramp will be isolated by sea level rise by 2100.



Figure 2. Process of coastal erosion and sea level rise

¹ Insurance Council of Australia (2021), *Climate Change Impact Series: Actions of the Sea and Future Risks*.

CONTEXT & APPROACH:

This Strategy has been developed under QCoast2100, a state-wide coastal hazard adaptation program supported by the Queensland Government and Local Government Association of Queensland (LGAQ). QCoast2100 assists Councils to proactively plan for long-term coastal resilience and minimising the risk of coastal hazards to communities and valuable assets such as roads, utilities, parks, natural areas and heritage places.

PURPOSE

The Strategy is a risk and change management initiative. It provides an understanding of current and future coastal hazard risks, including how the coast might change or be impacted in the future, and what we can do to proactively plan, prepare, and respond to these risks over time to improve our resilience to coastal hazards.

This strategy outlines the:

- coastal values of the region;
- current and future coastal hazard risks, nominally to the year 2100;
- short, medium and long-term actions to avoid, reduce and adapt to the social, cultural, economic, and environmental risks associated with coastal hazards; and
- recommended approaches to consider in managing our coastline.

The Strategy is underpinned by extensive stakeholder input and the best available science, engineering, and economic studies. It forms the foundation to strengthen the resilience of our coast and community and facilitates informed decision-making.

We all have a role to play in maintaining our resilience to coastal hazards and this document is the start of a broader discussion to assist all of us when responding to the impacts of a changing coast.

PROCESS

The Strategy was developed through an eight-phase process as outlined in the *QCoast2100 Minimum Standards and Guidelines*. The process has included technical studies and engagement. The outputs of this work have:

- Identified existing coastal hazard exposure and how this exposure may change in the future under the influence of rising sea levels;
- Assessed the vulnerability of and risk to natural and built assets through a comprehensive data collection and spatial analysis process;
- Identified priorities by distinguishing between urgent and future risks;
- Engaged with the community to understand preferred approaches to adaptation and develop potential approaches to adapt to coastal hazards;
- Assessed the viability of adaptation approaches through stakeholder engagement and multi-criteria analysis; and
- Informed the development of implementation planning (timing, staging and sequencing) of preferred adaptation options over time.

Figure 3. CHAS structure - phases and engagement touch points

- Engagement touch points with stakeholders and community



ALIGNING WITH OUR CORPORATE STRATEGIES

The Strategy is a non-statutory document that provides a high-level plan for the future management of coastal hazards through to 2100 and involves identifying regionally focused priority areas and actions. The identification of more detailed localised planning and the implementation of physical works will occur through annual operational programs such as asset management and shoreline erosion management planning.

Just like our coastal environment, the Strategy will evolve as new information, observations and technologies become available. The Strategy will be reviewed periodically to align it with leading practice and community expectations.

The Strategy, and supporting technical work, form an important part of Council's long-term planning and strategic framework and will inform and influence a range of other Council strategies, plans, policies, and future decision making. In addition to the Corporate Plan 2022 – 2029 and Napranum Master Plan, other key Council documents that should be updated (where required) to align with, integrate and embed coastal hazard risk considerations from the Strategy include:

- Annual Operational Plan 2022-2023
- Disaster Management Plan 2022-2023
- Bushfire Risk Mitigation Plan 2022 - 2023
- NASC Planning Scheme 2015
- Local Government Infrastructure Plan

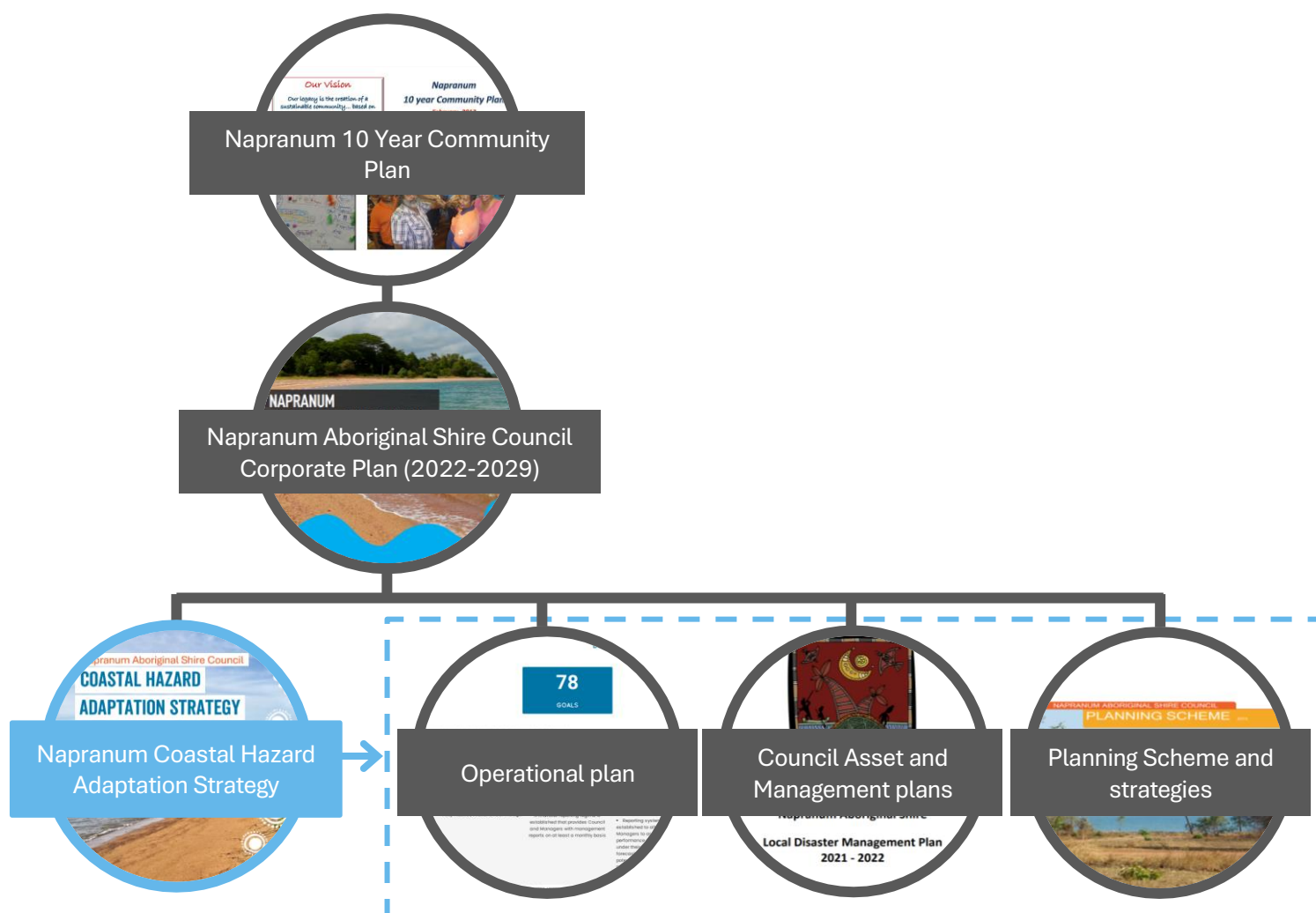


Figure 3. CHAS alignment with other Council documents



3.0 OUR COAST

The Napranum Aboriginal Shire Council area comprises approximately 1,995 km² of land divided into several areas, stretching from the Pennefather River in the north, down to Hey Creek in the south. The main settlement of Napranum is located approximately 6 km south of Weipa and approximately 380 km south of the northern-most tip of Queensland.

Council also has responsibility for approximately 40km of coastline directly fronting the Gulf of Carpentaria, extending from Pennefather River in the north to Jantz Point at the entrance to Albatross Bay. This area is accessible by boat or 4WD vehicles only, and aside from a small number of unauthorised or abandoned buildings along the beach, is undeveloped.

Additional undeveloped areas along northern and eastern parts of the Mission River and its estuary also fall within Council's jurisdiction. The closest major centre is Weipa, located approximately 5.5 km north-east of Napranum.



OUR STORY

Napranum is the traditional and spiritual homeland of the Alngith people who have cared for the land and sea of this ancient landscape for thousands of years.

Napranum is the site of the former Weipa Mission, and its name was formed from two languages of the local area: 'Nap' means 'meeting place' in the Trotj language and 'pranum' is a Thaynakwith word meaning 'meeting of people', therefore 'Napranum' means 'meeting place of the people.'

Traditional Owner groups that occupy lands surrounding Napranum include:

- The Alngith people of the Weipa Peninsula, between the Embley and Mission Rivers
- The Thaynakwith of the northern side of the Mission River
- The Mamngaith of the Mbang area (Urquhart Point)
- The Linngithigh of the middle southern side of the Embley River
- The Ndrra'ngith of the Hey River and Embley Rivers to the coast towards Pera Head
- The Araithingwum of the headwaters of the Hey River
- The Nggoth and Trotj of the south-east side of the Embley River and east of the Hey River
- The Anhathangayth of the upper Embley River
- The Mbiywum south-south-east of the upper Embley River extending towards the country now occupied by Merluna and Sudley (also known as York Downs) stations
- The Yinwum whose country extended from about Cox Creek back towards Moreton
- The Ndrwa'angayth people (sometimes spelt Ntran-ngit) of the Peppan area (near today's RAAF base).

For thousands of years, the Napranum coastline has been, and continues to be, integral to the livelihoods, customs and spiritual beliefs of the Aboriginal and Torres Strait Islander peoples, who maintain a strong connection to land and sea country. Many of our culturally significant areas are located close to, on, or within the beach and estuarine waterways and continued access to these areas is critical for community well-being.

Council acknowledges that the traditional knowledge systems and practices of First Nations People are a major resource for, and integral to, adapting to climate change. This Strategy seeks to integrate such knowledge with existing coastal practices and technical information to increase the effectiveness of coastal hazard adaptation.





OUR COASTAL LANDSCAPE

With over 125km of coastline, our coastal landscape is one of our most valuable natural assets. Sandy beaches, wetlands, estuarine waterways, mud flats, rocky outcrops and mangrove areas characterise much of our coastal zone, along with small residential settlements.

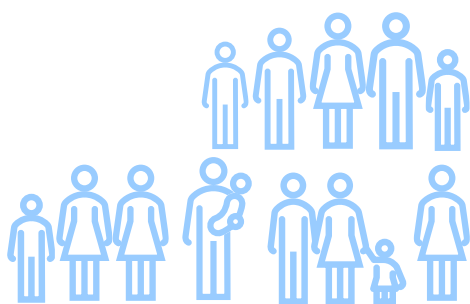
Our natural foreshores, beaches and coastal vegetation support important habitat areas for our native plants and animals. Napranum is home to over 1,550 species of native animals, plants and fungi including 824 native wildlife species, 15 rare or threatened plant species². and 19 rare or threatened animal species. Wetland and waterways such as the Mission River, Embley Creek, Hey River, Nomenade Creek and their connection to the coast are equally essential supporting large extents of protected ecosystems.

Approximately 275 km² (14%) of our region comprises wetland habitat including 130 km² of mangroves (6.5% of the total land area).

The coastal landscape and natural areas support a variety of places that hold special cultural, environmental and economic values to residents and visitors.

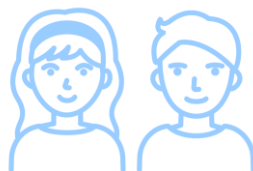
²Department of Environment and Science (2013), *Napranum Local Government Area — facts and maps, WetlandInfo*, accessed 8 September 2023. Available at: <https://wetlandinfo.des.qld.gov.au/wetlands/facts-maps/lga-napranum/>

COMMUNITY SNAPSHOT



883 PEOPLE IN 2021³

**RELATIVELY YOUNG
POPULATION**



**WITH A MEDIAN AGE OF
27 YEARS³**



81%

**POPULATION IDENTIFY AS
ABORIGINAL OR TORRES
STRAIT ISLANDER³**



-0.1%

**ANNUAL GROWTH RATE
OVER THE PAST 10 YEARS⁴**



3

BUSINESSES³



20%

**POPULATION
WAS BORN
OVERSEAS³**

The coastal landscape has cultural, social and economic significance for the local community who value the protection and sustainability of the Land and Sea Country. Important environmental features of the Napranum coastline include:

- diverse coastal landscapes including sandy beaches and estuaries;
- highly ecologically significant freshwater and intertidal wetlands, seagrass and mangrove forests; endangered or vulnerable wildlife who depend on the ocean and coastal zone for food, breeding and protection; and
- healthy coastal dune systems.

Locals and tourists alike value easy access to water-based activities and the natural, unspoiled environment that can be enjoyed in and around Napranum's numerous waterways and estuaries. Some of our favourite ways to use coastal places are boating and fishing and foreshore recreational activities such as casually socializing, camping and four-wheel driving. As a result, coastal dependent infrastructure, particularly supporting recreational activities, is important for maintaining our community's way of life.

Our response to coastal hazards today will have a direct impact on lifestyle opportunities and attractiveness of visiting or living on the coast in the future.



³ Australian Bureau of Statistics (2021) *Quick Stats: Napranum (LGA35670)*

⁴ Queensland Government Statistician's Office, Queensland Treasury (2023), *Queensland Regional Profiles: Resident Profile: Napranum (S) Local Government Area*. Available at <https://statistics.qgso.qld.gov.au/qld-regional-profiles>

4.0 BUILDING RESILIENCE TOGETHER

Looking after our coast now and into the future is a shared responsibility which involves everyone – local, Queensland and Australian governments, Traditional Owners, business owners, property owners, residents and the broader community.

To inform the Strategy, we reached out to the community and key stakeholder groups through a range of engagement activities. This process allowed us to receive key feedback and understand our community's coastal values, priorities and concerns.

Engagement with the community and key stakeholders highlights that our coastal environment underpins a diversity of environmental, social and cultural values, and supports lifestyle and recreational opportunities unique to Napranum. Easy access to the coast for recreational activities including boating, camping, four-wheel driving and fishing is an extremely important lifestyle value for residents and visitors alike. We appreciate the natural coastal environment and connecting with nature.

All input and feedback received has assisted in shaping the direction of technical investigations underpinning the Strategy and the identification of priority adaptation actions for Napranum.

OUR COASTAL VALUES:



Protecting **beaches and vegetated foreshore** areas



Respecting and protecting **cultural connections** to land



Turtle nesting sites and mango trees along the foreshore



Recreational activities including camping, fishing, boating and recreational driving, particularly at Pennefather Beach



Providing **continued access** to coastal areas (including vehicles)

COMMUNITY VALUES ENGAGEMENT

FEBRUARY 2021



2 conversations with community groups



4 meetings with Traditional Owner/Indigenous interest groups



7 survey responses

ADAPTATION APPROACHES ENGAGEMENT

NOVEMBER 2021



25 people engaged at pop up



44 comments recorded at pop up activity



6 Targeted conversations with key stakeholder groups



1 social media post

FEEDBACK ON DRAFT COASTAL ADAPTATION PLAN

NOVEMBER 2023



29 people engaged at pop up



Project update sent to **6** key stakeholders



1 social media post

OUR COASTAL VULNERABILITIES:

Our community has experienced the following changes to coastal areas:

- Need for better infrastructure and designated camping areas to minimise impacts on natural environment (littering)
- Dredging and barges causing increased erosion and changes in beach settlement
- Erosion from improperly managed beach access
- Recreational driving impacts on animal habitat and nesting areas, particularly at Pennefather
- Coastal and stormwater erosion
- Removal or uprooting of coastal vegetation (mangroves)

5.0 UNDERSTANDING THE RISK FROM COASTAL HAZARDS

We all have special places, features, qualities or memories of the coast that are important to us for different reasons – social, economic environmental, cultural or personal. These elements of the coast are at risk when coastal hazards threaten to impact them. Risks can be either direct (e.g. road inundation) or indirect (e.g. inundation that isolates a community) and can be assessed across a range from low to extreme risk.

To identify current and future risks along our coast, we need to first understand the impacts of coastal hazards, including the areas affected and what the impacts are on our special places and important infrastructure. Coastal hazard modelling was used to assess the risk resulting from coastal hazards to our assets, key community values and our natural and urban areas over time. To determine risk, we followed the process outlined below:

1

Modelling exposure to coastal hazards

Updating Council's existing coastal hazard mapping based on the best available science.

2

Identifying assets and community values

Identifying land and assets along our coast that are exposed to coastal hazard and engaging with the community to understand what values (social, economic, environmental) should be considered as part of the strategy.

3

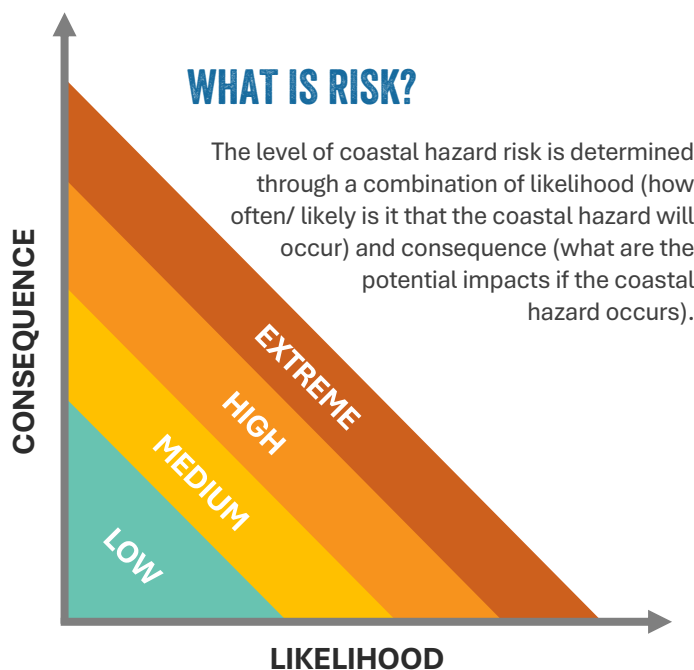
Calculating and mapping risk

Calculating the level of risk (low, medium, high, extreme) that coastal hazards pose to our community assets and values now and in the future.

4

Evaluating risk

Understanding what a tolerable/ acceptable level of risk is and if there are any controls or mitigating actions currently in place to minimise risk.



RISK ASSESSMENT PROCESS

The outcome sought by risk-based planning is not to diminish development potential in coastal hazard risk areas, but rather, to better inform the planning process and create clear visibility on locations across the coast with lower and higher exposure to coastal hazard risks. This ensures:

- more vulnerable or sensitive land uses are located in less hazardous or lower risk areas;
- a proactive long-term approach for maintaining or reducing the exposure of existing and future coastal settlements to existing and future unacceptable risks;
- the resilient design of infrastructure and development in appropriate locations where the risk can be managed to an acceptable level; and
- a coordinated response with emergency management and other coastal hazard adaptation approaches.

Being aware of an increasing risk profile means we have time to prepare, respond and implement adaptation actions now and over the coming decades to mitigate reactive responses and avoid impacts before they occur.



WHAT AREAS AND ASSETS ARE AT RISK FROM COASTAL HAZARDS?

Coastal hazards have the potential to negatively impact the community, infrastructure, essential services and our lifestyle today and long into the future.

Investigations have identified that impacts from coastal hazards in Napranum are limited in the built-up or main “settlement” area of our community.

Our natural and open space areas - like our riverfront, turtle and shorebird nesting areas, and beach and dune areas will become more exposed to coastal erosion and storm tide inundation over time.

Other key assets increasingly exposed to coastal hazards include:

- Traditional lands and culturally important areas such as outstation sites at Red Beach and Bouchat
- Key community infrastructure such as the Jessica Point boat ramp
- Beachfront parkland containing the coastal walkway, Napranum Splash Park, picnic shelters and culturally important places.

A technical risk assessment for Napranum identified the following special places and important infrastructure at high or very high risk at present day, by 2050 or at 2100.

OUR ASSETS AT RISK

What could be affected?



PENNEFATHER BEACH AND RIVER

Inundation and erosion may limit beach access and damage nesting areas in and around Pennefather Beach. Impacts will be exacerbated if vehicles drive on dune areas due to a lack of alternative beach access.

Assets at risk:



RED BEACH AND BOUCHAT OUTSTATION SITES

Traditional lands, residences, cultural sites and their access may be regularly inundated and impacted by all hazards.

Assets at risk:



NAPRANUM BEACH (NORTH)

Very important cultural sites are located within hazard extents. Foreshore parkland including the splash park, basketball court and coastal walking path north of the boat ramp are exposed to coastal hazards particularly from 2050 onwards.

Assets at risk:



Pennefather Beach & River

Red Beach and Bouchat Beach

Napranum settlement area

Napranum Beach (north)

Jessica Point boat ramp

Napranum Beach (south)

JESSICA POINT BOAT RAMP

The Jessica Point boat ramp and access road (Ooningan Street) are extremely vulnerable to coastal hazard risks now and in the future.

Assets at risk:



NAPRANUM BEACH (SOUTH)

Erosion and sea level rise (2100) may have temporary and permanent impacts on community access to this area.

Assets at risk:



5.0 OUR STRATEGY FOR BUILDING A RESILIENT COAST

Across Australia and internationally, coastal land managers are taking a strategic approach to managing the risk of coastal hazards and enhancing the resilience of our coastal zones. A tailored approach has been developed to guide decision making on identifying and selecting adaptation responses across Napranum coastal areas.

Adaptation principles, whole of coast actions and local adaptation pathways have been developed to guide how we manage the risks from coastal hazards and enhance the resilience of our coastal areas and community. This is essential to ensure our communities today, as well as future generations, can continue to enjoy our coast and valued lifestyle.

OUR STRATEGY IS MADE UP OF THE FOLLOWING COMPONENTS:



ADAPTATION PRINCIPLES AND HIERARCHY



ADAPTATION APPROACHES



WHOLE OF COAST ADAPTATION ACTIONS



LOCAL ADAPTATION PATHWAYS



IMPLEMENTATION PLAN

OUR ADAPTATION PRINCIPLES

The development of this strategy and its implementation are underpinned by a set of principles and a hierarchy of preferred broad types of adaptation approaches (“adaptation hierarchy”).

These principles have been developed based on best practice coastal hazard risk management, technical findings and community input which provided key insight into what types of adaptation responses the community thinks are acceptable to manage the projected impacts of coastal hazards.

The principles provide a foundation for considering the suitability of different adaptation actions and supporting consistent decision making for the implementation of the Strategy. The principles also establish Council’s key responsibilities and the limits of these responsibilities.

THE PRINCIPLES UNDERPINNING ADAPTATION IN NAPRANUM ARE:

1

Adaptation pathways retain and enhance the unique and iconic coastal identity, qualities and character of the western Cape coastal region.

5

Physical adaptation responses compliment their surroundings and achieve multiple public benefits. Fitting in with ‘place’ is important.

2

We build community awareness of risk and promote partnerships and collective action by involving stakeholders and our community when implementing adaptation pathways.

6

Future investment in community assets and infrastructure is ‘risk informed’ – we avoid investing in long design life or costly community assets and infrastructure in higher risk areas and transition our priority assets out of higher risk areas.

3

We prioritise adaptation responses in higher risk areas to keep people safe and limit future land use exposure in areas of unacceptable or intolerable risk.

7

Adaptation options comply with environmental regulations to protect natural coastal processes, ecological processes and wildlife habitats.

4

We prioritise natural and soft solutions over hard engineering solutions where practicable.

OUR ADAPTATION HIERARCHY

There are many actions we can use to respond to coastal hazards, ranging from natural solutions like revegetation, to engineered solutions like seawalls, to relocating assets out of vulnerable areas.

Together with the Adaptation Principles, our Adaptation Hierarchy helps us to choose which action/s will work best at a particular place or point in time. The most appropriate adaptation action is based on the values to be protected in a certain location as well as the social, environmental and economic costs of the options.

Overall, consultation feedback indicated a stronger preference for more natural solutions (i.e. foreshore and mangrove revegetation) or planning responses over hard engineering solutions and last line of defence structures (like seawalls and groynes). As a result, natural responses which enhance the resilience of at-risk coastal areas will be prioritised in the short term over hard structures.

OUR ADAPTATION HIERARCHY



The hierarchy of preferred adaptation approaches, in order of highest to lowest preference is:



1. AVOID

Avoid placing new development in areas affected by coastal hazards.



2. RESTORE AND ENHANCE

Reinstate and enhance degraded natural coastal ecosystems – like stabilizing and revegetating coastal dunes and wetlands.



3. ACCOMMODATE

Maintain existing land uses but make existing and future buildings and infrastructure more resilient – build things 'higher and stronger' – and evacuation planning.



4. RETREAT

Withdraw, relocate or abandon existing buildings, structures and infrastructure in high-risk areas; let coastal ecosystems expand landward as sea levels rise.



5. PROTECT

Protect priority shorelines, infrastructure, and buildings from erosion and inundation through soft (beach nourishment) or hard (structures like seawalls or groynes) engineering solutions.

OUR ADAPTATION PATHWAYS APPROACH

Pinpointing the timing of when coastal hazards may occur, or the rate of coastal change can be challenging. Adaptation planning using the pathways approach supports flexibility by allowing options to be adapted to changes in circumstances (e.g. new technology and knowledge) and community values, aspirations and risk appetite over time ⁵.

Adaptation pathways involve a sequence of adaptation actions (or combination of actions) to be implemented over time. When an adaptation action is implemented, it is used until it is no longer effective or viable to manage the risk or extent of change, at which time another option is used. This is called a “trigger point.”

Due to the deep uncertainty and complexity associated with climate change, it is unlikely that only one adaptation action will be sufficient to respond to coastal hazard risk and exposure now and in the future. An adaptation pathway approach allows decision makers to keep their options open, with the ability to change the timing of planned actions based on active monitoring of coastal hazard risks and associated triggers. This allows adaptation to be responsive and iterative, avoiding premature decisions that have the potential to prevent Council from implementing other, more effective options in the future.

The Strategy includes a range of adaptation actions that should be implemented across the whole coast, as well as some more specific, local adaptation pathways for key areas to support community values and address local risks.

Adaptation actions and local adaptation pathways have been prepared based on short, medium and long-term priorities which are linked to projected sea level rise and indicative coastal hazard extent mapping for three planning timeframes – 2020 (present day), 2050 (0.3m sea level rise) and 2100 (0.8m sea level rise).

Local adaptation pathways and their associated actions will continue to be refined based on the best available science and community attitudes. Key factors we must consider when responding to coastal hazards and selecting suitable adaptation actions include:



MAXIMISING BENEFITS

Protecting what the community values about the coast and maximizing community benefit.



COST

Adaptation can be very expensive. We need to focus on low-cost solutions (like revegetation) wherever we can and be strategic about where and when we invest in high-cost shoreline protection.



TIMING

Identifying what needs protection now and in the future.



PROTECTING SPECIAL PLACES & ASSETS

Protecting important assets should not be at the expense of what we value and love.



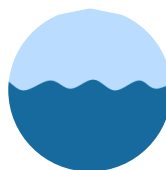
TRIGGER POINTS

“Trigger points” are linked to a change in hazard exposure or associated risk. The implementation of actions relies on regular monitoring of coastal areas to understand when trigger points are approaching or have been reached. Trigger points can also be used in locations where hazards are not yet occurring but are likely to occur in the future.



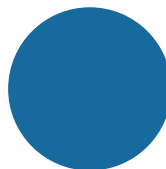
SHORT TERM

Current coastal hazard risk
(0-0.3m sea level rise)



MEDIUM TERM

Coastal hazard risks around 2050
(0.3 m sea level rise)



LONG TERM

Coastal hazard risks around 2100
(0.8m sea level rise)

⁵ NCCARF (2017), CoastAdapt: *Climate change and sea-level rise based on observed data*. Available at: <https://coastadapt.com.au/>

STRATEGIC ADAPTATION APPROACHES

Four adaptation approaches have been developed for Napranum. Each approach contains a suite of adaptation actions which form the basis for our response to coastal hazard risk across different areas of our coast (local adaptation pathways).

1 Maintain and improve

The Maintain and Improve approach involves the continued use of a place or asset where the current coastal hazard risk profile is low. Actions underpinning this approach often include activities and programs which are already being undertaken such as community awareness raising, active management of natural areas and ecosystems and emergency response. Key to all approaches is regular monitoring to understand the extent of coastal change at the local level, and to identify when additional actions should be implemented.

While 'Maintain' actions do not always directly reduce or remove the risk of coastal hazards, they are important to build and strengthen the natural resilience of our coast and community over time. If, over time, the risk profile is observed to increase (as indicated by local trigger points), then the adaptation response may shift to **modify**.

2 Avoid

This approach seeks to avoid placing new development or assets in areas affected by coastal hazards. This may be achieved through appropriate land use planning and asset management. The preference is to ensure land uses in coastal hazard areas reflect the level of risk for coastal hazard impacts, while also being a use that maximises the economic, social, and environmental value to the region.

Any new development / infrastructure that is placed in coastal hazard areas will need to align with the *State Planning Policy 2017* and relevant approval requirements including necessary mitigation measures.

3 Modify

The Modify approach uses physical measures to accommodate and mitigate against coastal hazard risks to an acceptable or tolerable level. These actions include various engineering (soft and hard) options and hazard resilient design measures to protect or upgrade assets and reduce the impacts of coastal hazards.

If, over time, monitoring indicates the risk profile is increasing (as indicated by local trigger levels), and the modify option is no longer effective or efficient to accommodate or mitigate coastal hazards, then the adaptation response may shift to **planned transition**.

4 Planned Transition

The Planned Transition approach involves making a strategic decision to relocate assets from specific areas that have very high or intolerable exposure to coastal hazards and/or mitigation becomes infeasible (due to economic or other factors). This approach is intended to facilitate change in how we use and manage land in high or extreme risk areas and may involve a range of policy responses to reflect more 'risk-appropriate' land uses in hazard areas.

ADAPTATION ACTIONS

An adaptation action is a recommended response to assist in mitigating the impacts from coastal hazards. A range of adaptation actions have been developed to support a strategic approach to coastal hazard adaptation across the Napranum coast and to achieve the goals and aspirations of the community. Adaptation actions have been developed for the whole of Napranum, as well as some specific coastal locations to support key community values and adequately address the local risk profile.

COASTAL HAZARD ADAPTATION				
NAPRANUM-WIDE ADAPTATION ACTIONS			LOCAL ADAPTATION PATHWAYS	
Adaptation response	Maintain and Improve	Avoid	Modify	Planned Transition
Adaptation options	Monitoring and planning initiatives to enhance adaptive capacity		Full suite of adaptation actions	
Timing	All timeframes		Refer to adaptation pathways	

A program of priority actions has been informed by an initial screening of options, as well as a detailed cost-benefit analysis. Specific adaptation actions we have explored with our community and stakeholders include:

1 Maintain and improve

Maintain and Improve adaptation actions apply to all coastal areas within Napranum. These actions often encompass “common sense” measures, some of which are already being undertaken by Council, the community and other organisations. Maintain and Improve adaptation actions are fundamental to the success of the Strategy and underpin the implementation of all adaptation pathways.



Monitoring

Monitoring allows us to observe how coastal areas and their risk profiles change over time. This helps to determine if our current adaptation pathway is appropriate and effective or needs adjusting (i.e. a trigger point has been reached and an additional or alternative adaptation action is required).

Monitoring also improves our understanding of coastal processes and coastal hazards over time and can be used to support hazard and risk refinement. It covers a wide variety of activities and may involve examining the beach profile and conditions, mangrove/ dune vegetation extents and recession rates, dune stability, frequency of damage to beach access and other infrastructure, asset condition, frequency of tidal inundation, number of properties impacted by hazard events and habitat health, connectivity and availability etc.



Community awareness, education and partnerships

Building community understanding and awareness of coastal hazards and adaptation is essential for the successful implementation of this Strategy. Developing opportunities for community involvement in programs and activities which promote climate change adaptation, such as dune and wetland restoration and monitoring activities, can enhance stewardship of the coastline and assist in capacity building, while benefiting from traditional knowledge. It can also improve the community’s resilience by empowering them to make informed choices about where and what to invest in.

Community awareness requires strong relationships between all levels of government, Traditional Owners, business, industry and the community, as well as ongoing education, information and messaging about coastal hazards, risks, monitoring and adaptation. It can be promoted through targeted coastal hazard campaigns and communications materials including signage, events, newsletters and social media.



Enhance coastline and habitat resilience

Supporting and strengthening our natural coastal processes and ecosystems including native habitats, dune and wetlands areas can improve the protective function of coastal landforms and vegetation and assist in mitigating the risks associated with coastal hazards. Enhancing coastline resilience can also improve amenity and create opportunities to involve and educate the community to naturally manage coastal hazard risks and support monitoring activities. Using nature-based responses is preferred over hard engineering works, but may require some hard engineering support for establishment.

Ecosystem management can be achieved through habitat management programs such as dune revegetation and planting within and around wetlands and waterways. Particular consideration will be given to beach access management (discouraging unnecessary or informal pedestrian and vehicle access and formalising appropriate public paths) and the protection and management of turtle and shoreline bird nesting areas.



Emergency response (e.g. evacuation planning)

Monitoring and early warning systems, including evacuation strategies and community engagement, are essential mechanisms which can assist in keeping the community safe. Council, State Emergency Service, volunteers and local disaster management groups play a lead role in our emergency response. Council's Disaster Management Plan provides information on preparation, response and recovery to potential coastal hazard events.

2 Avoid

Avoid adaptation actions seek to prevent the development of new 'high value' or 'long-life' assets into areas at high risks from coastal hazards.



Planning responses

Implementing land use planning responses that are appropriate for the level of risk in coastal hazard areas enables informed, risk-based decision making. Land use and development policy, zoning and development controls will be used to maintain the current risk profile in areas of acceptable and tolerable risk. Likewise, in coastal hazard areas where the risk is high or intolerable, land use planning tools will be used to reduce or avoid increasing the future risk exposure of people, buildings, community facilities and infrastructure.

Planning responses will build on current planning scheme requirements and may also involve the use of development controls such as coastal setbacks and planning processes such as master planning or trigger-based development approvals.

Particular focus will be on avoiding locating future vulnerable uses and people (e.g. new homes or accommodation) and reducing the future intensity of uses within high risk coastal hazard areas.



Hazard avoidance for new and replacement community infrastructure

Over time, Council or community infrastructure may come to the end of its design life (regardless of exposure to coastal hazard) and need to be replaced or upgraded to meet community needs.

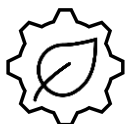
Where this happens, it is important that care is taken to avoid locating new important community infrastructure with a long design life in hazard areas. This adaptation action may involve progressively locating the footprint of replacement infrastructure further landward (if appropriate or technically possible).

While planning a new asset, asset owners should consider its design life and location in relation to coastal hazards. Monitoring will be important to determine when an asset's relocation may be socially and economically acceptable.

3 Modify

Modify adaptation actions actively seek to alter our coastal environment through a range of engineering (soft and hard) options and hazard resilient design measures to protect assets and reduce coastal hazard risks affecting people and property.

While modify adaptation actions have the ability to reduce risk, it is important we think about the potential impacts or “flow on effects” these actions may have on amenity, beach access and ecological processes.



Coastal engineering (soft)

Soft engineering solutions can assist in protecting our beaches, foreshores, and riverfront areas from coastal hazards. Examples include:

- Dune construction and restoration – improving the function of existing coastal dunes or artificially constructing new dunes using imported sand from inactive sand sources
- Beach nourishment – maintaining existing beaches and dunes by manually placing extra sand on the beach from inactive sand sources
- Beach scraping – stabilising dunes and minimising further slumping by manually pushing of a thin layer of sand from the beach face (above high tide) towards the dunes (usually immediately following storm erosion).

These actions are intended to complement the existing function of our natural coastal areas and should only be implemented where and when it is environmentally appropriate to do so.



Coastal engineering (hard)

Hard engineering solutions can assist in protecting areas adjacent to foreshores and creek banks from coastal hazards. Examples include:

- Seawalls / scour protection – a rock or concrete wall or embankment constructed parallel to the beach or along the banks of a waterway to stop coastal erosion and limit inundation.
- Levees / dykes – an artificial barrier, often constructed of vegetation covered earth, to prevent inundation of landward areas.
- Groynes and artificial headlands – an artificial barrier constructed perpendicular to the beach to trap and hold beach sediments and increase beach width.
- Tide gates – permanent artificial barriers across narrow waterways to stop elevated water levels from moving to upstream areas.

Some of these approaches can be used in conjunction with ecosystem-based or soft-engineering responses.



Modify infrastructure and implement hazard resilient design

This action involves the continued use of our infrastructure, buildings and assets in areas where the coastal hazard risk is tolerable. Where any new or upgraded infrastructure or built assets are being developed, they should reflect hazard resilient design or be constructed to accommodate impacts.

Our key services such as our roads, water supply, electricity and telecommunications should be designed to remain operational during and after a coastal hazard event. This can be achieved by considering potential coastal hazards during the infrastructure design process and actions such as raising land levels, modifying drainage networks and building on piles to increase the height of building floor levels, reducing exposure to temporary inundation.

Asset management and maintenance decisions should be informed by a complete understanding of coastal hazard risks. Asset owners must consider implications for the design life and resilience of assets to coastal hazards.

4 Planned Transition

In some specific places, if the coastal hazard risk profile is very high, and/or mitigation becomes impractical (due to economic or other factors), a strategic decision may be made to relocate or reposition assets.

Planned transition is often a costly, last resort option. It may occur gradually over time or, in some cases, as a rapid action in response to a threshold trigger or event.



Relocate important infrastructure and assets at risk

Critical Council or community assets, infrastructure and buildings that are in coastal hazard areas may be relocated to lower-risk areas or outside of the coastal hazard area when they reach the end of their useful life or need significant renovation to improve resilience (if the asset has a long-life design).

Monitoring will be important to determine when relocation may be socially and economically acceptable.



Accept the risk and embrace coastal processes

Embracing coastal processes without further intervention may be the most viable option in some instances. This includes:

- Accepting the loss of land affected by coastal hazards on unprotected shorelines.
- Allowing coastal dunes and habitats to migrate landward without intervention and accept there may be damage to or loss of infrastructure.

NAPRANUM-WIDE ADAPTATION ACTIONS

This strategy includes a range of Napranum-wide adaptation actions which are relevant to all coastal areas and seek to build on existing coastal hazard mitigation mechanisms and regulation. These adaptation actions fall within the ‘**Maintain and Improve**’ and ‘**Avoid**’ responses and are intended to be implemented over the short to medium term and continued over the lifetime of the strategy. A monitoring program, as well as ongoing community education, will be fundamental to the implementation of all adaptation pathways.

Across Napranum, some key measures have already been implemented to manage present day coastal hazard risks and protect our coastal environment. These include, but are not limited to:

- land use planning responses embedded in the Napranum Aboriginal Shire Council Planning Scheme 2015 which seek to mitigate and avoid coastal hazard risks; and
- operational measures to manage negative human impacts on cultural areas or sensitive dune habitats in selected locations such as the banning of vehicles (including motorbikes, quad bikes and ATV’s) on Bouchat Beach.

Napranum-wide adaptation actions include:

NAPRANUM-WIDE ADAPTATION ACTIONS		TIMING BASED ON SEA LEVEL RISE		
		SHORT TERM 0M	MID TERM 0.3M	LONG TERM 0.8M
MAINTAIN AND IMPROVE				
	Monitoring			
	Community awareness, education and partnerships			
	Enhance coastline and habitat resilience			
	Emergency response (e.g. evacuation planning)			
AVOID				
	Hazard avoidance for new and replacement community infrastructure			
	Planning responses			



LOCAL ADAPTATION PATHWAYS

In addition to adaptation actions which apply to the whole of the Napranum coast, we have begun considering local adaptation pathways to support key community values, respond to the local risk profile and reflect best practice principles for coastal hazard risk management.

The actions seek to reflect that the community has a very strong connection to the land and sea interface, with many culturally important areas located close to, on or within the beach and estuarine waterways. Continued access to these areas is critical for community well-being.

The Strategy focuses on special places and important infrastructure including Pennefather Beach, Bouchat and Red Beach, Napranum North, Jessica Point Boat Ramp and Napranum South.

PENNEFATHER BEACH AND RIVER

On the open coast frontage of the Gulf of Carpentaria, Pennefather Beach is very popular for fishing, camping and beach driving. The beach and dune areas are all exposed to coastal hazards, along with various structures and known grave sites. Some of these sites of cultural significance are unmapped due to their sensitive nature and/or remote location.

At Pennefather Beach, coastal hazards affecting beach availability would be expected to increase the incidence of 4WD vehicles traversing sensitive dune systems. This then has flow on environmental impacts, as Pennefather Beach and Pennefather River are important nesting areas for Sea Turtles and shorebirds.

RED AND BOUCHAT BEACH OUTSTATION SITES

At Bouchat and Red Beach on the northern bank of Mission River estuary downstream of Andoom Bridge, several outstation sites with permanent residential occupancy by traditional owners have been and continue to be established.

NAPRANUM BEACH (NORTH)

At the main settlement area in Napranum, on the Embley River, very important cultural sites are located close to the coastline, particularly north of Jessica Point boat ramp. This includes birthing trees, where many community elders were born, and a grave with a memorial adjacent to the boat ramp. The birthing trees are in the vicinity of the original mission site – this area is also known to contain asbestos from the demolition of the former mission buildings.

Popular park infrastructure is also present in this area, with the coastal walkway, Napranum Splash Park, nearby picnic shelters and basketball court at risk from current and future hazards.

JESSICA POINT BOAT RAMP

Jessica Point contains the boat ramp servicing the Napranum community, which is accessed via Ooningan Street.

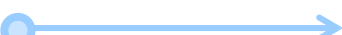
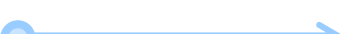
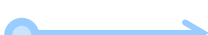
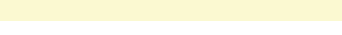
The ramp itself is protected by informally placed rock and has acted as a groyne along the broader shoreline. The ramp already facilitates salt water inundation onto Ooningan Street and consequently into adjacent park areas, and tidal inundation is projected to become more prevalent into the future, affecting more of the road network and parking areas.

NAPRANUM BEACH (SOUTH)

The beach south of the boat ramp is highly valued by the community for recreational, social and cultural reasons. In this location, fishing directly from the beach is a very popular activity and is often a driver of daily social and cultural connection.

LOCAL ADAPTATION ACTIONS

Napranum-wide adaptation actions will be implemented within each location, in addition to any location specific actions.

LOCAL ADAPTATION ACTIONS		TIMING BASED ON SEA LEVEL RISE		
		SHORT TERM 0M	MID TERM 0.3M	LONG TERM 0.8M
PENNEFATHER BEACH AND RIVER				
	Active dune and habitat management, along with beach access management (discourage unnecessary or informal access, formalise appropriate public paths and inspect and repair access after erosion)			
	Remove unauthorised buildings from beach and dune areas			
	Accept the risk – Allow dunes to recede without intervention and accept there will be some damage or loss to habitat			
RED AND BOUCHAT BEACH OUTSTATION SITES				
	Active dune and habitat management			
	Hazard resilient design for new buildings			
	Require new buildings to be located as far landward as practical			
	Relocate assets landward at end of life			
NAPRANUM BEACH (NORTH)				
	Active dune and habitat management			
	Contaminated site management to avoid exposure of contaminants			
	Low earth bunds to limit tidal inundation of parkland			
	Beach scraping and/or beach nourishment to defend against erosion, protect sites of cultural significance and maintain/improve beach amenity*			
	Relocate assets landward at end of life			
	Low-level bund seawall*			
JESSICA POINT BOAT RAMP				
	Raise road level			
	Adapt existing protection structures to offer higher levels of protection			
NAPRANUM BEACH (SOUTH)				
	Active dune and habitat management			
	Beach nourishment to defend against erosion, protect sites of cultural significance and maintain/improve beach amenity*			

*Options require further consideration and are subject to further detailed site investigations, business case, funding commitments, detailed design and statutory approvals. The lead up time is intended to be a trigger to provide sufficient time for further consideration and detailed investigations/funding commitments and approvals to be obtained.

LOCAL ADAPTATION ACTIONS

Adaptation actions

-  Enhance coastline and habitat resilience
-  Coastal engineering (soft)
-  Coastal engineering (hard)
-  Modify infrastructure and implement hazard resilient design
-  Accept the risk and embrace coastal processes
-  Relocate important infrastructure and assets at risk

PENNEFATHER BEACH



RED & BOUCHAT BEACH OUTSTATION SITES



NAPRANUM BEACH (NORTH)



JESSICA POINT BOAT RAMP



NAPRANUM BEACH (SOUTH)



NAPRANUM SETTLEMENT AREA

IMPLEMENTATION PLAN

A summary of implementation actions for Napranum-wide strategic adaptation responses is provided in the Table below. The implementation plan focuses on short term actions to be delivered over the next 5 to 10 years.

STRATEGIC ADAPTATION ACTION

INDICATIVE PRIORITY IMPLEMENTATION ACTIONS (TO BE IMPLEMENTED WITHIN 5-10 YEARS)

MAINTAIN AND IMPROVE



Monitoring

Monitoring is essential for improving our understanding of coastal hazards and how coastal areas and their risk profiles change over time. This helps to determine if our current adaptation pathway is appropriate and effective or our response needs adjusting (i.e. a trigger point has been reached and an additional or alternative adaptation action is required).

- Support the ongoing operation of the Nanum Wunghim Land and Sea Ranger program which undertakes beach monitoring and ensures sites of cultural significance are recorded and protected.
- In partnership with the Nanum Wunghim Land and Sea Ranger program, establish and initiate a formal beach monitoring program.
- Establish a photo monitoring program, led by the Nanum Wunghim Land and Sea Rangers to capture images of key sites and locations to assist in monitoring key changes across the coast (beach profile, mangrove/ dune vegetation extents).
- Source existing elevation and aerial imagery to further support coastal monitoring and analysis of changes to coastal environments over time.
- Work with Nanum Wunghim Land and Sea Rangers to document key measures for each cultural heritage site including spiritual/social value, archaeological value, physical condition, and protection measures.
- Develop protocols and a step-by-step procedure for when key culturally significant sites are exposed due to coastal processes.
- Work with the Nanum Wunghim Land and Sea Rangers to identify the location and condition of all key coastal habitats across the Napranum. Create a register to document the frequency and location of habitat management activities being undertaken.
- Connect to existing elevation and aerial imagery collection to support monitoring and reporting needed to inform adaptive management and the next planning scheme review*



Enhance coastline and habitat resilience

Supporting and strengthening our natural coastal processes and ecosystems including native habitats, dune and wetlands areas, can improve the protective function of coastal landforms and vegetation and assist in mitigating the risks associated with coastal hazards. Particular consideration will be given to beach access management (removing unnecessary or informal pedestrian and vehicle access and formalising appropriate public paths) and the protection and management of turtle and shoreline bird nesting areas.

- Continue to support the Nanum Wunghim Land and Sea Rangers active dune and habitat protection, maintenance and improvement program utilising Council, Traditional Owners and volunteer resources.
- Identify priority management areas and develop a Council endorsed plan for ecosystem management. The plan should focus on Pennefather Beach, Napranum Beach (North), Red Beach* and Bouchat Beach.*
- Continue to limit recreational driving in vulnerable areas, discourage unnecessary or informal pedestrian and vehicle access points and formalise appropriate public paths.

STRATEGIC ADAPTATION ACTION

INDICATIVE PRIORITY IMPLEMENTATION ACTIONS (TO BE IMPLEMENTED WITHIN 5-10 YEARS)



Emergency response (e.g. evacuation planning)

Early warning systems, including evacuation strategies and community engagement, are important mechanisms which can assist in keeping the community safe. Council, State Emergency Service, volunteers and local disaster management groups play a lead role in our emergency response and keeping the community safe. Council's Disaster Management Plan provides information on preparation, response and recovery to potential coastal hazard events.

- Review and update the Napranum Local Disaster Management Plan with updated coastal hazard mapping and embed risk outcomes in emergency management and response planning*
- Monitor frequency and nature of emergency management responses and call outs



Community awareness, education and partnerships

Building community understanding and awareness of coastal hazard adaptation is critical to the successful implementation of this Strategy. Being 'risk aware' can enhance stewardship of the coastline and assist in capacity building. It can also improve the community's resilience by empowering them to make informed choices about where and what to invest in.

Council will strongly advocate for collaboration and partnerships with other stakeholders and community to share information and responsibility in delivering adaptation actions.

- Develop a standing agenda item for Local Disaster Management Group (LDMG) meetings to discuss the findings and implementation of the CHAS as well as ongoing monitoring and reporting activities.
- Develop an engagement and communication plan, informed by Council's resources, budget and priority needs regarding information capture. The plan will facilitate knowledge sharing of hazards, adaptation and the role of coastal habitats and structure how information is shared between Council, external organisations and the community.
- Explore opportunities within Council to build internal capacity, understanding and awareness of coastal hazards, their impacts and implications for Council assets and operations.
- Identify new and existing networks to share and promote knowledge sharing and understanding of coastal hazard risks and adaptation – particularly with other similar nearby Councils such as Mapoon.
- Seek co-funding/resources for further initiatives through grants and stakeholder partnerships.
- Leverage from existing key stakeholder groups (Ranger Program, Traditional Owners, Council, research agencies and community) to form a coastal working group to collaboratively advise on the management of coastal hazards within Napranum Shire.*
- Investigate opportunities to develop a seed bank with involvement from Nanum Wunghim Land and Sea Rangers, local schools and Traditional Owners.*
- Continue to advance partnerships and collaboration with Traditional Owners to further consider needs and aspirations for Aboriginal and Torres Strait Islander People in coastal hazard adaptation.*
- Promote cross-sector partnerships and initiatives to enhance resilience and strategic adaptation for transport infrastructure, including boating infrastructure.*
- Promote resilient homes within the community.

STRATEGIC ADAPTATION ACTION

INDICATIVE PRIORITY IMPLEMENTATION ACTIONS (TO BE IMPLEMENTED WITHIN 5-10 YEARS)

AVOID



Hazard avoidance for new and replacement community infrastructure

Where the coastal hazard risk is tolerable, we can continue the ongoing use of infrastructure, buildings and assets.

Where any new or upgraded infrastructure or built assets are being developed, they should reflect hazard resilient design or be constructed to accommodate coastal hazard impacts.

- Review at-risk infrastructure based on current and future coastal hazard risks and embed risks into current asset management plans/Master Plan (this could include 'betterment' at critical asset refurbishment/renewal points).
- Advocate with Maritime Safety Queensland and utility providers on future service upgrades around Jessica Point with respect to coastal hazard impacts.
- Undertake a sand sourcing investigation to inform the feasibility of nourishment activities.



Planning and technical responses

Land use planning establishes certainty and clear expectations around development. Council will ensure its planning framework and land use controls only allow for risk appropriate land uses in hazard areas. Land use planning will build on current planning scheme requirements to reduce or avoid increasing the future risk and exposure of people, buildings, community facilities and infrastructure through the implementation of setbacks, hazard resilient design requirements and minimum floor planning levels.

- Integrate coastal hazard mapping and considerations into current and future planning schemes and all strategic planning processes to inform strategic land use planning.
- Work with State Government to obtain recognition of the erosion hazards assessed in this document as declared Erosion Prone Areas.
- Consider updated hazard mapping and risk assessment outcomes when deciding on new land use and development in hazard areas as part of the development assessment process.
- Continue engagement with Western Cape Communities Trust (WACCA) to ensure native title rights and interests are appropriately reflected in development decisions and approval conditions.

* Collaboration with other agencies and organisations required for implementation

WHAT'S NEXT?

GOVERNANCE

Everyone has a role to play in maintaining and developing a resilient coastal community. While Council is primarily responsible for implementing adaptation actions relating to Council-managed public infrastructure and assets, successful adaptation will require collaboration and partnerships between Council, Federal and State Government agencies, Traditional Custodians, businesses, community organisations, private landowners and residents.

- Council's ongoing role as the Strategy facilitator will involve informing, observing, planning and acting on coastal hazard management by:
- Data gathering and undertaking on-the-ground monitoring of areas affected by coastal hazards to understand changes and inform the implementation of adaptation options.
- Monitoring Council owned and managed assets affected by coastal hazards as part of operational management programs.
- Informing the community through information sharing and education.
- Updating the Napranum Aboriginal Shire Planning Scheme to reflect the outcomes of the Coastal Hazard Adaptation Strategy and coastal hazard mapping which will provide policy guidance and planning controls for land use and development.
- Providing resilient community infrastructure and implementing adaptation actions to protect, maintain and manage Council owned land, assets and infrastructure.

It is important to note that Council is not responsible for managing coastal hazard impacts on areas not owned or managed by Council or non-Council owned public assets or property. Asset owners/entities are responsible for maintaining their assets in the context of relevant State and Council policy and statutory requirements.

IMPLEMENTATION

An implementation plan will be prepared to guide how Council will embed the Strategy across Council business areas, programs and processes. The implementation plan will provide details on:

- Council plans, policies, strategies, and processes to be updated or created to support action delivery.
- Indicative timeframes for delivery of whole of coast and locality-based actions
- Governance, processes, and resourcing.
- Monitoring and evaluation approaches.
- Partnership and collaboration opportunities with the community, stakeholders, other levels of government and external infrastructure providers.

REVIEW AND UPDATE

This Strategy will be regularly reviewed to inform land use and infrastructure planning and ensure technical information remains up to date. The strategy review process should consider:

- The success of actions delivered to date is based on factors such as the reduction and management of coastal hazard risk and community and stakeholder awareness, feedback and attitudes.
- New information and knowledge about climate change and coastal hazard risks including updated technical information (coastal hazard modelling, risk assessment, monitoring data or changes to coastal hazard indicators).
- Updates to State and/or Federal legislation, planning and policy frameworks relating to coastal hazards and their management



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