

EXECUTIVE SUMMARY



Cairns
REGIONAL COUNCIL

our cairns coast

ADAPTING FOR THE FUTURE

COASTAL HAZARD ADAPTATION STRATEGY



why we need a strategy

Cairns Regional Council's *Our Cairns Coast: Adapting for the Future* (OCC Strategy) has been developed to better understand coastal hazards and how they might impact our coastal environments, lifestyle and communities now and into the future. The strategy will provide direction and key priority actions for Council, stakeholders and the community to proactively plan, prepare and respond to coastal hazard risks over time.

With over 126 kilometres of coastline, islands, coastal localities and riverfront communities, the Cairns coast underpins the identity, lifestyle and livelihoods for many Cairns people and businesses. The coast is important to the traditions and spiritual beliefs of First Peoples. Many of the city's most important assets and services are located in our coastal strip, including the port, airport and hospitals, which are integral to the economy, wellbeing and connectivity of our region.



The OCC Strategy sets the direction and key priority actions for Council, stakeholders and our communities to proactively plan, prepare and respond to coastal hazard risks over time.

THE COASTAL HAZARDS WE ARE ADDRESSING IN THE OCC STRATEGY



Coastal erosion - loss of land or removal of beach or dunes by waves, wind, currents, water flows or permanent inundation from sea level rise. Coastal erosion can be short-term or long-term and is influenced by changing climate conditions, sand supply and human activities.



Storm-tide inundation - temporary inundation of land by abnormally high ocean levels caused by cyclones and severe



Sea level rise - increase in sea level caused by global warming due to climate change, leading to the periodic or permanent loss of land and sea.



This strategy uses the Queensland Government mandated sea level rise projection of 0.8m at 2100.

The impact of these coastal hazards will vary in different areas but are predicted to increase over time with future climate change. With this strategy, Council is taking action to:

- plan and adapt to these challenges
- reduce our future exposure
- strengthen the resilience of our communities and
- protect the precious and unique coastal environments upon which we rely.

our vision

We work together with our communities and nature to adapt to a changing climate. We are leaders in innovation in the management of coastal hazards and thrive in our coastal environments now and into the future

We will achieve this by:

- Prioritising our natural environments and their ecosystems and using nature to protect and restore.
- Plan for smart solutions and infrastructure in collaboration with partners.
- Build a resilient, adaptable and informed community.
- Ensure the future resilience of our economies.

developing the strategy

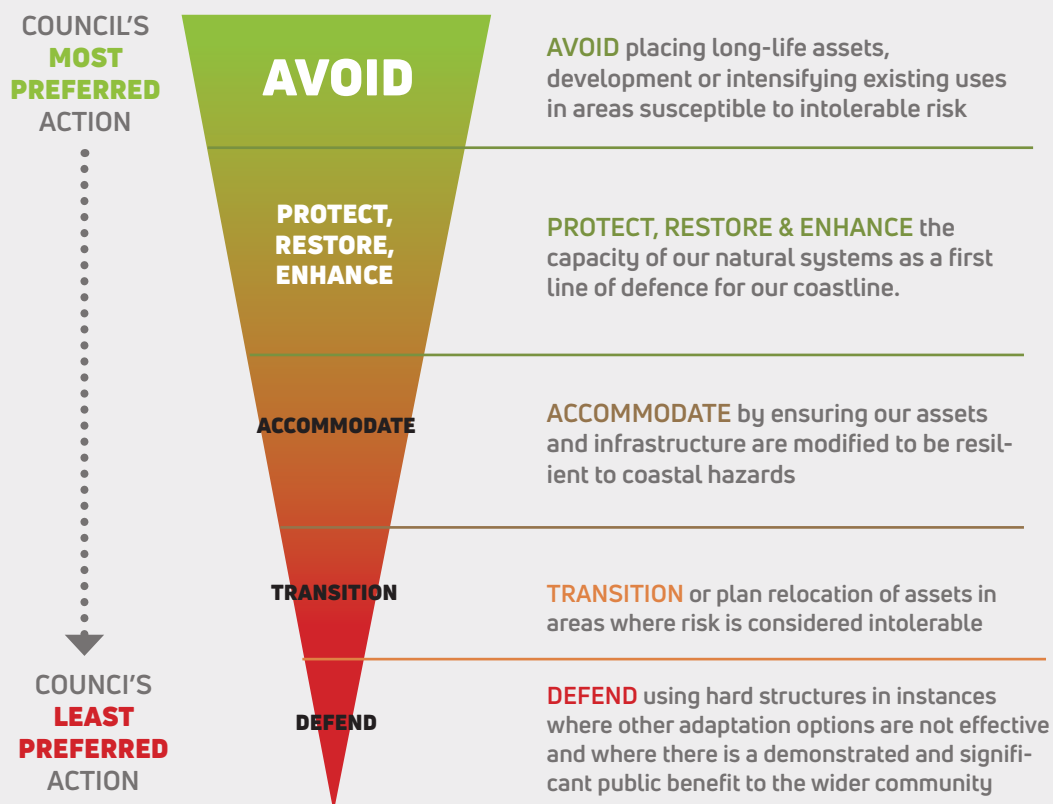
In developing the OCC Strategy, we have drawn on extensive community consultation, technical mapping and expert cultural and scientific advice. This engagement and research assisted in understanding what the community values about the coast, and in identifying 588 'priority assets' in at-risk coastal areas.



purpose of the our cairns coast strategy

- Identify existing and future coastal hazard risks out to 2100 resulting from storm tide inundation, coastal erosion and sea level rise inundation, including consideration of climate change;
- Inform decision making and actions in the short, medium and long term about the location, design and management of public infrastructure, community and cultural assets in our coastal areas;
- Inform strategic land use planning and policy;
- Inform and guide the protection and management of our natural environment, areas of ecological significance and places of cultural importance;
- Encourage sharing of information, partnerships and collaborations across the community in caring for the Cairns coast and progressing adaptation actions.
- Position Cairns to continue to be the business, tourism and services hub of Far North Queensland and ensure it reputation as the world's best place to engage with nature, thereby providing confidence to investors and tourists.

FIG 1: COUNCIL'S ADAPTATION HIERARCHY



calculating the risks to our coast

We have prepared new hazard mapping that displays the expected impact of coastal hazards to 2100. The impact of erosion, and cyclonic and non-cyclonic storm tide inundation is charted according to predicted sea level rise for the following time periods:

- short-term (present day to a predicted

- sea level rise of 0.3 metres)
- medium-term (based on predicted sea level rise of 0.3-0.5 metres around 2040 to 2060)
- and long-term (based on predicted sea level rise of 0.6-0.8 metres around 2080 and beyond).

Technical studies have been used to

assess coastal hazard risks and outline adaptation options for the whole of the Cairns region, as well as risks specific to 14 different localities of Cairns. These studies focussed on priority natural areas and community and public assets (e.g. foreshore parks, roads).

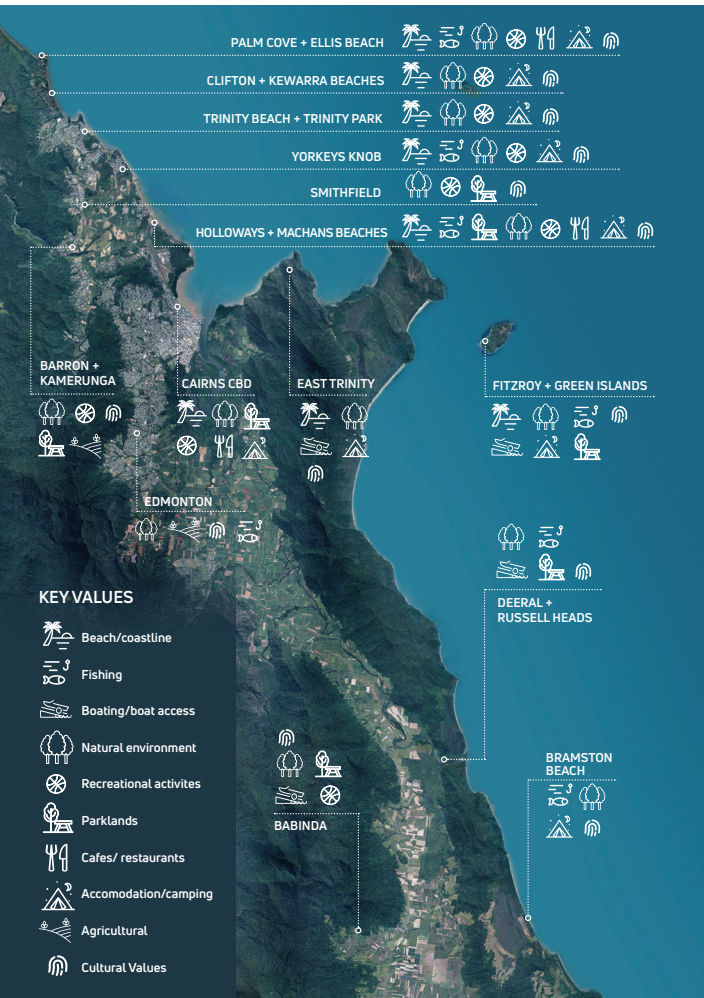
PREDICTED IMPACTS IN THE CAIRNS REGION

Under current climate conditions less than 1% of our regions urban areas and 2% of other areas are affected by coastal hazards. Storm-tide inundation and sea level rise are the dominant coastal hazards affecting our region. These impacts are proposed to increase over time to the extents shown below.

BASED ON A 0.8M RISE IN SEA LEVELS

	Coastal erosion	Sea-level rise	Storm-tide inundation
Industrial areas	<1% (0.4 ha)	18% (252 ha)	25% (335 ha)
Retail and commercial areas	<1% (2 ha)	23% (81 ha)	67% (171 ha)
Tourism areas	3% (8 ha)	24% (44 ha)	40% (65 ha)

Being aware of an increasing risk profile means we have time to prepare, respond and implement adaptation actions between now and over the coming decades to mitigate the step-change and avoid impacts before it occurs.



Each coastal community has varying exposure to coastal hazards and will be impacted in different ways. Detailed technical studies, mapping and adaptation planning has been completed for 14 localities in Cairns.

- Palm Cove and Ellis Beach
- Clifton Beach and Kewarra Beach
- Trinity Beach and Trinity Park
- Smithfield
- Yorkeys Knob
- Holloways Beach and Machans Beach
- Barron and Kamerunga
- Cairns city and inner suburbs
- Edmonton
- East Trinity
- Deeral and Russell Heads
- Babinda
- Bramston Beach
- Fitzroy Island and Green Island

UNDERSTAND YOUR LOCAL AREA

Visit the Our Cairns Coast webpage to access locality specific adaptation pathways. These maps and technical studies provide local guidance about which coastal assets are at risk and future actions.

WANT MORE INFORMATION?

To read the draft Our Cairns Coast Strategy or find out more about the prediction for your area, visit the Council webpage:

cairns.qld.gov.au/ourcairnscoast

what will we do about managing coastal hazards?

We have many options to respond to coastal hazards, ranging from revegetation and other ecological approaches, to engineering solutions like seawalls, right through to transitioning and relocating assets. To decide which options work best at which times and places, we are using the ‘adaptation hierarchy’ (see Fig 1) which favours protection, restoration and avoidance tactics as a first approach in adapting to coastal hazards.

We have identified 10 key actions and approaches that will be needed to manage and protect our coast into the future. These actions will assist us to maintain and improve, modify, and plan for transition as needed on our coast when sea level rises. The OCC Strategy is our guide for deciding which approaches are needed at which times and in which areas.

MAINTAIN & IMPROVE

MONITOR

Undertake monitoring to observe coastal changes and determine if trigger points are being reached for the implementation of adaptation actions.

HABITAT MANAGEMENT

Support and strengthen natural coastal habitats, dune processes and protect and restore degraded wetland habitat through habitat management programs such as planting vegetation on dunes and within and around wetlands and waterways.

COMMUNITY AWARENESS & EDUCATION

Build community understanding, awareness and resilience for coastal hazard risk adaptation by providing ongoing information and messaging about coastal hazards, risks, monitoring and adaptation actions.

EMERGENCY RESPONSE

Emergency management procedures should be in place and updated to consider future climate change related scenarios. These procedures include monitoring and warning systems, maintaining evacuation routes and community engagement.

PLANNING CONSIDERATIONS

Implementing land use planning responses that are risk-appropriate for the location in the coastal hazard area. Land use and development policy, zoning and development controls can be used to maintain the current risk profile in areas of acceptable and tolerable risk.

MODIFY

BEACH & FORESHORE MANAGEMENT

This can include, dune construction and restoration, beach nourishment, and beach scraping.

MODIFY INFRASTRUCTURE & HAZARD RESILIENT DESIGN

Allow for continued use of infrastructure, buildings and assets where the coastal hazard risk is tolerable, but when upgrading or building new assets, the design is to be resilient to or accommodate coastal hazard impacts.

COASTAL ENGINEERING

Using hard engineering solutions to protect beaches, foreshore and creeks from coastal hazards including levees / dykes, seawalls / scour protection, groynes and artificial headlands / reefs, tidal flaps or valves on stormwater pipes and tidal gates

PLANNED TRANSITION

RELOCATE INFRASTRUCTURE

Critical Council assets, infrastructure and buildings that are located in hazard areas should be relocated to lower-risk areas when they reach the end of their life or need significant renovation if it has a long-life design

ACCEPT THE RISK & EMBRACE COASTAL PROCESSES

Embrace natural coastal processes without intervention or change to current management arrangements, including:

- Accept loss of land affected by coastal hazards on unprotected shorelines.
- Allow coastal dunes and habitats to migrate landward.
- Allow dunes to recede without intervention and accept there will be damage or loss to infrastructure.

PRINCIPLES TO GUIDE OUR STRATEGIC DECISION-MAKING

Together with the adaptation hierarchy, Council has agreed on a set of principles that will guide our decision-making. These principles also set Council's responsibilities in relation to coastal hazards, and the limits of these responsibilities.

VALUES DRIVEN RESPONSES

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| V1 | The significance of ecological values and coastal ecosystems to the community must be considered when responding to coastal hazards. |
| V2 | Cultural and community values will be considered when responding to coastal hazards. |
| V3 | Traditional Custodians long-standing expertise and knowledge of land, sea and country and its application to adaptation responses in natural area contexts, should be valued. |

ENGAGEMENT

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| E1 | Council will engage with stakeholders when planning to address coastal hazards and outcomes of engagement will be one of the inputs into decision making with consideration of technical analysis and science. |
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GOVERNANCE, RESPONSIBILITY AND RISK

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| R1 | Coastal hazard management is a collective responsibility requiring collaboration and the sharing of information between all levels of government, the private sector, community and other key stakeholders. |
| R2 | Current science, data, information on coastal hazard risks and the Principles for Adaptation will be considered across all areas of Council's governance, policy, decision-making, planning, infrastructure, investment, operations, asset planning and management and emergency response to improve the future resilience of the Cairns community. |
| R3 | Council, with support from other levels of government is responsible, for: <ul style="list-style-type: none">• Actively monitoring priority coastal hazard areas in collaboration with the community;• Using evidence and expert advice in addressing coastal hazards;• Managing the impacts of coastal hazards on Council owned assets and services, in conjunction with beneficiaries; and• Maintaining public access and community services where practicable. |
| R4 | Council is not responsible for managing coastal hazard impacts on: <ul style="list-style-type: none">• Private property or assets;• Non-Council owned public assets or property; and• Private assets located on council managed land; Exceptions to the above will be considered on a case by case basis, where a significant public benefit can be demonstrated and any works are undertaken in conjunction with beneficiaries. |
| R5 | Private property owners are responsible for: <ul style="list-style-type: none">• Occupying coastal hazard areas at their own risk;• Managing risks to their property from coastal hazards; and• Paying for coastal protection works where they are the beneficiaries. |
| R6 | It is accepted that, at times, some existing communities may be temporarily isolated or inaccessible as result of coastal hazard impacts. |

SAFE COMMUNITIES

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| S1 | Human safety is paramount. Areas of unacceptable risk should be identified and exposure to risk avoided. If risk is unavoidable, risk should be minimised through adaptation solutions or planned transition and retreat pathways should be identified. |
| S2 | The community will have access to up-to-date climate change and coastal hazards information to build their risk awareness, resilience and capacity for informed decision-making. |

PRINCIPLES TO GUIDE OUR STRATEGIC DECISION-MAKING (CONT.)

PLANNING AND IMPLEMENTATION

- P1 Adaptation decisions will be informed by a balanced consideration of environmental, social, economic, financial and governance factors to benefit the community now and in the future. These adaptation decisions will be based on trigger points and thresholds that arise.
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- P2 Natural ecosystems services and 'soft' nature-based solutions which complement the green tropical landscape of the Cairns region will be used in the first instance, where appropriate to address the level of risk.
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- P3 The adaptation hierarchy for Cairns (to be implemented in order of preference, see Figure 1) is:
1. Avoid
 2. Protect, restore and enhance
 3. Accommodate
 4. Transition
 5. Defend
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- P4 Where engineering solutions are required, they are designed to integrate with the natural environment where possible and improve amenity.
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- P5 Public coastal land will not be available to private property owners for private coastal protection works, except where:
- significant public benefit is demonstrated;
 - there are no adverse impacts to public land assets or the natural environment;
 - works do not worsen any impacts of coastal hazards; and
 - private property owners pay for the works and ongoing maintenance.
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- P6 New development or intensification of existing development and Council assets should be avoided in areas of unacceptable coastal risk on private or public land unless significant public benefit is demonstrated, the land use is appropriate for the location and risks are managed to an acceptable level.
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