A key Gold Coast City Council strategy towards our Gold Coast Shoreline Management Plan.

Gold Coast Shoreline Management Plan
Summary Report
Gold Coast beaches need to be maintained, protected and where necessary, enhanced to ensure future generations are able to enjoy them.

Anonymous, Gold Coast City Council’s Bold Future engagement.
Residents and visitors of the Gold Coast have always shared an affinity with the ocean. During 1925, the opening of the former Jubilee Bridge made the Gold Coast’s beaches accessible to motorists from Brisbane and triggered a wave of development, which led to the establishment of this modern coastal city.

Close to a century on, the urban landscape—built as close to the beach as possible—demonstrates the city’s continued love affair with the beach.

Beaches are the hub of the Gold Coast lifestyle. Every day our beaches teem with walkers, swimmers, boardriders, anglers, divers and other recreational beachgoers.

Beaches are important to residents and visitors for several reasons. The beach is a social place where people interact, exercise and relax. Gold Coast beaches are also a major driver of the local economy. Environmentally, beaches help sustain marine ecosystems. History has shown that this iconic coastline is a dynamic one. The sandy littoral zone—the area from shoreline to just beyond the wave breaker zone—is the city’s frontline against powerful wave action that is intensified during extreme weather events. Such wave action determines the shape and state of our beaches.

Gold Coast City Council has been a leader in coastal management for more than 50 years, driven by the need to protect the city and its shoreline from the impacts of storms. A suite of innovative policies, research, technologies and beach management techniques have been implemented on the Gold Coast and subsequently acknowledged and adopted as best practice throughout the world.

Council continues to partner with key stakeholders and the community to ensure the valued beaches and lifestyle are cared for and maintained through holistic management practices. In 2005 Council began work on the Gold Coast Shoreline Management Plan (the Plan).

The Plan aims to ensure beaches are sustainable now and remain so into the future. Proper management strategies are necessary so the appeal of the city’s iconic beaches for residents and visitors is maintained.

The Plan is a strategy with a 50-year horizon that focuses on coastal physical processes; coastal ecological processes; economic values; community values; and beach management. The Plan includes 77 recommendations to combat the threat of increasing storm events on Gold Coast beaches over the next 15 years.

The Plan reflects a clear understanding of the natural processes of the coastline, its exposure and resilience to extreme weather events, and the community’s relationship with Gold Coast beaches. The objective of the Plan is to deliver social, environmental and economic sustainability to the city's most loved natural asset.

No two beaches are the same in either exposure or response to wave action along our coast. Several beaches along the Gold Coast that may need specialised management to be able to meet community needs into the future have been identified as part of the Plan.

Individual shoreline projects are a key component of Council’s management approach, facilitating integration of existing management efforts with new ones.

Council recognises the interconnected nature of beaches within the Gold Coast coastal environment; therefore, any impact that individual shoreline projects might have on the entirety of the Gold Coast beach environment and its surrounds have been considered.

Future management actions will likely include:
- dredging creeks with sand used to nourish beaches
- upgrading or building seawalls along the length of the coastline
- coastal control structures to assist in stabilising sections of beaches

To develop the Plan, Council engaged Griffith Centre for Coastal Management (GCCM), as the pre-eminent authority on beach science and research on the Gold Coast. Their resources and expertise are sought nationally and internationally by government agencies.

In November 2010, the Plan was formally endorsed by Councillors at a Council Meeting. Since this time, implementation of recommendations has commenced so residents and visitors can continue to live the coastal lifestyle the city is renowned for.

When implemented, the Plan will:
- sustainably manage our sandy beach environment
- develop coastal protection measures to combat current and forecasted future erosion issues
- ensure that beaches remain the focal point of our coastal lifestyles and a key economic driver for the city into the future.

The Plan aims to ensure beaches are sustainable now and remain so into the future. Proper management strategies are necessary so the appeal of the city’s iconic beaches for residents and visitors is maintained.
“Our beaches are a focal point for residents and visitors for swimming, surfing, fishing, walking, cycling, sport, recreation and lifestyle.”

(Gold Coast City Council, 2002).
why do we need a shoreline management plan?

There are several reasons why the Gold Coast must formulate and implement a shoreline management plan including legislative requirements and clear climate predictions.

2.1 Government Directive

Council’s overarching Bold Future Vision (2008) identified beaches as the Gold Coast community’s most treasured asset through a community consultation program undertaken in 2008. The Plan builds upon decades of studies and research on the Gold Coast’s beaches dating back to the 1960s.

These local directives are reinforced at a state government level. Subsequent to the development of the Plan, the Queensland Government’s Department of Environment and Resource Management (DERM) has asked coastal councils to develop their own shoreline erosion management planning frameworks. The approach is also aligned with the Queensland Coastal Plan (2011) and the State Planning Policy (SPP) for Coastal Protection (2011).

2.2 What plans currently exist for beach management?

The Plan is part of a framework for managing the city’s coastline that focuses on coastal conservation, shoreline management, storm response, population growth, and urban planning.

Some of the plans linked to the GCSMP include:

<table>
<thead>
<tr>
<th>Plan</th>
<th>Responsible agency</th>
<th>Purpose of Plan</th>
</tr>
</thead>
<tbody>
<tr>
<td>Queensland Coastal Plan</td>
<td>Department of Environment and Resource Management (DERM)</td>
<td>Statutory instrument that sets out the overall policy for coastal zone management in Queensland.</td>
</tr>
<tr>
<td>State Policy for Coastal Management</td>
<td>Department of Environment and Resource Management (DERM)</td>
<td>Provides direction and guidance about the management of coastal land in Queensland to achieve the objectives of the Coastal Protection and Management Act 1995.</td>
</tr>
<tr>
<td>State Planning Policy for Coastal Protection</td>
<td>Department of Environment and Resource Management (DERM)</td>
<td>Establishes criteria for land-use planning, coastal activities and development assessment to manage development within the coastal zone and coastal waters.</td>
</tr>
<tr>
<td>SEQ Regional Plan</td>
<td>Department of Infrastructure and Planning (DIP)</td>
<td>Provides sustainable growth strategies for SEQ up to 2026.</td>
</tr>
<tr>
<td>Gold Coast Local Disaster Management Plan</td>
<td>Gold Coast City Council</td>
<td>Details the disaster prevention, preparedness, response and recovery arrangement for the Gold Coast.</td>
</tr>
<tr>
<td>Gold Coast Planning Scheme</td>
<td>Gold Coast City Council</td>
<td>Developed in accordance with the State Government’s Sustainable Planning Act 2009 (SPA), it guides the city’s growth and development.</td>
</tr>
</tbody>
</table>
“The protection and enhancement of our unique natural environment is at the core of our decisions and the actions of our communities and visitors.”

(Gold Coast City Council, 2007).

Each year, Tallebudgera and Currumbin Creek Entrances are dredged to provide flood mitigation, sand nourishment, improve water quality and some improvement for navigation.
2.3 Pioneers in coastal management

Council has been a leader in coastal management for more than 50 years. During this time, Council has partnered with many agencies and research institutes to better understand and manage beaches, including the National Committee of Coastal and Ocean Engineering, the International Committee for Coastal Engineering, the University of New South Wales Water Research Laboratory, the University of Queensland, GCCM, the Australian Coastal Society, and the Queensland Coastal Councils Group.

These partnerships have led to the Gold Coast being an incubator for international beach management research, project delivery and policy, including:

- hydrographic survey techniques
- remote cameras for shoreline position and beach health monitoring
- profile distribution technique for beach nourishment
- coastal control structures including artificial reefs
- the use of geotextiles, plastics and other revolutionary materials
- computer and physical modelling of coastal environments including sand movement and surf amenity
- professional and community-based lifeguard and lifesaving services
- education and advocacy for coastal environments
- planning scheme policy for seawalls, dune vegetation, coastal footings and sand recovery
- coastal policy and legislation at state-level, driven by major erosion events occurring on the Gold Coast

The Gold Coast continues to set the benchmark for coastal management.

Beach protection strategies, such as the Northern Gold Coast Beach Protection Strategy, continue to be an important feature of coastal management on the Gold Coast. These are integrated strategies made up of multiple components, including beach nourishment, consideration of existing training walls, reefs and other control structures. Many successful coastal management initiatives implemented on the Gold Coast will continue to be important elements of beach management plans under the Plan, including:

Dredging and beach nourishment

For many years, sand has been dredged from a variety of points along the city’s coastline to nourish Gold Coast beaches. These locations include the Broadwater, Tallebudgera Creek, Currumbin Creek, The Tweed River, and offshore. The sand can be placed on the visible beach in a number of ways, or alternatively, in the nearshore zone. Sometimes there are additional objectives such as flood mitigation or improved estuarine water quality.

Coastal control structures

Seawalls

The Gold Coast has an A-line boulder wall that serves as the ‘last line of defence’ against erosive wave action. In 1965, the Queensland Coordinator General’s Department (C.O.G.) released a standard design for a boulder wall that would prevent storm-induced erosion. In the years following, an extensive surveying program funded by Council’s Beach Replenishment Programme was undertaken to establish a boulder wall line that could attain the best compromise between costs, property damage, erosion concentrations and the protection of beachfront land. In 1976, this line was officially adopted as the ‘A-line’. This alignment also defines the usable area of beachfront land, and the beachfront building line or setback.

Narrowneck artificial reef

The artificial reef at Narrowneck was a world-first. It was constructed as part of the Northern Gold Coast Beach Protection Strategy to help widen the beach along Surfers Paradise Esplanade and increase the resilience of Narrowneck to erosive wave action. Ongoing monitoring continues to validate this coastal control structure.

Training walls

Training walls were introduced at the Gold Coast Seaway in 1986 to stop the Nerang River migrating northward. Other training walls have been constructed at the Tweed River, Currumbin and Tallebudgera creeks to help stabilise these entrances. Ongoing management of Gold Coast’s beaches ensures that these structures have a positive legacy, and continue to deliver beneficial outcomes for our coastline.

Sand bypassing

Council is a partner in the Tweed River Entrance Sand Bypassing Project (TRESBP), along with the Queensland government, NSW government and Tweed Shire Council. This project has two objectives:

- to establish and maintain a safe, navigable entrance to the Tweed River
- to provide a continuing supply of sand to the Southern Gold Coast beaches consistent with natural drift rates, together with such additional sand needed to restore the recreational amenity of the beaches and maintain it

Council also partnered with the Queensland Government in the establishment of the Gold Coast Seaway, which has similar objectives to TRESBP.

For more information on any of these activities, visit goldcoastcity.com.au/coast.

2.4 What could happen if we do nothing?

Gold Coast residents and visitors have historically loved to live and holiday near the beach.

The proximity of the community to the ocean makes it prone to many natural challenges which the sea and weather events can produce.

The objective of this Plan is to deliver economic, social and environmental sustainability to the city’s beach landscape in perpetuity.

2.5 Focus on 1967

- Tropical cyclone Dinah crosses the coast as a Category 4 cyclone causing extensive damage to buildings.

- A continental low brought heavy rains and large swells.

- Tropical cyclone Elaine caused localised flooding and beach erosion.

- Topical cyclone Glenda moved south to offshore.

- Brisbane causing extensive beach erosion and damage to buildings.

- East coast low causing more beach erosion and flooding. Another east coast low, a severe storm, beach erosion and buildings damaged.

- East coast low causing further beach erosion.
how has the Plan been developed?

The coastal management techniques, strategies and recommendations used on the Gold Coast over the past 50 years have been reviewed. The Plan brings together the most effective actions and strategies in an integrated approach to managing the littoral environment. The Plan was developed in four stages.

1. The Littoral Review
   In 1967, the Queensland Government commissioned engineers from the Delft University in The Netherlands to suggest ways to address erosion on Gold Coast beaches caused by successive cyclones. Since it was published, the resulting report, Coastal Erosion and Related Problems – Gold Coast, Queensland, Australia (the Delft Report) has guided coastal management on the Gold Coast. The Delft Report recommended beach nourishment works, alternatives for stabilising the Nerang River and Currumbin Creek and sand by-passing methods at the Tweed River. In the Littoral Review, the Delft Report and its recommendations were examined.

2. Hydrographic data analysis
   Hydrographic surveys have been undertaken extensively along Gold Coast beaches since 1962. Data collected over this period was analysed to help identify knowledge gaps, validate the Delft Report recommendations and identify priority areas for further action or investigation.

3. Further studies
   Many further studies were completed, informed by the Delft investigations and Gold Coast hydrographic survey data. Studies were structured around five major themes:
   - coastal physical processes
   - coastal ecological processes
   - economic value of Gold Coast beaches
   - community values and stakeholder engagement
   - the development of a beach management plan

4. Recommendations
   Subsequent to these research phases, 77 recommendations for major capital works, operational works, design and management guidelines, natural area management, community engagement, resourcing and further studies were identified.

“Prepare and protect coastal beaches from the impact of storm activity and the impact of climate change.”

(Gold Coast City Council, 2007).
what do we know about our beaches?

The Gold Coast’s beaches are a drawcard to visitors and 4.

What do we know about our beaches?

4.1 Coastal physical processes
The littoral zone is constantly changing as a result of sand movement. This movement is essentially dominated by two phenomena: storm events and longshore drift.

During a large storm event, high energy waves erode sand from the visible portion of the beach and deposit it in the nearshore zone to form one or more storm bars. Storm bars dissipate wave energy to prevent further erosion. In calmer conditions the sand is returned to the visible beach.

The dominant south-easterly wave climate on the Gold Coast causes waves to hit the shoreline at oblique angles to the beach. This typically drives sand northwards along the shoreline of Gold Coast beaches at an average annual net rate of 500,000 cubic metres. Over fifty years of research shows that the Gold Coast is part of a larger beach compartment, in which the sand source is the Clarence River in New South Wales, from which it travels northwards to its sink, which is South Passage in Moreton Bay.

Council undertakes extensive hydrographic surveying along the Gold Coast’s beaches. Half a century of surveying the beaches has provided Council with a clear understanding of how sand moves along the coast. This has been consolidated further in more recent decades by shoreline position video monitoring and hundreds of published research papers documenting and modelling the processes at work along Gold Coast beaches.

4.2 Coastal ecological processes
The vast sandy beaches of the Gold Coast provide the city with an enormous natural asset. This asset—the littoral system—comprises many different ecosystems, such as the intertidal rocky shore, sand dunes and reefs.

The ecological health of the Gold Coast’s littoral system can be impacted by coastal development, recreational usage and management techniques.

To mitigate against potential impacts, the Plan outlines several recommendations, including:
• continuing dune revegetation and fencing works on our beaches
• researching the long-term impacts of beach nourishment on beach ecology, including impacts on shorebirds, nearshore reefs and sea turtles
• undertaking a detailed ecological assessment of our city’s coastal environment
• raising awareness at certain beaches including Currumbin Creek with signage that alerts visitors to shorebird migratory habitat

These recommendations will be implemented holistically in future shoreline management planning on the Gold Coast.
4.3 Economic values of Gold Coast beaches

The Gold Coast’s beaches draw tourists from all over the world. Beaches are natural assets that contribute significantly to the city’s tourism economy.

Maintaining and/or improving the amenity of Gold Coast beaches sustains the appeal of the coastal assets.

While beaches are not essentially commercial assets, the economic return from healthy and attractive beaches is significant.

• Gold Coast residents made a combined 40 million beach visits in 2007, spending between $21.5 million and $91 million in total (Raybould & Lazarow 2009).
• Approximately 4.9 million day visitors and 4.4 million international overnight visitors use the beach during their stay (Tourism Research Australia, 2004, 2006a, 2006b).
• There are 65,000–120,000 surfers on the Gold Coast, with approximately 35 per cent of those visitors.
• Surfers spent between $126–$233 million on the Gold Coast in 2007 (Raybould & Lazarow 2009).

4.4 Community values

Community involvement in coastal management programs is integral to its success, legacy and public stewardship. Our beaches feature prominently in the community’s Bold Future Vision (2008).

Many community members volunteer their time as part of the BeachCare program, or other community groups supported by Council to revegetate and look after Gold Coast dunes.

The Plan recommends a raft of additional community engagement opportunities that will allow the community to participate in the future management of Gold Coast beaches.

In regards to community beach values on the Gold Coast, it was concluded that:

• walking, jogging, swimming, board riding, body surfing, bonding with nature and simply being outdoors were reasons why people visited the beach
• the quality of the environment, cleanliness of the beach, and cleanliness of the park areas adjacent to the beach are the most popular determinants for visitation to a beach
• the most important issues for beach and foreshore management identified by residents were coastal protection (including sea level rise and climate change), environmental service provision and traffic, transport and parking

4.4.1 What is planned for our beaches?

The Plan features 77 recommendations for the economic, social and environmental sustainability of the Gold Coast’s beaches. The recommendations include actions for capital works and strategies to better understand how beaches function.

Recommendations to improve the health of the Gold Coast’s coastline include:

• continuing beach nourishment, maintaining seawalls along the A-line and, where appropriate, coastal control structures as part of a 10-year capital works program to enhance beach health
• continuing to monitor beach changes through hydrographic survey and shoreline position video monitoring
• preventing development seaward of seawalls along the A-line and maintaining existing coastal control structures
• partnering with the State Government to ensure the smooth introduction and implementation of the Plan as a state-endorsed plan

Central

• Developing a shoreline project at Burleigh Beach to protect parkland and infrastructure.
• Implementing dune preservation and community education programs that explain the diversity of shoreline features, management and beach safety.
• Maintaining the seawall along the length of Palm Beach in public areas.
• Developing a shoreline project at Palm Beach.
• Establishing a permanent discharge line for the dredging infrastructure at Tallebudgera Creek.

Southern

• Continuing to partner with Queensland and New South Wales governments, as well as Tweed Shire Council, to ensure a continuing supply of sand to the Southern Gold Coast beaches consistent with natural drift rates, together with such additional sand needed to restore the recreational amenity of the beaches and maintain it.
• Devising a post-storm nourishment strategy at Currumbin Beach.
• Where appropriate, erecting signage to inform beach users of the impact of recreational activities on shorebirds that frequent southern beaches.

The Plan’s technical strategies to mitigate the impact of storm events on the coastline must be balanced with community expectations and values. The community will be engaged throughout the implementation of the recommendations.
"Maintain and enhance the amenity, accessibility and quality of our beaches for leisure purposes."

(Gold Coast City Council, 2002).

The Narrowneck Reef provides stabilisation for the sandy beaches of Surfers Paradise. Healthy beaches encourage recreational, residential and commercial investment.
how does the Plan work with other Council policies?

The Plan integrates with existing Council planning policies, including:

6.1 Gold Coast Planning Scheme
Constraint Code 11: Oceanfront Land Code
The Planning Scheme ensures that development occurring in the City's ocean beach area is maintained to ensure the protection of the property and the preservation of the beach environment.

Policy 7: Foreshore Rock Wall Design and Construction
The purpose of this Policy is to protect the integrity of the foreshore seawall by ensuring that walls are constructed or restored in accordance with the adopted standard design.

Policy 15: Management of Coastal Dune Areas
This Policy guides the specific species required for primary, secondary and tertiary coastal dune areas; requirements to revegetate disturbed dune areas; and requirements to fence dunes for protection.

6.2 Corporate Strategies
Climate Change Strategy 2009–2014
The Climate Change Strategy 2009–2014 sets direction for addressing change; enabling action; working in partnership; increasing resilience; preparation for unavoidable events; mitigating future impacts; evaluating risks; adapting to changing circumstances; promoting energy efficient technology; integrating decisions; monitoring, evaluating and reviewing.

Ocean Beaches and Foreshore Strategy 2015-2030
Climate change and seachange demographics continue to increase demand on coastal neighbourhoods for the quality of lifestyle and tourism experience. The Ocean Beaches and Foreshore Strategy is the principal plan for ensuring that beaches continue to meet the expectations of residents and visitors through ensuring a coastal focus for transport, recreation, economic development, nature conservation, asset management, town planning, events and other major City initiatives.

Nature Conservation Strategy 2009-2019
The Gold Coast City Council Nature Conservation Strategy 2009-2019 is the principal plan for conserving the city's rich biodiversity and natural assets including those located in coastal and marine areas. The strategy covers natural features on public and private land and waters.
The Gold Coast’s beaches are central to the lifestyle of residents and attraction of visitors from around Australia and overseas. Ensuring the city’s coastline is environmentally, socially and economically sustainable will help maintain its appeal to residents and visitors and resilience to storm events.

Gold Coast beaches serve many roles, including acting as a hub for recreation and socialising; as a buffer between property and storm-generated waves; as a driver of the local economy; and, ecologically, a habitat for marine life.

The community has identified the beaches as one of the city’s most important assets via the Bold Future Vision (2008).

The Gold Coast Shoreline Management Plan is the culmination of more than 50 years of beach studies and management practices throughout the city. The Plan presents a strategic course of management to the long-term preservation of beaches and the coastal environment. Without an integrated and holistic management plan, there are inherent risks including poor beach amenity, damage to property and a loss in tourism.

The 77 recommendations outlined within the Plan aim to sustain the lifestyle and amenity Gold Coast residents and visitors expect from beaches stretching from Point Danger to Jumpinpin.

The design and implementation of the Plan’s recommendations will be a collective undertaking involving Council, State Government agencies, GCCM, community and interest groups.

This Plan will ensure that the beautiful Gold Coast beaches will continue to be enjoyed for years to come.

conclusion
where can I find more?

The Gold Coast Shoreline Management Plan can be found at:

- Local Studies Library (upstairs at Southport Library, corner of Garden and Lawson streets)
  Ref: 333.91716099432 GOL
- Broadbeach Branch Library (Sunshine Boulevard Mermaid Waters)
  Ref: 333.91716099432 GOL

Supporting information for the Plan can be found at:

- Griffith Centre for Coastal Management (griffith.edu.au/coastal-management)
- Gold Coast City Council (goldcoastcity.com.au/coast)

References


Gold Coast City Council
- Gold Coast Local Disaster Management Plan
- Gold Coast Planning Scheme
- Gold Coast Health of the Waterways Report
- Curumbin Entrance Research Program
- Beach Condition Index Report
- Beach Valuation Study
- Ocean, Beaches and Foreshores Study

Griffith Centre for Coastal Management
- Gold Coast Shoreline Management Plan Volume 1: Executive Summary & Littoral Review Part A – Chapters 1 to 5 (December 2008), GCCM, Research Report No.90
- Gold Coast Shoreline Management Plan Volume 2: Littoral Review Part B – Chapter 6 (December 2008), GCCM, Research Report No. 90
- Gold Coast Shoreline Management Plan Volume 3: Shoreline Management Plan and Policies – Chapters 7 to 9 (December 2008), GCCM Research Report No. 90
- Gold Coast Shoreline Management Plan Volume 4: Case Studies (December 2008), GCCM, Research Report No. 90
- Gold Coast Shoreline Management Plan Volume 5: Background Publications (December 2008) GCCM, Research Report No. 90

Government of Queensland
- SEQ State of the Environment Report (DERM)
- Queensland State of the Environment Report (DERM)
- State Coastal Management Plan (DERM)
- State Policy for Coastal Management (DERM)
- State Planning Policy for Coastal Protection (DERM)
- SEQ Regional Plan (DIP)
- SEQ Natural Resource Management Plan (SEQ Catchments)

