Sustain.
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Dredging - Navigation Channels, Anchorages and Destinations Plan

October 2017
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1. Introduction

Gold Coast Waterways Authority (GCWA) was established in December 2012 by the Gold Coast Waterways Authority Act 2012 (GCWA Act) to strategically plan for, promote and manage the sustainable use of Gold Coast waterways.

1.1 Purpose

The purpose of this plan is to provide guidance to employees, the Chief Executive Officer of GCWA and the GCWA Board, when considering dredging of navigation channels and anchorages. The plan is also to inform waterways users of the considerations made with respect to dredging of navigation channels and anchorages.

The purpose of GCWA, stated in the GCWA Act, is to:

- deliver the best possible management of the Gold Coast waterways at reasonable cost to the community and government, while keeping government regulation to a minimum
- plan for and facilitate the development of the Gold Coast waterways over the long term in a way that is sustainable and considers the impact of development on the environment
- improve and maintain navigational access to the Gold Coast waterways
- develop and improve public marine facilities relating to the Gold Coast waterways
- promote and manage the sustainable use of the Gold Coast waterways for marine industries, tourism and recreation.

- performing functions conferred on GCWA under other Acts; including
  - Transport Infrastructure Act 1994 (TIA)
  - Transport Operations (Marine Pollution) Act 1995 (TOMPA)
  - Transport Operations (Marine Safety) Act 1994 (TOMSA)
  - Sustainable Planning Act 2009 (SPA)
2. Context

The GCWA dredge navigation channels and anchorages in line with the recommendations of the ‘Gold Coast Waterways – Access Needs Study’ and reactively when/where necessary. Such works are performed under the GCWA developed Sand Management Plan (SMP) and the Environmental Management Framework (EMF) for Managing Sand Resources in the Gold Coast Waterways (see 2.1 and 2.2 below for details), consistent with the purposes of the GCWA Act.

The Access Needs Study was developed in cooperation with industry and recreational stakeholders to determine the most suitable width and depth of channels in the network. The Study is used to provide the next most appropriate capital dredging project within the waterways as funding becomes available with the ultimate aim to achieve the widths and depths as determined in the Study and provide safe navigational access within the Gold Coast waterways. Over time as capital projects are completed maintenance dredging of recurring shoaling will dominate the works carried out by the GCWA.

The SMP and EMF were developed in collaboration with relevant approval agencies including —

- the Department of Environment and Heritage Protection
- the Department of Agriculture and Fisheries
- the Department of Natural Resources and Mines
- the Department of Infrastructure, Local Government and Planning
- City of the Gold Coast Council

Guiding Documents:
- GCWA Act
- Gold Coast Waterways Management Strategy 2014-2023 (as updated)
- GCWA SMP/EMF
- GCWA Risk Policy
- GCWA Risk Framework
- GCWA Risk Appetite Statement

2.1 Sand Management Plan

The GCWA obtained a strategic, long-term approval in 2014 to sustainably manage dredging and dredged resources to support navigational access and foreshore management objectives. The Sand Management Plan (SMP) established parameters for efficiently meeting navigational access objectives and managing dredged resources in a sustainable manner.

The SMP includes all dredging activities related to navigational access in Gold Coast waterways excluding canals which are the responsibility of the local authority but including channels, access points and destinations as well as relocation activities related to those dredged materials.

2.2 Environmental Management Framework

The Environmental Management Framework (EMF) for managing sand resources in Gold Coast waterways guides the ongoing implementation of the SMP and was developed as part of the approval process to support the SMP.

The EMF is based, in part, on approval conditions and best practice environmental management requirements for dredging and material placement that have been imposed under existing approvals and permit conditions already held by GCWA.
2.3 Overarching Principles of the SMP and EMF

The SMP concept outlines a strategic approach to the management of sand resources to maintain navigational access of the Gold Coast’s waterways. The objectives of the SMP are to:

- Work with nature in terms of recognising natural channel migration and shoaling behaviour of the waterways and undertake an adaptive management approach to dredging and material placement over time.
- Reduce administrative burden on the GCWA, CoGC and regulatory agencies related to approvals for routine dredging and placement activities particularly where such activities have a low environmental risk and/or the potential environmental impacts from operations are well understood (e.g. have been monitored and shown to not be causing impacts in previous operations).
- Provide longer term certainty to where and how sand dredging and placement will be managed whilst providing flexibility to how GCWA procures and manages the dredging program.
- Recognise and implement sustainable and agile management practices for dredging and material placement through the development of clear environmental commitments and performance requirements including a strategic whole-of-study area approach to mitigation, monitoring and research that is overseen by an Agency Steering Committee (ASC) and a Science and Innovation Advisory Committee (SIAC).

2.4 Gold Coast waterways

Gold Coast waterways include those waterways within the Gold Coast Local Government Area and areas at the mouths of the Gold Coast Seaway and Tallebudgera andCurrumbin Creeks (see Figure 1 for details). As previously stated, the SMP and EMF apply to all waterways within the defined channel network (see Figure 2 for details).

The EMF also applies to the management of navigational channels and other navigational network features including access infrastructure (e.g. boat ramps, public recreational pontoons and destinations (e.g. anchorages) within Gold Coast waterways.
Figure 1 Gold Coast waterways as described in the *Gold Coast Waterways Authority Act 2012*. 
Figure 2- Gold Coast Waterways Channel Chainage Map
3. Dredging of Access Channels, Destinations and Anchorages

The Gold Coast waterways have an extensive network of navigation channels that the GCWA endeavours to provide reasonably safe depths within the existing channel footprint. The ‘Gold Coast Waterways Access Needs Study’ (the ‘Access Needs Study’) guides the determination and prioritisation of capital dredging projects. Maintenance dredging works are completed as required.

Both capital and maintenance dredging projects will be limited by the amount of funding provided each year by Treasury to the Gold Coast Waterways Authority.

The GCWA monitors the navigation channel network by conducting hydrographic surveys, receiving internal advice and noting information provided by the public. Each year the Waterways Management Program will incorporate a portion of capital and maintenance dredging to either remove sand shoals in the navigation channels not previously dredged and upgrade certain channels (capital funding) or to dredge recurring sand shoals in previously dredged navigation channels (maintenance funding).

Subject to economic feasibility and consistency with the Sand Management Plan/Environmental Management Framework, the GCWA will provide access channels to public marine facilities, including all-tide or near all-tide access.

As circumstances warrant and funding permits, the GCWA may occasionally dredge and maintain primary and secondary channels as described in the Access Needs Study on the basis of benefit to the community. In these cases, the channel design depth will be appropriate to the proposed usage and in keeping with environmental and financial constraints, in particular the number of recreational vessels using the channel. Funding contribution from other entities may affect the choice of design, depth or frequency of dredging for such channels, subject to normal approval processes.

In general, the GCWA will not provide new channels when designing or prioritising new public boat launching and landing facilities, unless:

- it is deemed necessary in the particular circumstance, e.g. to address safety issues, congestion and/or environmental impact issues
- the benefit of such dredging outweighs the capital and recurring costs
- it can be justified in relation to available funding and demand for other public marine facilities and infrastructure.

Prioritisation of funding for channel dredging will take into account:

- whether safety will be compromised
- whether navigational access will be compromised
- the level of demand and practical channel usage
- the greatest possible benefit to the greatest numbers of the recreational boating public
- projects where the benefits significantly outweigh the cost of initial and ongoing dredging
- the status of the channel for providing access to public marine facilities
- whether it will contribute to the local economy by allowing access to commercial marine related businesses
- whether dredged material can be taken or relocated with minimal environmental impact

The choice of design dredging depths for a particular location will be made after consideration of the wave climate in the channel, channel bed material, under-keel clearance for the majority of vessels likely to use the access channel, and other site-specific issues such as length of channel, varying depth requirements along the channel, current, dredged sediment placement, dredging method and, nature of the seabed, environmental values and funding contributions from other entities.
3.1 Navigation Channel Network Components

The ‘navigation network’ in the broadest sense includes all of the elements that contribute to navigational access. Channels are the most obvious component, but equally important are the access infrastructure and destinations. Aids to navigation are also an important component, including hard infrastructure such as beacons, lights and buoys, but also soft infrastructure such as charts, surveys and notices to mariners. From a user perspective, canals as well as foreshores could be logically included in the navigation channel network component definition; however on the Gold Coast both canals and foreshores are managed by the City of Gold Coast.

Alignment of the dredged/marked channel to natural channels minimises dredge volumes, reducing both costs and disturbance to the environment. The location of shoaling and channel alignments may vary over time, and dredging can sometimes be avoided by simply relocating navigational aids. This flexible, objective based management approach means that only a portion of a channel typically requires dredging.

The width and depth of navigation channels vary depending on natural or built constraints and the environment in which they are located. The North and South channels are 100 m wide with a nominal depth of -4.5 m LAT and -3.5 m LAT respectively. Other channels in the network have varying depths between -1.00 m LAT and -6.5m LAT and varying widths between 100 m wide and 30 m wide. The parameters of the channels are as defined in the Access Needs Study.

Dredge design depths generally make an allowance for a margin for siltation through some degree of over-dredging. This is dependent on coastal processes, availability of suitable dredging plant, remoteness of the site, and seasonal constraints.

In coastal waterways, where possible, there should be a maneuvering basin with a minimum depth of 0.5 metres below lowest astronomical tide at the toe of a boat ramp. This basin will normally be maintained through regular attention by the appointed manager utilising land-based equipment at low tide. The GCWA will consider reimbursement where these land-based works are significant, and prior funding approval has been sought. Where specialised dredging plant is required the GCWA will assess and consider funding on a case by case basis.

For all-tide or near all-tide sites where the GCWA seeks to provide channel access from the waterways to public marine facilities, the depths shall be as follows:

- minimum of 0.5 metres below LAT for boat launching facilities
- minimum of 1.5m below LAT for jetties and pontoons serving non-trailer-borne (deeper-draught) recreational vessels.

3.2 Once-off Dredging Funding

As circumstances warrant and funding permits, the GCWA may occasionally provide once-off access channel dredging to public marine facilities without commitment to on-going maintenance dredging. This will be the default case unless agreed otherwise in writing with the appointed manager. That is, once-off dredging does not create permanent all-tide access status to a public marine facility.

At its discretion the GCWA may assign all tide or near all-tide status to selected boat ramps and commits funds to maintenance dredging.

3.3 Dredging for Commercial/Private Use

Where channels are dredged for commercial support reasons to a greater depth than is required for the majority of recreational boats, the GCWA may require and negotiate a contribution from interested parties. There is no obligation for the GCWA to dredge access channels to canal estates, private estates or commercial marinas. There is no obligation on GCWA to undertake or support dredging of Gold Coast waterways for other private purposes, such as access to land-side development, or reclamation projects. Approvals sought to undertake such work privately will be assessed pursuant to the legislation required.
3.4 Dredging of Coastal Creeks, Rivers and Broadwater Channels

The GCWA focuses its dredging funds on providing access to selected high-use channels throughout the Broadwater, rivers and creeks.

Council may conduct dredging for any purpose subject to any relevant regulatory requirements, in particular for instances that do not rate a high priority for application of funds by the GCWA.

The dredging or bed-levelling of channels through bars at the entrances of coastal creeks and rivers to provide access to public boat launching and landing facilities is a low priority for funds allocation and will not normally be provided. Nor will it normally be provided for all-tide or near all-tide access to or within creeks, rivers and lakes. This is because:

- Benefits gained in the short term are usually soon lost through shifting banks and changes to channel configuration.
- The costs of initial capital dredging and ongoing maintenance dredging are usually prohibitive.
- There may be unacceptable environmental impacts on upstream waterway ecology – such as salinity penetrating further inland – meaning that environmental dredging approvals and supply of suitable environmental offsets are difficult to arrange.

**Standard response to an external enquiry:**

'It is at GCWA’s discretion to prioritise the dredging of primary and secondary navigation channels and access to public marine facilities that provide the greatest possible benefit to the greatest numbers of the recreational boating public. This is not the case in certain locations, such as the entrance to rivers and coastal creeks, where sand banks shift and channel configuration changes. Because of these varying seabed conditions the benefits of expensive dredging works gained in the short term do not have a long lasting effect.
4. Principles and outcomes

4.1 Guiding principles

Consistent with the purposes of the GCWA Act, GCWA’s approach to sustainable waterways management, development and use is built upon the following guiding principles:

Integration: Economic, environmental and social considerations should be effectively integrated into planning and decision-making.

Decision-making: It is necessary to balance easily identified short-term economic costs with more difficult to quantify long-term social and environmental costs.

Foresight: Decisions are guided by foresight, thinking ahead, so that decisions now anticipate change.

Community involvement: Progress towards sustainability requires the support and involvement of the whole community.

Continual improvement: Continual improvement in performance will be based on accountability, transparency and good governance.

Intergenerational equity: Present and future generations should have fair and equal access to resources and opportunities.

Ecological integrity: Decisions and actions will maintain biological diversity of the waterways.

4.2 Plan outcomes

Outcome 1 - Opportunities for public access and use of waterways is maintained or enhanced, in a way that protects public safety and waterways resources.

Access to waterways, including navigation channels and the waterfront is a highly desirable commodity for local communities and visitors. Access can provide significant economic benefits to the community, as well as allowing for recreational uses (e.g. recreational fishing, diving and commercial operations).

Therefore, any dredging is to maintain and/or improve access to the waterways and is to be located, designed and operated to maintain existing and/or improve public use, safety and access to the waterways;

Outcome 2 – Any dredging works must ensure waterways resources, processes and physical characteristics are maintained or enhanced.

An extensive range of recreational, economic and environmental values are present in the Gold Coast waterways. Waterways resources, processes and physical characteristics can include erosion prone areas or areas subject to storm tide inundation; environmental attributes such as wetlands, mangroves, wildlife habitat and native vegetation; natural movement of sand; water quality; matters of state environmental significance or any other values identified in the Strategic Plan for the Gold Coast Waterways.

Therefore, any dredging works in the navigation channels and/or elsewhere and the deposition of dredged material must consider the above values.
## Glossary of Terms

<table>
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<tr>
<th>Term</th>
<th>Definition</th>
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<td>All-tide</td>
<td>that a vessel can be realistically launched into or retrieved from the waterway at the site for 100% of the tidal range</td>
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<td>GCWA</td>
<td>Gold Coast Waterways Authority</td>
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<tr>
<td>Bed-levelling</td>
<td>Relocation of seabed material from a shoal to deep water by dragging a heavy bar (blade) behind a vessel and across the seabed multiple times to provide a greater water depth</td>
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<td>Dredging</td>
<td>removal of seabed material by mechanical means to provide greater water depth</td>
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<td>Floating walkway</td>
<td>multi-modular facility located on and extending from a concrete ramp and not requiring a gangway or access span</td>
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<td>Land-side</td>
<td>refers to infrastructure constructed above high water mark</td>
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<td>Local managing authority</td>
<td>local Council (City of Gold Coast)</td>
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<td>Local law</td>
<td>includes laws passed by councils and valid orders issued by port authorities</td>
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<td>Material</td>
<td>the geotechnical strata of the seabed being excavated by the dredge</td>
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<td>Near all-tide</td>
<td>a vessel can be realistically launched into or retrieved from the waterway at the site for at least 80% of the tidal range</td>
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<tr>
<td>Part-tide</td>
<td>a vessel can be realistically launched into or retrieved from the waterway at the site for at least 50% of the tidal range</td>
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<td>Pontoon</td>
<td>a gangway-access pontoon (and not a floating walkway)</td>
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<td>Public marine facility</td>
<td>defined in the Transport Infrastructure Act 1994 and means public marine transport infrastructure, including:</td>
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<td></td>
<td>• land or waters associated with the infrastructure that are affected by its use</td>
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<tr>
<td></td>
<td>• land or waters specified for the infrastructure under a regulation made with the objective of clarifying what are the land or waters associated with the infrastructure that are affected by its use. Examples: an area of land and waters, specified under a regulation, that constitutes a boat harbour; and: breakwaters, jetties, landings, mooring piles, pontoons, car parks and land or waters affected by the use of the infrastructure.</td>
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<td>Outside this policy and the Act, the term public marine facility has its ordinary English meaning – particularly for infrastructure not owned by the Authority.</td>
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Appendix 1 - Channel Chainage Detailed Maps
LEGEND

- Primary channel
- Secondary channel
- Tertiary channel
- Channel limits
- Dredge area boundary

Gold Coast Waterways Authority area

Chainage in metres from Gold coast Seaway at 0m

Boat ramp (as at 2011)

Recreational anchorage (as at 2011)

Not all names are official place names. Contact Department of Natural Resources & Mines if using a name in a legal context.

Not for Navigation
Map: C4-111
GOLD COAST WATERWAYS
MAP D
Channel chainages

LEGEND
- Primary channel
- Secondary channel
- Tertiary channel
- Channel limits
- Dredge area boundary
- Gold Coast Waterways Authority area
- Channel in metres from Gold coast Seaway at 0m
- Boat ramp (as at 2011)
- Recreational anchorage (as at 2011)

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Horizontal Datum: GDA94
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