



## STAGE 4 SUMMARY (PART B)

### FEASIBILITY STUDIES

Feasibility studies were undertaken, which involved three key parts:

- Option Development – Site selection; sediment requirements (type, volume and frequency); dredging approach; and cost estimate.
- Numerical Modelling – Optimising the approach; predicting any impacts due to plumes; and predicting the transport and fate of sediment to help assess the feasibility.
- Feasibility Assessment – Likelihood of success based on numerical modelling, comparing alternative sites and ongoing maintenance dredging for impacts, costs, limitations; and recommendations.

Separate reports were drafted for each of the four approaches considered, namely;

- Offshore Beach Nourishment
- Sediment (in channel) Relocation in the Liquefied Natural Gas (LNG) Region
- Habitat Restoration/Creation, as described in the Beneficial Reuse Options Assessment
- Sediment (in channel) Relocation for the Gladstone Marina

### OFFSHORE BEACH NOURISHMENT

This study explored sand-sized sediment from the Wild Cattle Cutting region being placed offshore from a beach with the aim of providing long-term beach nourishment. Key points from this report include:

- Sand-sized sediment from Wild Cattle Cutting is suitable.
- There is likely to be at least 20,000m<sup>3</sup>/year available.
- There would be an increase in dredging time and cost by 1.5 to 2 times relative to East Banks Sea Disposal Site (EBSDS) and greenhouse gas (GHG) emissions. Dredging time would increase by up to one day and cost up to \$100,000.
- Sediment is predicted to be transported both alongshore and onshore, with sediment most likely to reach the shoreline when placed either at Tannum Sands or Wild Cattle 2. Net northerly longshore transport is predicted.

### WESTERN BASIN SEDIMENT IN CHANNEL RELOCATION

This study explored the sustainable in-channel relocation of sediment from the Western Basin region of the Port of Gladstone (PoG). It involves the release of fine-grained sediment in a naturally deep area of the designated channel close to Tide Island. The aim is for the sediment to be subsequently transported within the inner harbour, providing additional sediment input to intertidal regions whilst not resulting in an increase in sedimentation in any dredged areas. Key points from this report include:

- Fine-grained sediment from LNG Terminals and Fisherman's Landing is suitable.
- There is potential for up to 150,000m<sup>3</sup>/year to be placed.
- There would be a reduction in dredging time and cost for the region by more than half (relative to EBSDS and GHG emissions).
- Sediment is predicted to be transported away from the Tide Island Dredged Material Placement Area and deposited as a widespread thin layer of sediment throughout much of PoG (as intended).

## LNG TERMINAL SEDIMENT IN CHANNEL RELOCATION

This study explored the sustainable in-channel relocation of sediment from the LNG Terminals region of the PoG. It involves the release of fine-grained sediment in a naturally deep area of the designated channel close to Tide Island. The aim is for the sediment to be subsequently transported within the inner harbour, providing additional sediment input to intertidal regions whilst not resulting in an increase in sedimentation in any dredged areas. Key points from this report include:

- Fine-grained sediment from LNG Terminals and Fisherman's Landing is suitable.
- There is potential for up to 150,000m<sup>3</sup>/year to be placed.
- There would be a reduction in dredging time and cost for the region by more than half (relative to EBSDS and GHG emissions).
- Sediment is predicted to be transported away from the Tide Island Dredged Material Placement Area (DMPA) and deposited as a widespread thin layer of sediment throughout much of Port Curtis (as intended).

## HABITAT CREATION/RESTORATION

This study explored the placement of dredged sediment to create or restore seagrass and/or intertidal shorebird habitat within the PoG. Key points from this report include:

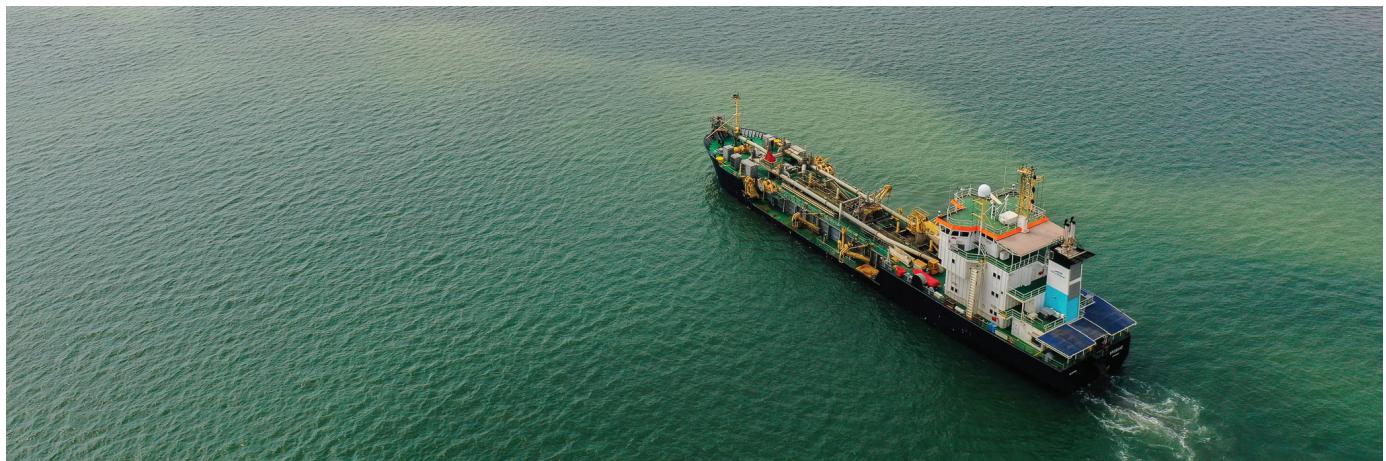
- Mixed sediment would be required for all sites.
- Volumes from 4,500 to 30,000m<sup>3</sup> could be placed.
- Placement could be made by Trailing Suction Hopper Dredger Brisbane via either rainbowing or pumping (Shoal Bay).

- Costs vary depending on the site. Passage Island would be less expensive than placement at EBSDS.
- Majority of sediment would be retained in possible seagrass habitat at Shoal Bay and Passage Island, but transported into deeper water at Quoin Island. Passage Island would be more financially viable than Shoal Bay and the preferred option.

## MARINA SEDIMENT IN-CHANNEL RELOCATION

This study explored the sustainable in-channel relocation of sediment from the Gladstone Marina. Similar to the above method, it involves the release of fine-grained sediment into the designated Clinton Channel. The aim is for the sediment to be subsequently transported within the inner harbour, providing additional sediment input to intertidal regions whilst not resulting in an increase in sedimentation in any dredged areas. Key points from this report include:

- Fine-grained sediment is found within the Marina.
- In the order of 40,000m<sup>3</sup>/year, frequency and volume could be adjusted based on monitoring results.
- A medium Cutter Suction Dredger would be proposed.
- There would be an increase in costs relative to onshore placement of great than 30%.
- Sediment is predicted to be transported away from the Clinton Channel release site and deposited as a widespread thin layer of sediment throughout much of the PoG (as intended).



## MORE INFORMATION

For more information on the Sustainable Sediment Management Project (SSM Project), visit [gpcl.com.au/ssm-project](http://gpcl.com.au/ssm-project).