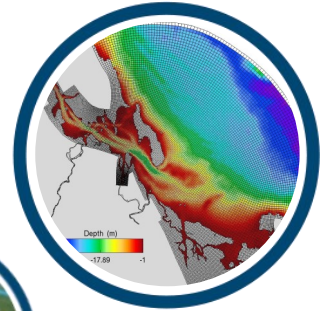




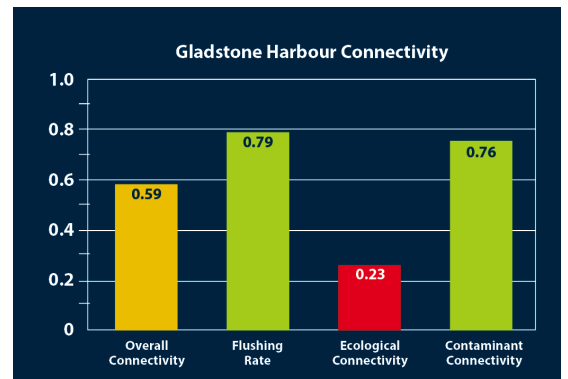
Gladstone
Healthy Harbour
Partnership

CONNECTIVITY



FIVE FAST FACTS

1. The connectivity indicator measures the movement of water through Gladstone Harbour.
2. Hydrological connectivity (the movement of water) helps to maintain ecosystems like seagrass beds, mangroves and coral reefs.
3. Connectivity is measured using a 3D hydrodynamic model that simulates water movement and tracks virtual particles.
4. Connectivity is measured in **ELEVEN** Gladstone Harbour zones.
5. Connectivity does not contribute to the overall environmental grade.



WHAT DO THE GRADES MEAN?

Flushing rate and contaminant connectivity scores were high in 2016-17, where as ecological connectivity scored poorly.

Heavy rainfall after Cyclone Debbie caused high levels of flushing over March, although other factors such as winds and offshore conditions also contributed.

These conditions limited potential for contamination of neighbouring zones, as well as the potential for larvae to recruit to nursery habitats in other harbour zones.

HOW IS CONNECTIVITY MEASURED?

Connectivity is measured using a 3D hydrodynamic model (which models water movement) where 2,000 neutrally buoyant 'particles' are randomly placed throughout the virtual water column in each of the harbour zones at 20 day intervals. The movement is assessed against a four year baseline period (2010-2014) to determine any changes.

Three connectivity indicators are measured to calculate scores for the Gladstone Harbour Report Card:

1. **Flushing rate** — measures the rate of water exchange
2. **Ecological connectivity** — measures water exchange between spawning grounds and nursery areas for important harbour species such as barramundi, bream and mud crabs
3. **Contaminant connectivity** — measures the movement of contaminants that are discharged into the waterways and their ability to move into other parts of the harbour

CONNECTIVITY SITES MONITORED BY GHHP



Connectivity is modelled across GHHP's 11 environmental monitoring zones. The map shows particle exchange after 20 days of dispersal, averaged over 12 months (2016-17).

GHHP Partner, CSIRO was a direct contributor to this indicator

For more information on connectivity monitoring in Gladstone Harbour visit www.ghhp.org.au or visit our Facebook page.