Australian Government

Australian Institute of Marine Science

AIMS: Turning science into solutions

Australia's tropical marine research agency

Marine science ensures cruise ship access to Darwin

The challenge

The Port of Darwin's close proximity to Asia makes it a gateway for international cruise ships with Fort Hill Wharf home to Darwin's Cruise Ship Terminal. Cruising is a significant component of the Northern Territory tourism industry. In 2018 the Territory welcomed around 60,000 cruise ship visitors.

About 80% of the Darwin Harbour region's seafloor is covered with soft surfaces consisting of mud and fine sand. Its eight-metre tidal range requires dredging to ensure safe access for vessels.

The port operators, Darwin Port, would have to remove the sediment - last undertaken at Fort Hill Wharf in 2008-09 - and satisfy strict requirements under the Environmental Assessment Act.

The approach

In 2017 AIMS developed and implemented a sediment sampling and analysis plan for Fort Hill Wharf.

AIMS scientists conducted hydrodynamic modelling of the sediment plume to assess the environmental risk posed by maintenance dredging. The information provided by AIMS was referred to the NT Environment Protection Authority and allowed Darwin Port to gain environmental approval to dredge.

Finally, AIMS monitored the actual dredging operation in real time using turbidity meters. This ensured a faster response to water quality exceedances, increasing protection for the environment and met an additional EPA regulatory requirement.

The impact

AIMS' scientific information assured environmental approval for maintenance dredging and enabled Darwin Port to continue to facilitate commerce in Northern Australia. Without AIMS' real-time monitoring, the dredge would not have been able to proceed. AIMS' involvement in the sediment excavation:

- Maintained the required depths of the berths to provide safe access to the wharf at all tides for visiting cruise ships and naval vessels;
- Enabled the dredging operation to comply with environmental standards and be completed on-time and within budget;
- Prevented environmental harm to the marine ecosystem; and
- Ensured revenue in a sector worth nearly $90 million per year to the NT economy.

MAINTENANCE DREDGING

ENVIRONMENTAL APPROVAL GAINED

CRUISE SHIPS & NAVAL VESSELS

ALL TIDES SAFE ACCESS

MONITORING DREDGING CAMPAIGN

ACCURATE REAL-TIME

ECOSYSTEM HEALTH

PRESERVED