

Environmental Management of Dredging and Reclamation in Singapore – Application of PIANC Report 108 Recommendations

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PIANC Report No. 108 – Dredging and Port Construction around Coral Reefs was released in 2010. However, DHI has developed and successfully applied the approaches and methodologies for environmental management outlined in the report in Singapore since 2004.

Traditional methods for environmental management of marine dredging and reclamation works close to sensitive habitats have generally not provided the level of control necessary to ensure preservation of these habitats while avoiding unnecessary restrictions to operations. Trigger limits have been based on literature and/or baseline monitoring, but traditional monitoring programs have not included a timely and adaptive feedback mechanism to adjust the limits based on monitoring results in a proactive fashion, in time to avoid or minimise both coral mortalities and false exceedences.

This presentation describes the successful implementation of comprehensive Environmental Monitoring and Management Plans (EMMP), based upon such feedback principles, which have allowed dredging and reclamation activities to proceed in close proximity to Singapore's most important marine habitats under close third party scrutiny. Specific focus is placed on describing the methods utilized to quantify compliance with daily spill budget targets and how such targets and compliances are assessed. Use of sediment plume models to hindcast impacts from the contractors' complex reclamation schedules is also described. Methods for segregation of impacts (e.g. from adjacent projects, or between different project activities) and assessment of cumulative impacts are also described. Finally, the presentation describes the updating of tolerance limits and confirmation of spill budgets via targeted habitat monitoring.

To date, the EMMPs have been able to document compliance of the works to all pre-project environmental management objectives at a level of reliability that cannot be refuted by third parties. This has minimized the developers' and contractors' exposure to public complaints and liabilities associated with environmental impacts. The EMMPs have thus allowed the dredging and reclamation activities to proceed in an efficient manner, whilst ensuring protection of the environment.

Keywords: Singapore, Corals, Dredging, Reclamation, Spill Budget