

# IT DOES NOT HAVE TO BE SO HARD! APPROACHES TO FORESHORE MANAGEMENT USING ADAPTIVE NATURE-BASED SOLUTIONS AND LIVING FORESHORES.

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The application of coastal, estuarine and river foreshore stabilization and protection has a history of 'hard' engineered solutions. Such approaches create species poor environments and often replace diverse natural foreshores. Not without exception, and other than low energy environments that can accommodate a purely vegetation restoration approach, the application of structures such as vertical and subvertical seawalls, rock revetments or similar have predominated.

Recently there has been an increasing trend for the application of solutions incorporating more ecologically focused and adaptive characteristics, as well as greater consideration for human interaction. This trend has been coupled with an increasing awareness for environmental consideration and development of innovative solutions.

Increasingly, solutions are demonstrating that foreshore erosion protection, improvement and stabilization can have environmental enhancement and biodiversity improvements at its core and, furthermore, offer nature-based solutions that are adaptive to long term trends, such as sea level rise. The discipline is in a dynamic, rapidly evolving and ultimately exciting phase.

Solutions have been applied in varying environments, including relatively high energy wave environments (Figure 1), estuarine intertidal embayments (Figure 2) and tidal creeks (Figure 3). Examples are presented and include details of the innovative techniques utilized, practicalities, challenges and outcomes. These have typically utilized a hybrid of material and vegetation. Other examples such as retrofitted eco plates and living revetments are also considered.

There is a relative paucity of international or domestic guidance documents on the subject matter. Exceptions include OEH (2009). This presents an opportunity to share knowledge and increase the implementation of such solutions.



Figure 1 - Estuarine embayment seawall restoration utilizing intertidal pools and vegetation, Carss Park, Sydney



Figure 2 - Saltmarsh berms incorporated into seawall, Clayden Reserve, Sydney.



Figure 3 - Living foreshores of mangrove and saltmarsh integrated tidal channel restoration, Johnstons Creek, Sydney.

If you have any queries on the preparation of your abstract, please contact Nick Lewis at [nick.lewis@rhdhv.com](mailto:nick.lewis@rhdhv.com)

The featured projects have been undertaken under engagement from various Clients and partners. Clients include Sydney Water Corporation, Georges River Council, and NSW Department of Planning and Environment. Partners include Thompson Berrill Landscape Design, Short Pants Consulting, Realm Studios and Australian Wetland Consulting.

## REFERENCES

NSW Office of Environment and Heritage (2009). Environmentally Friendly Seawalls A Guide to Improving the Environmental Value of Seawalls and Seawall-lined Foreshores in Estuaries.