



2<sup>nd</sup> PIANC Asia Pacific Conference

*Approaches to foreshore management using adaptive nature-based solutions and living foreshores*

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***Approaches to foreshore management using adaptive nature-based solutions and living foreshores***

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## Abstract recap

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 of 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.

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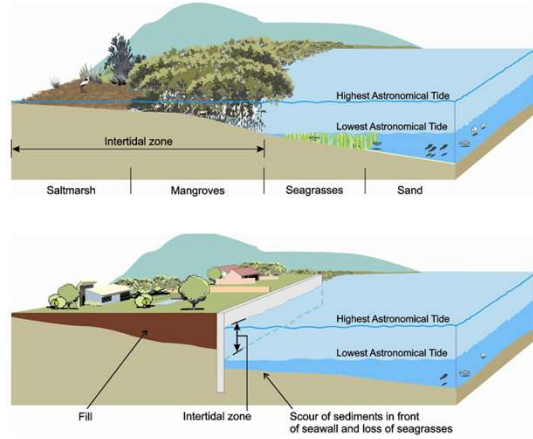
## Content

- Defining the problem & conceptual solutions
- Project example 1 – Embayment - **Carss Park**
- Project example 2 – Tidal Inlet - **Wagonga Inlet**
- Project example 3 – Stormwater Channel - **Powells Creek**
- Other solutions
- Barrier
- Debate

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## The problem and context



Schematic diagrams of natural estuarine shoreline showing wide gradation across zones (top) and modified shoreline where intertidal zone is greatly reduced in size and width (bottom). Images courtesy of Office of Environment and Heritage.

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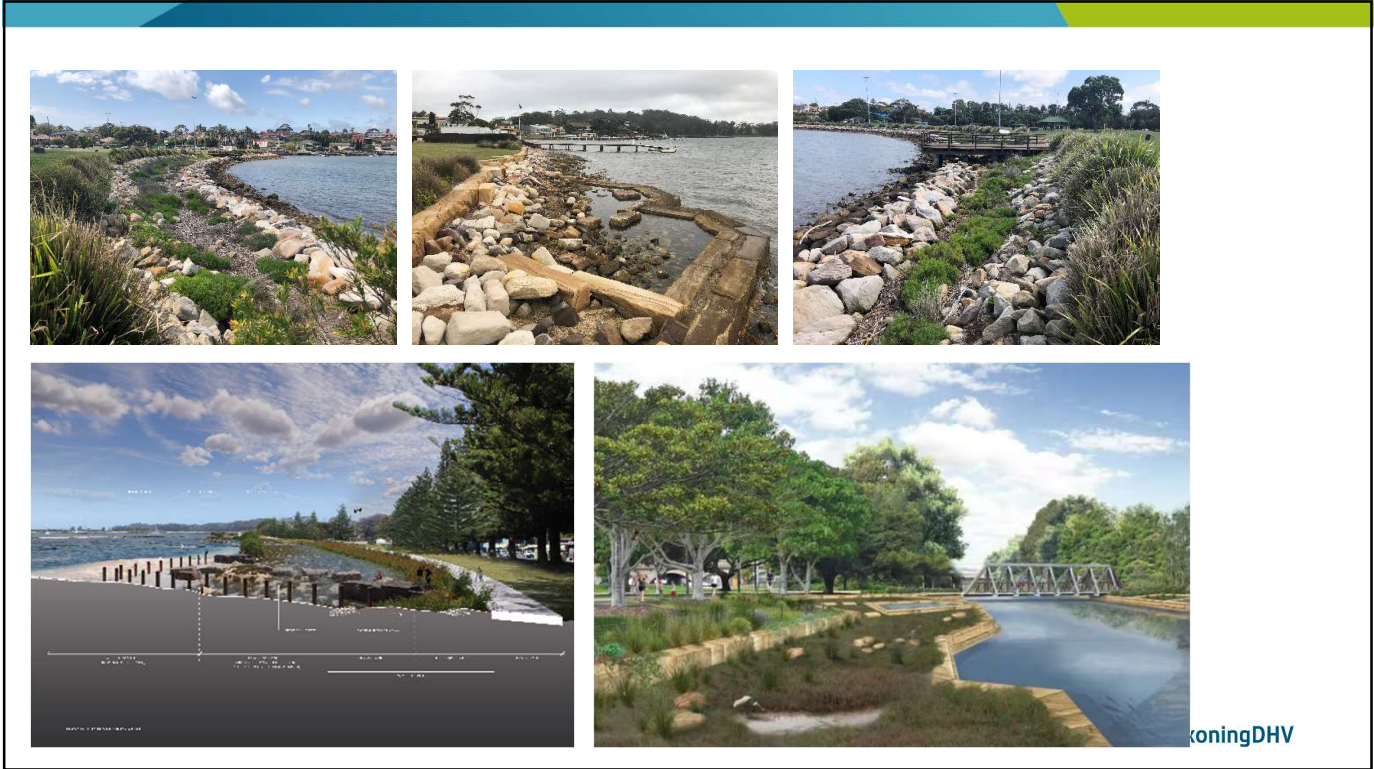
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## The problem and context



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# Example 1

Project Name: **Carss Park Foreshore Rehabilitation**  
Location: Kograh Bay, Sydney  
Client: Georges River Council



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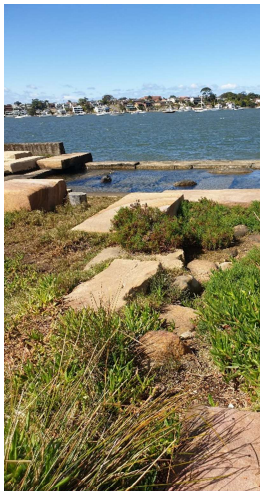
# Example 1



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# Example 1



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### Example 1



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### Example 1



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## Example 2

Project Name: **Wagonga Inlet Living Shorelines**

Location: Narooma, South Coast, NSW

Client: The Nature Conservancy



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## Example 2

**Wongonga Inlet Living Foreshore**  
Narooma



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## Example 2



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## Example 3

Project Name: **Powells Creek Stormwater Channel Rehabilitation**

Location: Strathfield, Sydney

Client: Sydney Water



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### Example 3



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### Example 3



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## Other solutions



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## The problem and context



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## Barriers?

*What are the barriers to more environmentally friendly solutions?*

- *Infrastructure / service / amenity to protect*
- *Higher costs*
- *Forcing processes*
- *Habits*
- *Education / knowledge*
- *Appetite*
- *Guidelines / examples*



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## The debate.....

*The example presented here [see right] truly enhances the environment through nature-based solutions and increased biodiversity, and is not just window dressing/ticking the box?*



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