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# ARUP

By Email

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Dear Laurie

## Cottesloe Pier Proposal: Technical Viability Maritime and Structural Design

We have carried out a high-level appraisal of technical viability of Lawrence Scanlan & Associates proposals for a pier and underwater observatory at Cottesloe Beach. This is limited to an overview of the general structural form and geometry of the proposals in the context of maritime and structural engineering.

Our knowledge of the proposals is based on the below-listed conceptual arrangement drawings, received in January 2013.

- SK01, Site Plan
- SK03, Ground Floor
- IM01, Image-01
- IM04, Image-04

On the basis of the above, we believe that the proposed concept is technically viable in terms of its maritime and structural engineering design. Our opinion is based on past experience of similar projects, professional judgement and knowledge of local site conditions which include marine conditions. A key element in the design will be the assessment of the risk of waves over topping the deck for various storm events and this will require detailed analysis. As an initial starting point a clearance of 3.5 to 4.0metres to deck level should be included in any concept designs. Further studies and risk assessments will be required to confirm this assumption.

This is subject to future design development, which we would expect to include the following tasks:

- Data gathering:
  - Desk study to collate and review relevant existing information of the site.
  - Bathymetric survey to establish detailed bathymetry in the project area.
  - Geotechnical site investigation to establish design soil parameters.

- Assessment of maritime environmental conditions to establish wind, wave, water level and current design parameters.
- Stakeholder engagement.
- Understanding the operation and operational requirements of the facility.
  
- Design Basis:
  - Design life, durability and maintenance requirements.
  - Geometric requirements.
  - Form of construction, materials and constructability requirements.
  - Design parameters (established on the basis of data gathering exercises).
  - Operational requirements based on the proposed use of the facility.
  
- Proposal development:
  - Approvals.
  - Maritime design of marine infrastructure (pier, observatory, moorings etc).
  - Structural design of topside structures (restaurant, bar etc).
  - Operational assessment (e.g. wave overtopping assessment to set appropriate deck levels).
  - Assessment of potential impacts of the proposals on existing structures (e.g. scour assessment).
  - Assessment of environmental issues.

We trust that the above comments are useful and meet your current requirements. The proposed development is very exciting and we would be happy to work with you to make the project reality.

For information we have included a capability statement on waterfront developments and please feel free to contact us if you require any further information or input.

Yours sincerely,



Alistair Avern-Taplin  
Principal

Enc Arup Waterfront Developments Capability Statement, 2013

cc Lewis Macdonald