



Niksa Sardelic

## Editorial

The selected projects in this issue of Coastlines reflect a diversity of locations and the variety of engineering projects in which we are involved. Our planners are essential during the concept stages of an endeavour like The Landing at Hobsonville where a former military base is being transformed into a well planned residential and recreational coastal neighbourhood with a wide range of facilities which will be an asset available to the wider community. The collaborative effort of Beca's planning and engineering team, together with a number of specialist sub-consultants, resulted in the consents for the project being granted this year and works are due to commence later in 2011.

Richard Frankland, one of our Port Technical Directors, was asked to speak at the recent 35th Pacific Countries Ports Association conference in Suva. This was a wonderful opportunity to catch up with representatives of organisations he has worked with in the past and to spread the word on methods of sustainably maintaining and repairing wharf structures where available funds are tight. The successful repair of a deteriorated structure in

an aggressive marine environment is a specialised undertaking, the success of which is dependent on a number of factors, not least the experience of the team involved in the project.

Our works in the Pacific are highlighted in the Cook Islands by the development of the port in Avatiu. This project will assist that small island nation in generating tourist income as well as providing better facilities for cargo vessels trans-shipping goods to the smaller outlying islands in the group.

Closer to home, work is proceeding on an iconic lifting bridge over the Hatea River for the Whangarei District Council, reflecting the local character and culture of the district. An innovative approach used during the consenting process on this project provides flexibility and allows for cost and time efficiencies during the design-build process.

We are delighted that three of our staff are presenting papers at the Annual Conference of the NZ Coastal Society on 17-19 November in Whitianga and highlight our wider team in this issue.

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## Preparing for 'The Landing'

'The Landing' was used to service a fleet of seaplanes as part of the operation of the original Hobsonville Air Base, formerly the military installation for the New Zealand Defence Forces. Now, 'The Landing' is set to become an active and vibrant waterfront destination for Auckland, comprising a range of commercial, lifestyle and recreational uses and serving as a gateway to the broader Hobsonville Point development.

The Hobsonville Land Company is managing the redevelopment of the base with a vision to create an exciting long term and multi-dimensional housing project including education facilities, places of employment and supporting infrastructure.

### Marine facilities

A range of complementary marine facilities are proposed as part of this development, including a new ferry wharf to support a service to Auckland's CBD, coastal boardwalks and esplanades, public access structures, a 44-berth marina and the construction of a new recreational beach. To improve the functionality of the water's

edge along the public spaces, dredging is also proposed. This will enable 'The Landing' to be home to New Zealand's first purpose-built launching facility for super yachts, which will be built in the nearby Marine Industry Precinct.

Taking the requirements of a wide range of stakeholders into account, preliminary engineering of these structures incorporated information gathered during site investigations and assessment of the impact of each of the proposed works.

The layout of the marine facilities had to provide for a combination of recreational and commercial facilities; and coastal processes such as wind, waves, tides and currents needed to be considered to increase the functionality of the facilities and reduce the amount of dredging.

Retaining and recognising heritage features is a key distinguishing factor for this project. An interesting part of Auckland's history, the existing seaplane ramp, will remain and an existing basalt seawall will be incorporated into the new development.

### Planning for success

To provide for a wide range of activities and structures both above and below mean high water springs, the project demanded a comprehensive understanding and appreciation of the implications of the Resource Management Act, the NZ Coastal Policy Statement and various regional and district planning documents, including Plan Change 13 to the Waitakere District Plan.

The Beca planning and engineering team, together with a number of specialist sub-consultants, worked collaboratively to complete preliminary engineering design and prepare applications to the Auckland Regional Council and Waitakere District Council. A joint hearing was held in July 2010 and all consents were granted with a set of conditions that were acceptable to the client and the Councils. Works are due to commence later in 2011 with the construction of the ferry wharf.

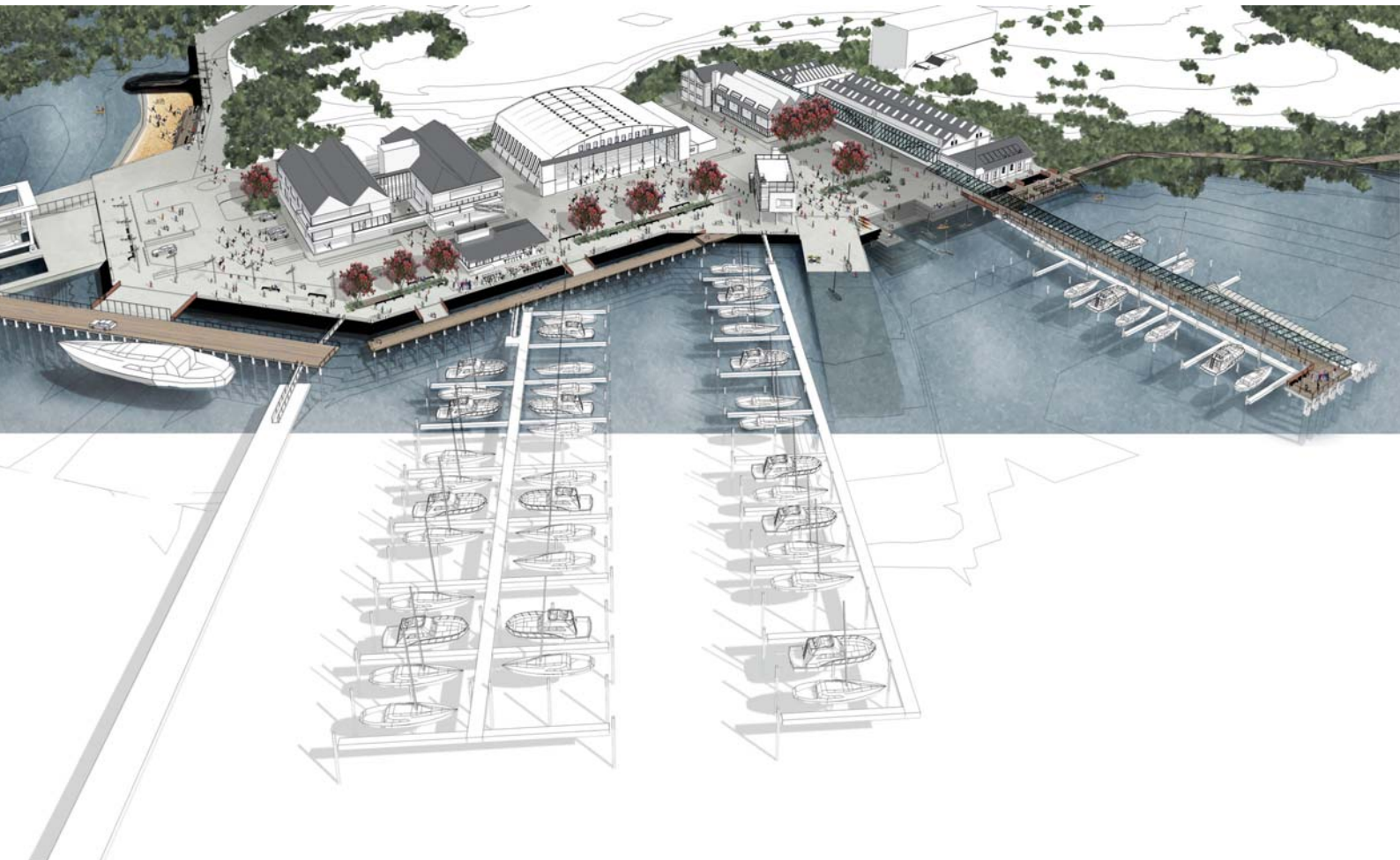
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## Coastal consenting and preliminary engineering design for a gateway waterfront destination.



▲ Image is courtesy of Architectus, who prepared the Masterplan for 'The Landing'.

## Upgrading a vital Cook Islands gateway



Jointly funded by the Asian Development Bank and Cook Islands Government, the US\$23 million upgrade of Avatiu Port (above) in Rarotonga aims to extend the life of the Port. The domestic and international wharves will be aligned into one 250m long berth-face, seeking to enhance the safety and efficiency of port operations. Beca is providing project management, engineering, construction supervision and environmental planning services to the Cook Islands Port Authority (CIPA) for this project.

Avatiu is the gateway and principal international port for the Cook Islands and the transshipment port for cargo to the less populated outer islands. The Cook Islands are heavily reliant on international imports by sea to support the tourism industry – the mainstay of the economy – as well as for general imports and exports.

The harbour handles about 90% of the food and materials imported into the Cook Islands and 100% of the fuel. Larger ships, including cruise ships, cannot be accommodated at the Port, limiting the economic benefits to be gained from the tourism market.

The continued efficient operation of the port, its security against periodic cyclone events and the need to accommodate changes in regional shipping methods and tourism are critical to the Cook Islands' economy and the social well-being of its people.

The project will replace the aging and dilapidated main wharf with a low maintenance, climate change-proofed wharf that is less vulnerable to damage from extreme weather and is able to be raised in the future to adapt to sea-level rise. The harbour entrance will also be widened and the harbour deepened so larger vessels can berth at the wharf and turn inside the harbour.

The Beca team based in New Zealand and Rarotonga prepared an Environmental Impact Assessment (EIA) of the upgrade works for lodgement with the Cook Islands' National Environment Service

in March 2010. The EIA built on an Initial Environmental Examination and consultation commissioned by the Asian Development Bank during the loan assistance stage of the project.

A focussed consultation process with stakeholders, tribal leaders, government ministries, local businesses and the community contributed to the robust justification for the project. It emphasised the need for careful management of works for efficient Port operation during the construction period. Consultation will continue throughout the project, with construction expected to begin early in 2011 and finish during the second quarter of 2012.

On completion of the upgrade, CIPA with assistance from the Beca team will develop an environmentally and sustainably responsible Port Management Plan seeking to reduce the environmental impacts of business-as-usual Port operations and where possible enhance the environmental quality of the harbour area.

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## An iconic second harbour crossing for Whangarei

A new lifting bridge over the Hatea River is set to provide a striking road and maritime traffic gateway for Whangarei.

Whangarei District Council successfully obtained resource consents in July this year to construct an iconic lifting bridge over the Hatea River. The first of its kind in New Zealand, the lifting bridge will be Whangarei District's second harbour crossing on the Hatea River.

The bridge was designed to reflect key themes identified in public consultation: to provide a visually powerful bridge, reflect the local character and culture of Whangarei and provide a strong gateway to both road and maritime traffic.

The project includes a new road on Pohe Island and intersection improvements on Port Road and Riverside Drive. The bridge features will incorporate pedestrian and cycleway access as well as viewing platforms to enjoy spectacular views to the upper harbour. A new off-road pedestrian and cycleway on Pohe Island reserve through to Riverside Drive will be

constructed, with future opportunities to link up to the wider open space network.

The lifting section of the bridge will allow boats to pass through the river channel; and boats will be able to be tied up to new pontoons upstream and downstream of the bridge when it is being used by road traffic.

It is anticipated that the lifting bridge will have significant benefits for Whangarei, reducing traffic congestion and improving accessibility in the CBD as well as providing a more direct link to State Highway 1. The project is designed to cater for anticipated traffic flows for at least 40 years.

The local community including tangata whenua, the Harbour Master, Department of Conservation, commercial fishermen, recreational fishermen, marine facility operators, and recreational user stakeholders were consulted extensively by Whangarei District Council.

The council set up a Marine User Group to keep communication lines open and to help identify potential access effects associated with the project; and consultation with the Group will continue during the detailed design and construction phase of the works.

Beca prepared the joint resource consent application on behalf of Council. Developed using an innovative construction envelope approach, it gives Council flexibility throughout the consenting and construction process. The benefit of using this approach is that it allows for greater cost and time efficiencies through the design-build process.

Whangarei District Council intends to complete the works for the Second Harbour Crossing by September 2011.

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Image courtesy of Opus

# Sharing methodologies for assessing the condition of Pacific port structures

Richard Frankland's invitation to speak at the 35th Pacific Countries Ports Association Conference was as a result of his work on port and coastal related engineering in many of the countries whose representatives attended the conference. His presentation covered several aspects of port maintenance, in particular condition rating and repair methods for assets, using wharf structures as an example.

Maintenance of structures in the Pacific is especially challenging because of the aggressive tropical marine environment. In most small island countries, the wharves at main ports are lifeline structures, not only critical for the economic well-being of the island, but essential in the event of natural or other disasters as international aid arrives by ship.

Pacific countries are often criticised for a lack of maintenance, but this relates to

the lack of funding available to the port authorities. Port authorities are usually subsidised government entities that cannot reasonably operate at commercial profit levels and depend on funding from the government budget. There is often a shortfall between what the port authority requests and what it is allocated. In this situation something has to give and can include the inspection work necessary to properly quantify the maintenance demands on structures and plant. The result is a vicious circle when the maintenance demand increases because there are insufficient resources available to assess it.

Richard's well-received presentation offered a simple and effective methodology for completing a condition assessment of port assets. This methodology provides a clear picture of the condition of the assets, combined with their relative importance,

helping to prioritise the assets that need to be addressed. Cost estimates can be developed once the critical elements are identified. If the system of condition assessment is repeated, feedback from repair costs can be used to provide improved estimates of repair cost. A system of prioritisation means the repairs can be managed so the most critical elements are addressed, while keeping within a predefined budget.

Pacific countries were represented at the meeting, with senior government figures delivering keynote presentations.

For more information on the presentation and methodology please contact:

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## Team Update

Beca can draw on a wider team to support ports and coastal projects.



We have specialists in the disciplines of coastal structures, planning and consenting, geotechnical, civil engineering, cost management and infrastructure management services; and can draw on scientists in coastal processes, modelling and the environmental aspects of the built land/water interface. Many of our staff have more than 15 years' experience in their chosen field and can offer practical solutions for a wide range of client objectives.

### Your first port of call by discipline

**Civil** // Stephen Priestley

**Geotechnical** // David Anstiss

**Planning/Consents** // Blair Masefield

◀ Pictured here are some of our team members experienced in and passionate about coastal projects.

From left to right are: Graeme Roberts, Lisa Hardwick, Alex Wong, Richard Frankland, Katie Sherning, Steven Priestley, Jennifer Hart, Niksa Sardelic.

**Cost Management** // Gerard Lieshout

**Environmental** // Hugh Leersnyder

**Infrastructure Project Management** // John Youdale

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## Introducing Blair Masefield

Blair grew up sailing in the Bay of Islands. His first taste of coastal planning was as a student working part time for Wairoa District Council while living on the Mahia peninsula during the height of the coastal property boom. He joined Beca after graduation and worked on a range of statutory and strategic coastal projects before moving to the

Auckland Regional Council Coastal Consents and Compliance team.

Blair's 'OE' work afforded a completely different experience in a London Borough's Spatial Planning policy team. He says travelling "...was certainly an eye opener, contrasting the mega port of Rotterdam to the historic Italian villages on the Amalfi and

Cinque Terra coasts, the orderly mixed use redevelopment of Buenos Aires port to the chaos of Thailand's island paradises". He adds humorously, "Imagine trying to consent a Victorian seaside development like Brighton under the RMA!"

Now back in Auckland, Blair rejoined Beca and is continuing to focus on coastal projects.



**New Zealand**

**China**

**New Caledonia**

**Australia**

**Indonesia**

**Papua New Guinea**

**Brazil**

**Malaysia**

**Singapore**

Send your feedback and suggestions for future issues to portsandcoastal@beca.com

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