## **Beca**

# Coastlines



#### **Editorial**

Beca's ports and coastal team has been privileged to work on many interesting projects with our clients over the last few years. We have continued to experience a trend of steady work with successful developments at home and growth in the Pacific. This showcases Beca's ports and coastal capabilities, and also provides constant challenges and learning opportunities for our staff. With the background of global economic headwinds potentially impacting us and our clients, the ports and coastal team continues to strive to deliver effective solutions.

In this edition we look at projects in New Zealand including Queens Wharf, essential infrastructure improved prior to the influx of crowds for the Rugby World Cup. The historic structure received a new lease on life with under-wharf concrete repairs work. One of our planners also sheds light on the New Zealand Coastal Policy Statement 2010 process.

On the Pacific front, we provide an update on our projects that include developing harbours in some of the more remote areas in the Cook Islands and our on-going work in developing essential transportation in Tuvalu. We also report on a recent tourism infrastructure project in Vanuatu, a relatively new area of engagement for Beca's ports and coastal team.

What makes Beca unique is our great people. We reflect on the good work done by the Ports and Coastal team in making our projects such a success. It has been a period of staff movement, as two of our engineers leave on their respective OEs, and our long serving project administrator retires. Nevertheless, we look forward to their return with new experiences and continue to enjoy the skills and great input from other members of the team, including Peter Algie, who is profiled in this issue.

We hope you enjoy these updates.

#### Editorial

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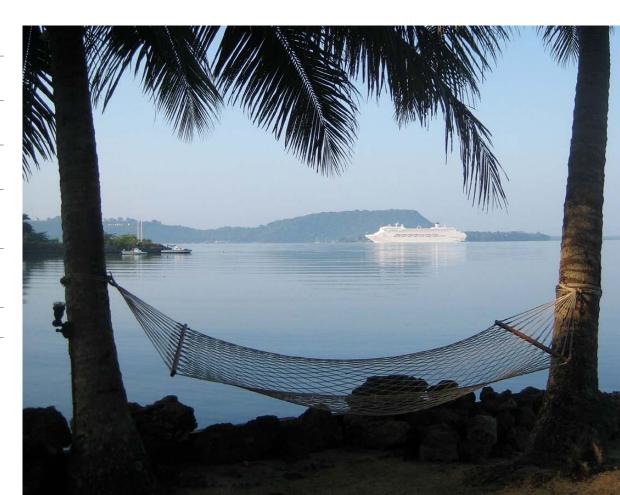
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Beca Ports and Coastal Services

#### Improving Vanuatu's Tourism Infrastructure

Beca is excited to be working on the recently won Vanuatu Tourism Infrastructure Project. Funded by the New Zealand Aid Programme, the goal of the project is "improved infrastructure including management services in Port Vila city to enhance tourism development".

Tourism has long been identified as a key component of Vanuatu's economy. Port Vila is one of the most popular cruise ship destinations in the Pacific with around 150,000 visitors arriving annually. Industry growth is set to continue in the future with an estimated 200,000 passengers scheduled to arrive in Port Vila in 2012 (around a 30% increase from 2011). Infrastructure development supporting the cruise ship industry is integral to future economic wellbeing.

The project focusses on improving the tourist experience at two key areas in Port



Vila: the Portside Precinct at the existing wharf and the Seafront Precinct on the downtown waterfront.

Work began with an inception visit in March this year. An initial stakeholder workshop was held to help understand the project's complexity, issues and opportunities as well as the government department regulations and procedures. We held meetings with stakeholders including tour operators, transport operators, municipal authorities, businesses and donor agencies; understanding that facilitating clear communication and information on this project will be essential.

We are currently developing Phase 1 preliminary concept design options. Phase 2 will involve facilitating public consultation and presentation to key government ministries to select a preferred option. Subsequent phases will include detailed design of the preferred option, preparing tender documents, tender evaluation and assisting with project monitoring and technical advice during construction.

There are a variety of challenges that promise to demand both functional and innovative

solutions. The current Seafront Precinct infrastructure is degraded, with slumping and soil loss behind the existing seawall, overtopping of the seawall during storm events, overland flooding following heavy rainfall and poor drainage leading to severe flooding. At the Portside Precinct cliff stability issues pose a threat to public safety. Lack of space for public transport services (buses and taxis) and a proliferation of market stalls also create a heavily congested area. This is compounded by the mixed operational use of the port area for both cargo and cruise ship operations and the need to accommodate the potential for future development of the cruise industry.

Beca's team of urban designers, landscape architects, engineers and scientists is taking a collaborative, design-led approach to realising the longterm vision for Vanuatu's prime waterfront.

For more information contact: **Graeme Roberts Email** // graeme.roberts@beca.com **Telephone** // +64 9 300 9271

### Tuvalu Ship to Shore Transport Project Update



Beca is currently working with the Government of Tuvalu on the Tuvalu Ship to Shore Transport Project, a major project to improve the quality, safety and cost effectiveness of the transport services to the outer islands of Tuvalu. Funding is provided by the International Development Group of the New Zealand Ministry of Foreign Affairs and Trade NZAID programme, which has supported reef channel improvement works in Tuvalu for over 30 years.

Following completion of the reef channel design and tendering by Beca, the Reef Channel Construction Contract was awarded to Vuksich and Borich NZ Ltd in July 2011. Construction works were carried out on six of the outer islands, Nanumea, Nanumaga, Niutao, Nui, Nukufetau and Nukulaelae, between September 2011 and May 2012.

Works included dredging to deepen and widen the existing main channels, forming turning basins and installation of navigation aids to improve navigation and safety of cargo loading/unloading operations to the islands. Navigation aids will also be installed at Funafuti, the capital and main international and domestic shipping port. It is expected that works on Funafuti will be completed by the end of 2012.

Due to the remote locations, a number of challenges were faced during the construction period. These included high levels of maintenance and repair work on the machinery affected by the harsh marine

environment and tropical climate, limited availability of replacement parts, long delivery times and the variable condition of the excavated material. Blasting was only required on one island due to the hardness of the reef, which minimised the impact of the works on the surrounding infrastructure, environment and local community.

Critical to the successful delivery of the project was maintaining positive relationships between the contractor and outer island communities. Poor communication connections with the outer islands and limited understanding of technical issues by their communities were key challenges that the team managed effectively. Relationships were strengthened through site visits and presentations to the community and local primary schools on project expectations, environment and health and safety matters

Overall the project has delivered a positive outcome for the community through improved navigation and safety of access on and off the islands.

For more information contact:
Lisa Hardwick
Email // lisa.hardwick@beca.com
Telephone // +64 9 300 9072

#### Essential upgrades for Queens Wharf

A big highlight for Beca was being a part of the largest concrete repair job to a wharf ever undertaken in New Zealand.

Queens Wharf is an historic reinforced concrete structure, over 100 years old, located off Quay Street in downtown Auckland. In 2009, the ownership of the wharf was transferred from Ports of Auckland Ltd to the Government and the Auckland Regional Council (ARC), in order to develop it into a public space and short term 'party zone' for the Rugby World Cup (RWC). In November 2010, the ARC became part of the Auckland Council and Waterfront Auckland took over the development of Queens Wharf. This included the demolition of Shed 11, construction of 'the Cloud', a function and exhibition space, refurbishment of Shed 10, installation of new underwharf services and repairs to the wharf surface and underwharf concrete.

Beca was commissioned to write the specifications, and compile and administer the contract to repair the deteriorated underwharf concrete elements. The provisional volume for concrete repairs of 180m<sup>3</sup> made it the biggest wharf concrete repair job in New Zealand ever at the time.

The 50 week contract was awarded to Construction Techniques Ltd (Contech) in August 2010, with the work scheduled to finish before the RWC. The project required full cooperation with the other contracts and contractors working on the wharf, which meant repairs to certain areas under the wharf had to be rescheduled to fit into other contract timeframes.

In August 2011, Contech finished the contract ahead of time with a total volume of 191m³ of concrete repairs, a 6% increase from the estimated volume, which is within the expected range of variation for this scale and type of project.

It is anticipated these repairs will increase the service life of Queens Wharf by another 10-15 years.

For more information contact:

Niksa Sardelic

Email // niksa sardelic@beca

Email // niksa.sardelic@beca.com Telephone // +64 9 300 9204

#### Rehabilitating Mauke and Mitiaro Harbours, Cook Islands

Funded by the New Zealand Aid
Programme and managed by the Cook
Island Ministry of Infrastructure and
Planning (MOIP), this project to upgrade and
rehabilitate two cyclone-damaged harbour
structures has a contract value of \$4.3 million.

During 2009 and 2010, Beca was commissioned to design the upgrade and rehabilitation works for the small harbour structures on the islands of Mauke and Mitiaro, situated in the Cook Island group, which were damaged during a 2005 cyclone.

Design works for each harbour involved the construction of sea walls situated on reef flats, harbour dredging and construction of a quay area and boat ramp which will withstand cyclone conditions on an exposed coastline.

Pacific Building Solutions of Fiji won the work for both islands and was mobilised on the Mauke site by June 2011 to the warm reception of the Mauke people and Island council members. The project was officially started with a prayer and customary rock breaking, followed by a feast.

On behalf of MOIP, Beca has been providing on-going construction supervision and contract management services. The contractor has had to face some challenging working conditions with material shortages,

labour strikes and adverse weather conditions affecting many aspects of construction. Completion of the harbour at Mitiaro is expected later this year.

These harbour projects are essential to improving the standard of living and economy of these two outer islands as they facilitate the primary means of cargo transport to and from the islands.

The improved harbours are designed to allow cargo to be unloaded safely in marginal sea conditions. In addition, they provide a valuable source of employment for the community, enabling the development of important skills and expertise for local residents.

For more information contact:

John Youdale

Email // john.youdale@beca.com

Telephone // +64 9 300 9151



#### Giving effect in 2012 to the New Zealand Coastal Policy Statement 2010

The Resource Management Act requires a New Zealand Coastal Policy Statement (NZCPS) to guide local authorities in the day to day management of the coastal environment. Local authorities must give effect to relevant provisions of the NZCPS in planning documents, and resource consent authorities must consult relevant provisions when considering consent applications.

The first NZCPS was issued in 1994, and on 3 December 2010 it was revoked when a new statement took effect. A number of second generation planning documents such as District Plans, Regional Plans and Regional Policy Statements were at various stages of development when the NZCPS 2010 was released. As those plans were based around the 1994 version, many now require updating.

The NZCPS 2010 version gives more specific direction to councils in a number of areas including strategic and spatial planning, ports, aquaculture, coastal hazards, public access and vehicles on beaches. The NZCPS 2010 also has greater support for environmental outcomes with

more specific policy on the preservation of natural character, protection of indigenous biodiversity and improvement of water quality and monitoring. Additionally, the NZCPS 2010 introduces new policy related to nationally significant surf breaks.

Beca has been assisting the Bay of Plenty Regional Council to prepare a Variation to the proposed Regional Policy Statement (PRPS) to give effect to the NZCPS 2010. The PRPS was publically notified in November 2010 and is therefore based on the now outdated 1994 NZCPS.

The Variation proposes maps to be appended to the PRPS that spatially define the inland extent of the Coastal Environment, providing for consistency in the way the region's coastal environment is identified and where coastal environment policies are implemented.

A natural character assessment was undertaken for the Bay of Plenty coastal environment and areas identified from outstanding through to low natural character. Coastal environment policies in the Variation reflect the regional scale of the assessment by including criteria and the requirement to consider natural character and avoid adverse effects on identified areas at a local level when developing district plans or assessing resource consents.

The Variation was publicly notified in May 2012.

For more information contact: **Cushla Loomb Email** // cushla.loomb@beca.com **Telephone** // +64 9 577 7976



Cushla is an Associate in Beca's Tauranga office, with a specialist knowledge of Coastal Planning. Please contact her for information or advice on the implications of the NZCPS.

#### Introducing Pete Algie



To contact **Pete Algie Email** // peter.algie@beca.com **Telephone** // +64 300 9391

Pete joined Beca in 2010 after a ski season in Canada at the end of his studies. His work in the Ports and Coastal team has centred on concrete repair and maintenance, marine structural design and load capacity calculations of existing wharves, and he has a keen interest in broad structural and geotechnical engineering. Pete believes the Ports and Coastal sector provides a range of interesting projects and the team at Beca has unmatched expertise, making every day a valuable learning experience.

Pete's favourite project so far has been designing a mooring dolphin for Ports of Auckland Ltd, located in the Waitemata Harbour near Fergusson Wharf. The structure required the installation of 30 metre piles in 15 metres of water about 50 metres offshore, providing some very challenging construction conditions.

Pete is completing his Masters Degree in Engineering as he works, researching the response of piles embedded in liquefiable soils subject to earthquake loading. While he enjoys many sporting endeavours, his Masters' commitment has meant he has taken time off soccer for the first time in 17 years. However, he continues to compete in outdoor and multisport events.

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

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