



Coastlines

Editorial



Cushla Loomb – Editor

A booming property market, a healthy tourism industry and an increasing desire to live by the sea have resulted in a large influx of residents, both permanent and part-time, to coastal settlements around the world. In New Zealand, ninety percent of the population now lives within 50km of the coast. This growth, both in population and numbers of dwellings, places significant pressure on the infrastructure in these areas and their fragile coastal environments.

Councils and other infrastructure providers are struggling to cope with the environmental, social and infrastructure issues they are facing as a result of the movement of people into coastal areas, particularly when combined with the added demand during peak tourist seasons.

This edition of Coastlines features articles on Beca projects delivering practical solutions to assist Councils, infrastructure providers and communities to prepare adequately for the changes facing their coastal areas. The Portland

Bay Coastal Infrastructure Plan, undertaken by Beca's Melbourne team, adopts design principles and strategic planning to balance the competing needs of the community to identify future growth issues and demands for the next 20 years. The Lae Port simulation study modeled different growth scenarios for the largest port in Papua New Guinea. Quantifying the throughput performance, it enabled the identification of minimum operation levels in the port and recommendations for concept changes for onshore operations. The Kaipara Harbour coastal environment policy review identifies integration issues and recommends policy changes to better address challenges associated with a rapidly growing area that crosses many jurisdictional boundaries.

We also take the opportunity to profile two of our Ports and Coastal team in this issue, Tony Pidgeon – who has been with Beca for many years and Stefan Feil – who has recently joined the Beca team.

Enjoy.

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Kaipara Harbour (see story inside)

Kaipara Harbour coastal environment policy review

Integrated management across council boundaries.



The Kaipara Harbour is the largest enclosed harbour in New Zealand and is nationally significant for its intrinsic and amenity values, natural and physical resources, and cultural and historical significance. The Harbour is within the jurisdiction of two regional councils, Northland and Auckland, and two district councils, Kaipara and Rodney.

In recent years there has been increasing community concern over the cumulative effects of human activities on the harbour and its coastal environment. This concern has been heightened by an increase in resource consent applications for activities within the harbour, developments within the harbour catchment, and a growing awareness of the effects of sedimentation and contaminants within the harbour.

The two regional councils have embarked on a programme to improve the management of the harbour and its coastal environment by enhancing the integration between the relevant agencies. The council's have set out a sequence of actions to determine what commitments are required by each council (jointly and individually) to enable progress towards achieving integrated management. A review

of relevant statutory policy and planning documents is one of the key actions.

Auckland and Northland Regional Council's have jointly commissioned Beca to undertake the review to determine the consistency of the policy and plan documents and whether they enable integrated management and appropriately address cross boundary issues for management of the harbour. Following an extensive desk-top review of information and discussions with council officers and other stakeholders, a draft report making recommendations on potential policy and plan changes to achieve integrated management and address cross boundary issues has been prepared.

An important part of the project was a collaborative workshop, which provided council officers with a forum to discuss the findings and proposed recommendations of the Beca report, identify opportunities to improve integrated management at district and regional levels, and seek buy-in to the final recommendations of the report.

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Assessing the future capabilities

Simulating for performance.



Lae Port, located on the northern coast of Papua New Guinea (PNG) is the nation's largest port in terms of volume of cargo handled. The port has experienced an average growth of 7% p.a. in TEU's* handled over the past 10-years.

A number of capital development projects are planned to provide a multiple berthing facility of approximately 600m overall length, to cope with further projected growth.

Beca was commissioned to carry out a simulation study to assess the operational performance of the upgraded berth with regard to its ability to cope with projected throughput demands.

The simulations were performed using Beca's Polaris port simulation software. After configuring and calibrating the model against recorded data for the 2006 base year, simulations were run to investigate the impact of projected cargo and shipping volumes in 5 and 10-years time, under scenarios of low, medium and high growth. The analysis modelled the movement of containers, break bulk cargoes, bulk fuels and cars through the port. Particular aspects included were trans-shipments to and from other coastal ports, and delays in cargo-handling due to wet weather.

Polaris evaluated the port's key performance measures of berth utilisation, ship turnaround, ship delays and on-shore storage demand. These

measures were used as the basis for assessing the levels of service that could be achieved with the upgraded berth.

The simulations showed that the current rate of container transfer at the port would result in unacceptable delays to shipping for most of the future cases, and would be impractical for high-growth conditions in 10-years time.

The impact of different container-handling rates on throughput performance was quantified. This identified the minimum container-handling rates that would be required to maintain a satisfactory level of service for the various growth scenarios.

On-shore storage requirements to cope with the increased throughput volumes were identified for break-bulk and containerised cargoes.

The study also included a preliminary overview of the port's current onshore operations and layout. This identified a number of issues and suggested concept changes that could lead to improved efficiency and safety of the onshore operations.

* TEU = Container capacity is measured in twenty-foot equivalent units

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Portland Bay coastal infrastructure plan

Beca is nearing completion of a Coastal Infrastructure Plan for Portland Bay for the Glenelg Shire Council, in partnership with Regional Development Victoria and the Department of Sustainability and Environment. The key focus of the plan is the assessment of the condition of current foreshore facilities and to identify the gaps to deliver the coastal infrastructure required to meet user demands of the foreshore over the next 20 years and beyond.

Portland is a scenic stretch of coastline popular for a range of recreational and community activities including boating, fishing, whale watching, festivals, markets and charity events. A significant commercial fishing industry also operates from Portland Bay. The Port of Portland is one of Victoria's four international deep sea ports and the Coastal Infrastructure Plan therefore recognises the adjacent land uses necessary to support the port operations.

The Coastal Infrastructure Plan creates new civic foreshore and tourism precincts encouraging activity and drawing people to the foreshore. The Plan has addressed issues such as the need to accommodate the pressure for a second boat ramp and existing car and trailer parking congestion. Recommendations in the Plan include relocating the lobster fishing fleet into a newly created commercial marina and the provision of secure berths for local and visiting recreational vessels in a new marina. In addition to the major infrastructure recommendations, the Plan also suggests a number of minor infrastructure works to improve community amenity and safety along the foreshore.

The Plan involved creating design precincts and forming design principles to use as a basis for the recommendations. Cost estimates for the proposed

capital works recommended in the Plan were prepared as part of the development of a business case. These provided Council with the evidence required to apply for funding grants to implement the Plan's recommendations.

A key feature of the development of this Plan has been the extensive consultation undertaken throughout the project with residents, stakeholders, local traders and agencies. There have been individual interviews with 25 stakeholder organisations, resident's discussion groups, detailed stakeholder design option meetings, a community design option day and evening workshop and community information sessions. The draft Coastal Infrastructure Plan is currently on a 4 week public exhibition and will be finalised before the end of the year.

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Planning for coastal amenities together.



Updates

Project: Keeping structure to our coasts – Manukau Coastal Structures Management (featured in Coastlines Edition 11)

Client: Manukau City Council

Location: Various coastal locations in Manukau City Council jurisdiction

Current Status: The removals and upgrades contract is completed, with a total of 5 structures upgraded, and 23 structures removed from the coastal marine area. Now those coastal structures that remain on the border between Manukau City Council reserve land and the coastal marine area are authorised under the RMA to occupy the coastal marine area for a further 35 years.

Project: Fiji Port Upsizes (featured in Coastlines Issue 10)

Client: Fiji Ports Corporation Limited

Location: Rokobili, Suva, Fiji

Current Status: Beca have completed the combined Environmental and Social Impact Assessment and it has been approved by the Fiji Department of Environment.



Manukau Coastal Structures Management



Fiji Port Upsizes

Stefan Feil, Civil Engineer



How long have you been in this profession?
Nearly 7 years.

How much of that time has been with Beca?
8 months.

Why did you choose this profession?
I like the application of marine science to coastal engineering. While at first glance both subjects are specialised and could seem to be relatively narrow, they actually provide for a large range of issues and applications which makes them interesting.

What do you enjoy most about what you do?
Working on projects that combine specific technical questions with more overview-type planning aspects.

Do you have a favourite project?
Masterplan for The Landing at Hobsonville; Hobsonville Landing was previously a RNZAF site for seaplanes. It is now set to be regenerated to provide a connection to other Auckland Harbour ferry terminals, a waterfront destination, facilities for public marine activities and a launch site for superyachts. I previously had not had the

opportunity to be involved in a re-development project of this type and while it is only at a planning stage at present, the potential and location of the site make it a very interesting project.

What's the best thing about working for Beca?
The good atmosphere; the variety of jobs and clients; learning a lot from experienced colleagues in various specialisation areas; and knowing that as a Beca employee I am working for a respected company, something I have also heard repeatedly from external persons.

What's your favourite coastal location?
In the UK, St Agnes in Cornwall is my favourite coastal location. Since arriving here, Piha won me over immediately and as my 'local' beach is a favourite, but I realise I have many coastal beauty spots to discover yet.

What do you like to do to relax?
Surf, listen to live music of most types and just read a book on the beach.

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Tony Pidgeon, Simulation Team Leader



How long have you been in this profession?
41.75 years.

How much of that time has been with Beca?
41.5 years.

Why did you choose this profession?
The combination of technical challenges and application to practical problems.

What do you enjoy most about what you do?
Variety of work and major involvement in seeing projects through from the initial client discussions, scoping and definition, proposal preparation, through the detailed analysis work to project completion.

Do you have a favourite project?
Logistics support to PT Freeport copper mining operations in Irian Jaya.

What's the best thing about working for Beca?
Variety of work.

What's your favourite coastal location?
Omaha.

What do you like to do to relax?
DIY home improvements, reading, walking.

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

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