



Our vision: “Creative people striving together to transform our world”



Our values

Partnership: We value longstanding relationships and connections with clients, business partners and with our colleagues across the globe. Trust, integrity and teamwork are the foundations of our culture.

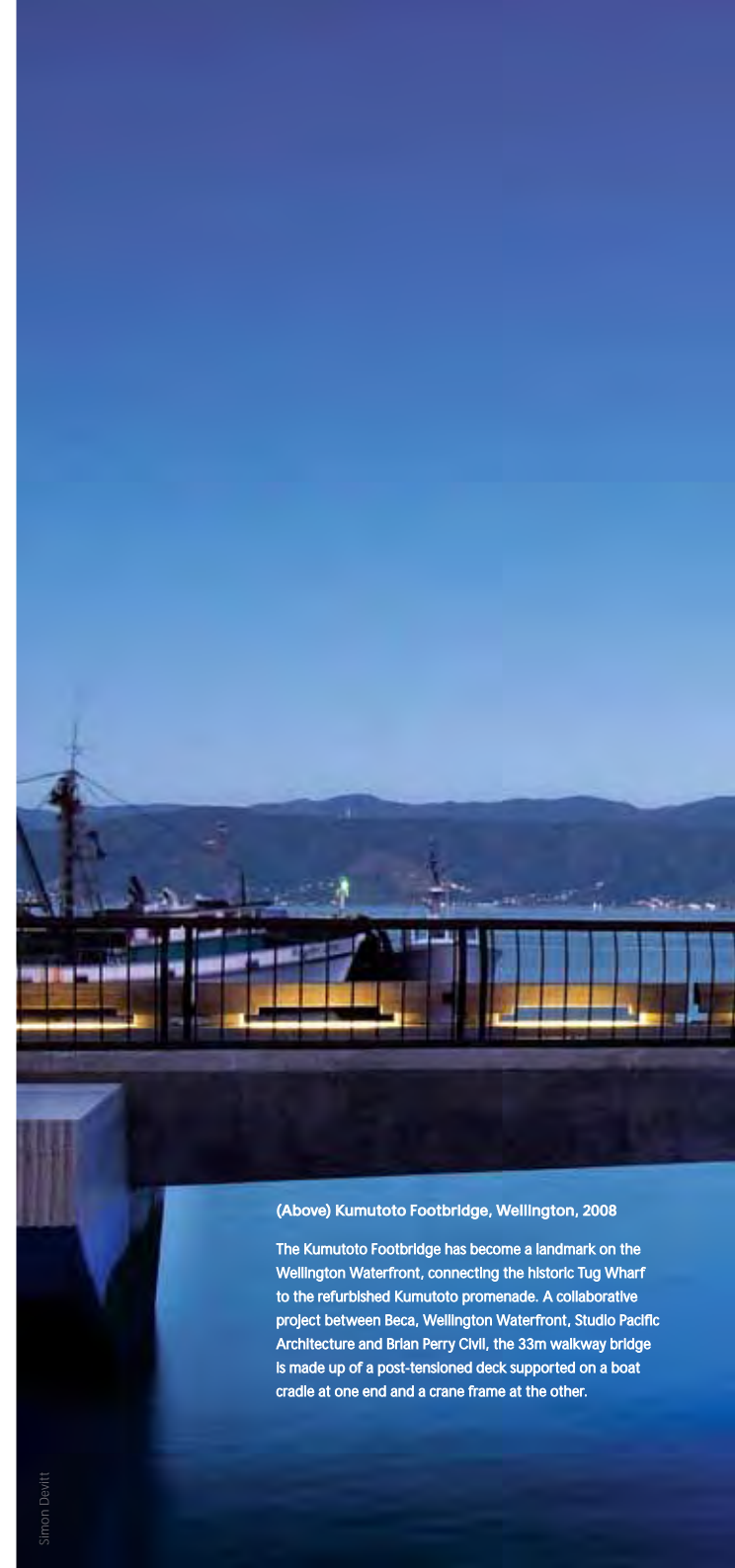
Tenacity: We stick by our clients and the need to solve their complex problems and challenges. Our perseverance, attitude, systems and disciplines focus our efforts into the delivery of excellence.

Enjoyment: We thrive on challenges and take pride in being innovative and delivering successful solutions. We enjoy each other's company, celebrate our achievements and have fun along the way.

Care: We respect each other, our clients, the environment and our community. Safety and care are embedded in our work practices and are key to the positive solutions we deliver for our clients.

Introducing Beca

Beca is one of the largest employee-owned Asia-Pacific engineering consultancies with some 2,500 professional, technical and administrative staff. We have developed a reputation for quality, innovative, professional and client friendly performance with local and international clients in the bridging and civil structures sector.



(Above) Kumutoto Footbridge, Wellington, 2008

The Kumutoto Footbridge has become a landmark on the Wellington Waterfront, connecting the historic Tug Wharf to the refurbished Kumutoto promenade. A collaborative project between Beca, Wellington Waterfront, Studio Pacific Architecture and Brian Perry Civil, the 33m walkway bridge is made up of a post-tensioned deck supported on a boat cradle at one end and a crane frame at the other.



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Recent Awards

NZIA Auckland Urban Design Architecture Award 2008 – Onepoto Footbridge

Athur Mead Environmental Award 2008 – Northern Busway Project

ACENZ Gold Award 2007 – New Rewa River Bridge, Fiji

ACENZ Silver Award 2007 – Upper Harbour Bridge

ACENZ Merit Award 2007 – Auckland Central Motorway Junction

Austrroads Bridge Maintenance & Rehabilitation Award 2006 – Kyber Pass Viaduct Widening

1. Melbourne Airport On Ramp, Melbourne (2007-2010)

Beca have been engaged by Melbourne Airports for design of the new Airport On-Ramp. Beca carried out the design from concept stage through to detailed design.

2. Tauranga Harbour Link, Tauranga (2003-2010)

The Harbour Link provides fast, efficient four lane access to the Port of Tauranga and Mount Maunganui. Due for completion in 2010, Beca is currently the client's representative during construction.

3. Te Wero Bridge Competition, Auckland (2007)

A Beca-Wilkinson Eyre Architects' design competition entry for Te Wero Bridge sought to create a focal point for the Viaduct Harbour in Auckland's Central Business District.

4. Upper Harbour Bridge Duplication and Causeway Widening, Auckland (2002-2006)

Beca's economical design gave the design and construct team a distinct competitive edge whilst simultaneously meeting with Transit New Zealand's requirements for appearance.

5. Grafton Bridge Structural Strengthening, Auckland (2007-2009)

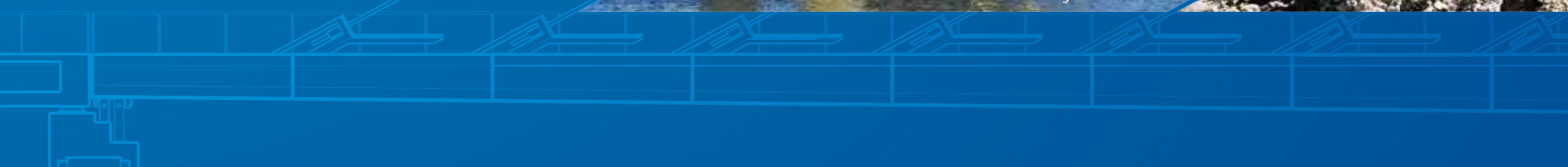
The 100 year old Grafton Bridge has been strengthened with carbon fibre reinforcing polymer materials and upgraded for future generations while preserving its architectural integrity and heritage status.

6. Otira Viaduct, South Island, New Zealand (1996-2000)

Located in one of New Zealand's harshest construction environments this multi-award winning Beca design used cutting edge pre-stressed concrete bridge technology.

Concept
Development

Detailed Design
and Analysis






1.
Feasibility
and Planning



2.
Investigation
and Reporting



5.
Maintenance
and Retrofitting



6.
Contract Management
and Site Supervision

Bridging Excellence

Beca has a respected pedigree in structural design excellence and innovation. Our position as a leader of bridge design in New Zealand is a result of eight decades of delivering challenging projects and acquiring and retaining the best people possible. Tapping into and harnessing the vast pool of bridge expertise and experience available to us is not an activity we reserve only for large, high profile, new build projects - it is an ethos which spans the full range of services we offer our clients.

Beca offers expertise in the design, implementation and maintenance of a wide array of civil structures. Our experience covers the full suite of common bridge forms including composite beam and slab, steel truss, box girder and cable-stay. We also bring extensive experience of working with maritime wharves and associated structures, and have recent and high-profile experience in the design of large-scale underground rail infrastructure.

International Clients



1. (Above) Rewa River Bridge, Nausori Fiji (2002-2006)

An Integral part of the Fiji Island Ring Road, this award winning Beca Design has received praise from both the client and the local community.

2. Central Motorway Junction Upgrade, Auckland (2003-2007)

Beca provided both design services and construction review to the Fletcher Construction/ Leighton Construction Joint venture for New Zealand's busiest section of motorway.

3. Arapura Bridge (Bridge 28 Hokitika Line) South Island, New Zealand

Beca have carried out more than 70 bridge inspections along Ontrack's Hokitika Line and Main South Line. Since 2004 Beca have also been involved in around 15 bridge replacement schemes for Ontrack.

4. Grafton Bridge Structural Strengthening, Auckland (2007-2009)

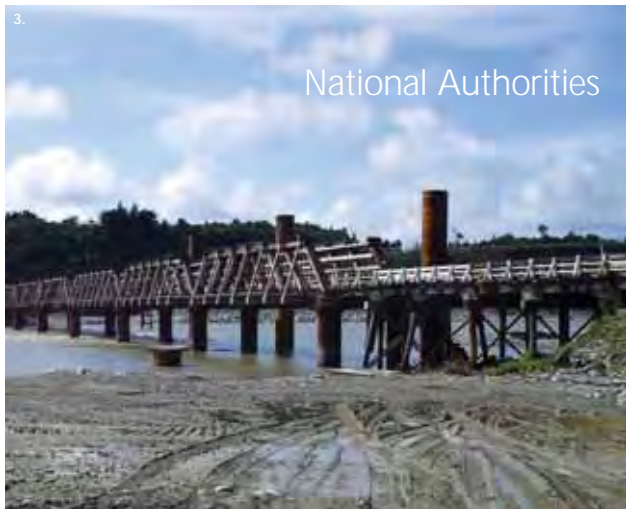
In preparation for the Auckland Central Connector bus route, Beca worked closely with Auckland City Council in the structural assessment and strengthening of Grafton Bridge.

Contractors



2.

National Authorities



3.

Local Agencies and Councils



4.

Our Clients

Beca seeks to create client relationships geared around the ideals of providing a professional, effective, and skilled approach to the design and maintenance of key infrastructure assets.

National Authorities

When considering long-term development of core infrastructure networks, our clients consistently turn to Beca. Not only do we have a proven track record for successful design and maintenance of key infrastructure, but authorities also rely upon Beca to help develop transport and maintenance strategies and produce technical standards. Clients wanting to harness a broader array of skills and understanding in the bridging sector use Beca.

Contractors

Beca has long standing relationships with many contractor companies who share our focus on excellence. We try to involve them early in the process to get their inputs on the buildability of a project design and work closely with them for successful outcomes. Beca has increasingly become involved in alliance contracts, solution-focused delivery mechanisms that allow more effective interaction between designer, constructor and project owner; creating high performing teams. This also adds value to the way we work collaboratively with contractors in conventional project delivery models.

Local Agencies and Councils

Beca has forged strong relationships working within communities and helping local authorities and councils deliver sustainable infrastructure. The engineers at Beca are experienced professionals who work with client's to carry out routine and special inspections of local assets and

provide professional input for the delivery of appropriate maintenance, retrofitting or new build activities. Our clients feel confident that, in selecting Beca, they bring to the table a partner who is able to help strike better balance between social, environmental, and economic impacts.

International Clients

Working out of three hubs in New Zealand, Australia and Asia means we understand the operating environments in all three areas, and can provide an effective service to all clients operating in the Asia-Pacific region. In recent years our bridge teams have worked on projects for the Governments of Belize, Papua New Guinea and Fiji and worked closely with consultants Jurutera Perunding Wahba Sdn Bhd of Malaysia.

Project Name	Start	Finish	2007	2008	2009
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AHB Box Girder Strengthening	2007	2010
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Beca's role is to design and supervise strengthening works for the Auckland Harbour Bridge. Works are required to ensure this important NZ transport asset can contend with modern traffic demands and is able to continue operating successfully.



Manukau Harbour Crossing	2007	2011
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The MHX bridge is part of a broader SH20 widening scheme. Part of the scheme is to duplicate the existing four lane bridge over the harbour. The project, which is being delivered under an alliance model, is required in time for the 2011 Rugby World Cup.



New Lynn Rail Station	2007	2010
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The project is one of many successful partnerships with Fletcher Construction. The original single track divided the town center, making any new commercial development difficult. The project, which aims to effectively separate road and rail, will greatly improve the regions rail capabilities by duplicating and lowering the rail tracks into a new 8m deep, 1km long trench.



Newmarket Viaduct	2007	2012
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This is a key element of the wider Central Motorway Improvement programme. The existing viaduct will be replaced with a wider structure for the addition of an extra south-bound lane. It will be constructed in stages so the motorway can remain operational at all times.





Kevin Dawey



A Performance Culture

At Beca we recognise that performance can be measured in many ways; whether through delivery to tight programmes, meeting strict budgets, handling technical complexities, or the challenge to capture the unquantifiable character of "iconic".

Whatever the performance criteria may be for a project, Beca engineers are committed to working with clients and partners to develop and meet clear, concise and measurable goals.

Between 2007 and 2012 Beca has been entrusted to simultaneously deliver four of the largest civil structures projects in the Auckland region. This bears testament to our reputation for successfully managing complex projects on time.

Ormiston Road Bridge

Client: Manukau City Council

Date Completed: 2008

Design Statistics: 27m Wide // 70m long // two 3.2m lanes // Pedestrian walkways in each direction // 1.4m cycle lane

Beca, alongside Moller Architects, designed the Ormiston Road Bridge for Manukau City Council. Not only responsible for the design, Beca was also engaged to successfully carry out contract management and perform site supervision during construction.

The streamlined cable stay bridge is the first of its kind in New Zealand and captures the client's vision for the new township. Designed to compliment its environment, it allows a free flow of light and visual continuity with the park and waterways beneath. Key structural features include cable-stay pylons inclined in both longitudinal and transverse direction and minimised pylon diameters and box girder depths. These features, adopted to promote improved aesthetic and structural performance, resulted in some interesting and at times difficult design challenges.

Beca maintains a reputation for technical competency and flair for innovation. The Ormiston Road Bridge design and construction is testament to Beca's ability to rise to the challenge and exceed expectations.



“The engagement of Beca for this project has meant that a design team of exceptional ability with regard to structural and architectural disciplines, based in Auckland, was in place upon award to develop an outstanding design solution.”

“The wider community at a regional and national level benefits from possessing a structure which sets a benchmark by acting as a fine example of design excellence.”

Comments from Manukau City Council



Delivering Landmark Assets

Beca is equipped and has a reputation for delivering innovative conceptual new-build designs that challenge the norm and establish landmark status within their surroundings.



Kevin Davy



Kevin Davy



Kevin Davy



MHX Alliance

Client: New Zealand Transport Agency
Services: Planning // Consenting // Detailed Design // Contract Supervision

The Manukau Harbour Crossing (MHX) Alliance consists of Beca, Fletcher Construction, Higgins Contractors, and the NZ Transport Agency (NZTA). The scope of work of the NZ\$200 million project is to increase the existing four-lane motorway over a six kilometre length of SH20. The bridging phase of the scheme is to duplicate the existing four lane bridge adding a further two lanes in each direction over the harbour. Beca has key responsibilities for delivering the planning consents and for all design work.

The project has complex design, construction, environmental and lifecycle issues. Notably, it commenced in mid-2007 with outstanding resource consents. The alliance delivery model provided the flexibility for Beca to begin design work while working to gain the consents, which were then obtained earlier than expected.

The target completion date of November 2010 is tight, but again the alliance model adds value by allowing alliance team members to pursue a common goal with shared commitment and focus under a single governance structure.

The MHX project is the second alliance for the four partners, who worked together as the Freeflow Alliance on the Grafton Gully project. This brings continuity and a solid foundation for team work to the harbour crossing project, arising from understanding each other's corporate cultures and working methods.

Delivering Successful Teams

A project team built on a cornerstone of mutual understanding and appreciation creates an environment that invites success. Since working relationships are formed in contract, the selection and correct application of the most suitable contract delivery model is fundamental to this success.

Beca has decades of experience working with a variety of traditional contract models. In the late nineties Beca gained experience working under the Design and Construct (D&C) form of contract and, in more recent years, we have been an integral force in pioneering the successful application of Alliance contract models.

Whatever your project needs Beca is well positioned to advise you - based on experience - on the most suitable approach to best realise your project goals.



Seismic Retrofitting Region 9 & 10

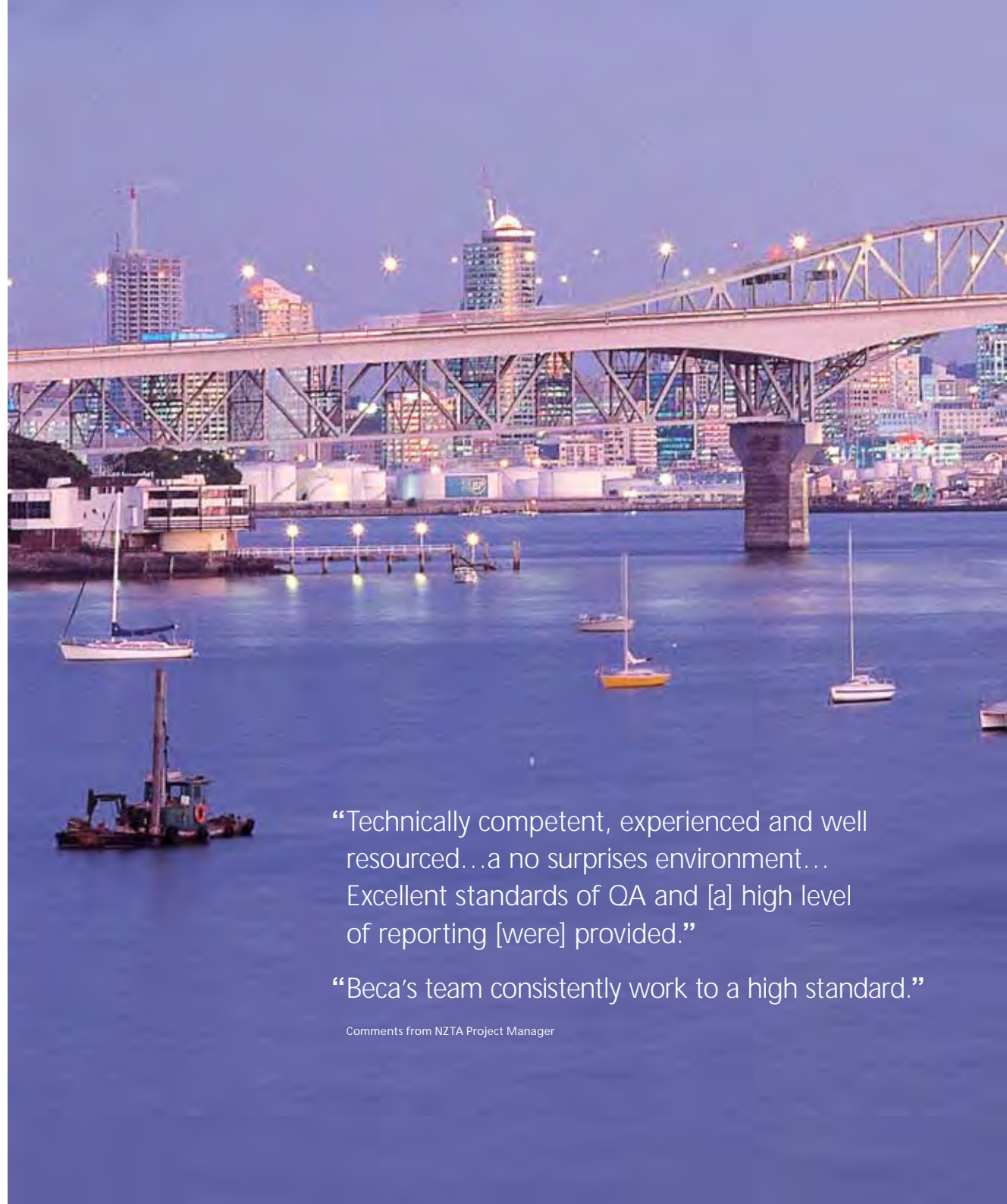
Client: New Zealand Transport Agency
2004

Services: Bridge Seismic Assessments //
Investigation and Design of Retrofit
Measures

Beca has been at the forefront of seismic assessment and design of retrofit measures for more than a decade, commencing with the ground breaking assessment of Thorndon Overbridge in 1992. This expertise was further developed on subsequent large bridge assessments including Auckland Harbour Bridge, Victoria Park Viaduct and Newmarket Viaduct.

In 2004 Beca provided a technical assessment of the seismic vulnerability for seven bridges within the Wellington, Nelson and Marlborough regions for NZTA. Strategies were developed to enhance and extend the service life of the structures and where necessary benefit/cost analyses were undertaken before consideration of any seismic retrofitting. Our screening, detailed assessments and recommendations not only ensured the seismic security of the State Highway Network but it also allowed the client to economically justify expenditure for retrofitting the bridges.

Seismic assessment is just one of the many services we can provide our clients when it comes to extending the service life of bridges. It is experiences such as the seismic retrofitting of Region 9 and 10 that underlines our commitment to working with our clients to rehabilitate existing assets in the most cost-effective manner.



“Technically competent, experienced and well resourced...a no surprises environment... Excellent standards of QA and [a] high level of reporting [were] provided.”

“Beca’s team consistently work to a high standard.”

Comments from NZTA Project Manager



Auckland Harbour Bridge Engineering Services & Seismic Retrofit

Client: New Zealand Transport Agency
1999 to 2011

Services: Structural inspections and defect monitoring // Investigations // Remedial design // Repair supervision for structural defects // Concrete Pier protection and Viaduct ASR treatment // Investigations and structural assessment for proposed additions or modifications of the structure

Beca has been the consultant of choice on New Zealand's largest and most well-known bridge for all major engineering design works and general structural services for the past ten years. In addition to the recent box girder strengthening design and contract management, Beca

is responsible on a day-to-day basis for managing, assessing and maintaining the working life of the structure through our studies, reporting and design activities.

Between 1995 and 2000, Beca carried out the Seismic Upgrade for the structure. This experience laid the foundation for Beca's long-term involvement and relationship with the Client and the structure, and also gained significant accolades for excellence in the field of structural engineering when awarded the prestigious 2001 ACENZ Gold Medal.

Beca is now established as a first port-of-call for works relating to New Zealand's largest bridge asset. All Clients can tap into our long-term asset management and structural rehabilitation experience attained through working with structures such as the AHB.

Maintaining Existing Assets

Looking after and maximising the life expectancy of our existing infrastructure assets has never been more vital. Although the large-scale, new iconic projects may grab the headlines, Beca engineers are equally skilled and enthusiastic about working with local agencies and communities to help breathe life back into existing structures. We believe that our detailed investigations and thoughtful maintenance and retrofitting strategies can help clients to maximise the use of public spending.



Onepoto Footbridge

Client: North Shore City Council

Completed: 2008

Services: Architectural Concept Design // Feasibility Design // Detailed Design

The vision in designing this bridge was to recreate a journey across the Onepoto stream. A journey sensitive to the area's history and environment. This vision was developed into an architectural form simulating a breaking wave, realised through a series of glue laminated timber rib components. From a sustainable urban design view, the bridge creates interest that encourages pedestrians and cyclists to use it. It also provides comfort for pedestrians and cyclists, separating them from the road.

The Onepoto Basin, within which the footbridge is located, is a sensitive coastal environment. It contains a number of significant environmental features, including a marine reserve, mangroves, areas of native bush and the historically protected timber abutments of an old road bridge. It was important for North Shore City Council that the bridge responded to its environment:

- **Marine Environment:** The resource consent sought to minimise the effects of construction on the local mud snails, burrowing crabs, horn shells and mangroves. This required the central pier position to be located outside the Coastal Marine Area.
- **Footbridge and Pathway Alignment:** Mapping the pathway across the site was restricted by the placement of native plants and trees. A number of routes were investigated to maximise the mangrove experience, protect native Pohutukawa trees and preserve the old historic timber bridge abutments.
- **Tree Protection:** A small number of existing Pohutukawa trees at the bridge abutments needed to be retained. The bridge pier shape was specifically designed to ensure clearance to the deeper underlying roots of one of the protected Pohutukawa trees. The construction method for this pier was based on hand excavation and self-supporting shutter formwork to limit impact on the protected tree.
- **Recognising Heritage:** The design is sympathetic to the past and provides windows for the appreciation of the old timber bridge abutments.

“Beca has provided a refined and elegant outcome.”

“The beauty of the project is [that] it reflects the careful marrying of technology and craft. An overtly engineered structure has been avoided in favour of one which presents as collective craft. An efficient calm bridge is the outcome.”

Comments from North Shore City Council



All photos this spread by Simon Devitt



Meeting Social & Environmental Responsibilities

An often forgotten, but no less important, measure of a project's success is how well it is received by its local community and how well it can contribute to its environment.

Caring for our communities and environment is part of the Beca culture. By integrating these aspects into our day-to-day business activities we are able to offer holistic design and management practices, which help to minimise impacts on the world around us. By drawing on our established community relationships and harnessing our thoughtful approach to responsible design solutions, Beca engineers are able to deliver projects that are financially, socially and environmentally successful.



Above Ground Limited



Dowse to Petone Upgrade

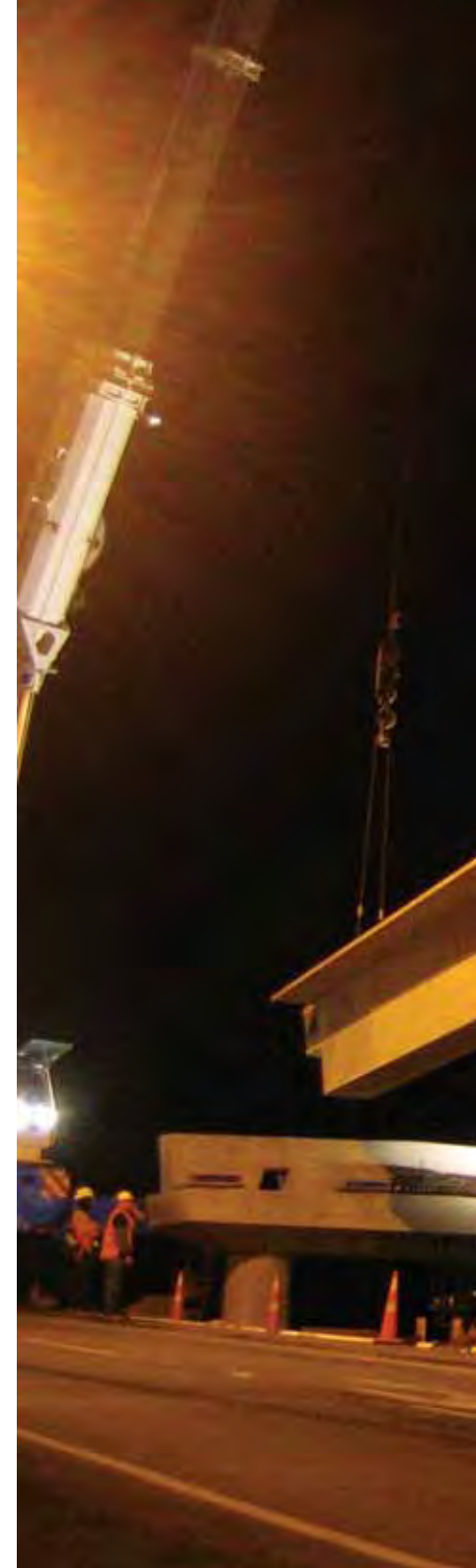
Client: New Zealand Transport Agency
1995 to 2009

Services: Investigation // Traffic Modelling // Feasibility // Cost Management and Risk Assessment // Detailed Civil & Structural Design // Geotechnical Design

The Dowse to Petone upgrade is an urban highway improvement project of a scale and complexity not seen in the Wellington region for many years. Encompassing a mix of civil and structural works, the \$78 million project includes the construction of seven new bridge structures over a 3km strip of SH2 between the Dowse and Petone areas of the Hutt Valley.

The location means the design and construction solutions have had to be responsive to the highway as a major traffic link, while being sensitive to the demanding geography of the site. The bridge structures have been designed considering the effect of the nearby Wellington Fault, and the bridge forms are expected to be very resilient to ground movements from the Secondary Fault Zone.

To date, the Dowse to Petone Upgrade of State Highway 2 has received very positive feedback from road users, the local council and the community, demonstrating that even on geographically constrained sites, traffic flow can be maintained at full operating capacity with careful programming and traffic management.



“With buses every three minutes in the morning peak there will be no hanging around at stations. Buses are better for congestion and the environment than lone drivers travelling stop start.”

Comment from North Shore City Mayor

Northern Busway

Client: New Zealand Transport Agency
& North Shore City Council

1990 - 2008

Services: Urban Design // Environmental Systems // Cost Management & Risk Assessment // Community Consultation // Development & Statutory Planning // Strategic & Policy Planning // Geotechnical // Civil & Structural

This project represents the culmination of 14 years of research, consultation, design, environmental assessment and planning. The AEE lodged to support 22 individual resource consents, comprised of 11 volumes of material, and specialist and technical inputs from 11 consultancies.

As New Zealand's first ever two-way purpose built busway, it was built with a vision to “revolutionise North Shore travel and change the way Aucklanders think about public transport” (Transit New Zealand Acting Chairperson Bryan Jackson).

The Northern Busway is designed to allow priority traffic, primarily buses, to bypass the motorway system and increase the person-carrying capacity of the northern motorway, State Highway 1 (SH1). It runs along the eastern side of the motorway in an 8.7 km stretch from Constellation Drive in the north to just before Auckland Harbour Bridge. Opus and Beca undertook the planning and resource consenting of the overall project and later designed the Southern Sector.

This project was awarded the Arthur Mead Environmental Award as well as the Roding New Zealand Supreme Award and a Shell Bitumen Excellence Award in 2008.

Developing & Delivering Transport Solutions

Developing successful urban transport solutions is a discipline that encompasses a variety of fields, all with the common purpose of improving connectivity between communities in urban areas.

Beca's approach to creating transport solutions is well-informed, rigorous, evidence-based and policy driven. Integrating social and technical considerations into a broader strategic, statutory and policy planning framework is fundamental to our business practice of creating successful and sustainable infrastructure.



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Melbourne
Brisbane
Sydney
Wollongong

China

Beijing
Shanghai

Indonesia

Jakarta

Myanmar

Yangon

New Zealand

Auckland
Christchurch
Dunedin
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New Plymouth
Tauranga
Wellington

Singapore

**United Arab
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