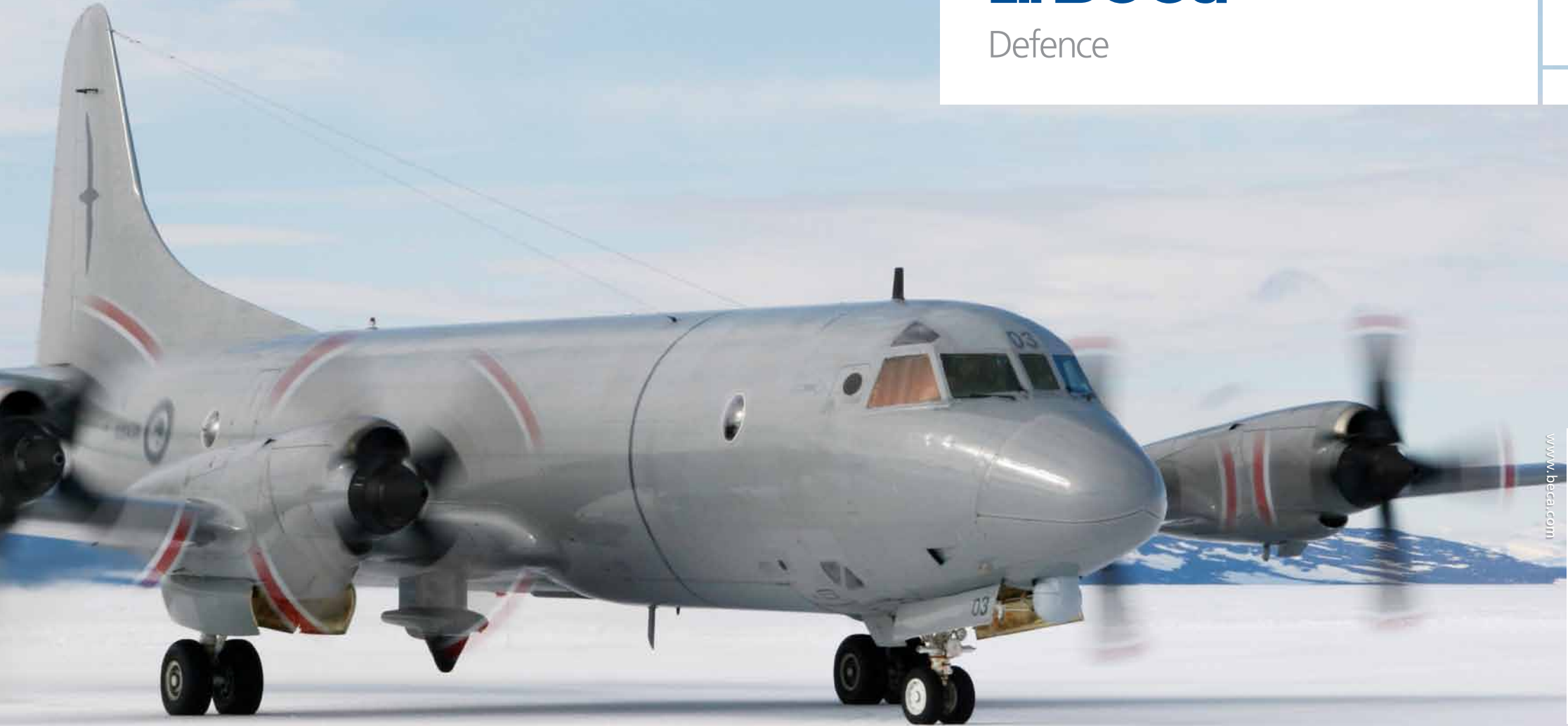




Defence



Beca Defence brings together a team of dedicated professionals from across the Beca group, who use their engineering and business sector knowledge to propose solutions to the unique challenges our defence clients may encounter.

We have worked on a diverse range of projects, ranging from major infrastructure developments to complex systems integration.

About Beca

The Beca group is one of Asia-Pacific's most respected and leading professional services organisations, specialising in design and the management of projects. We enjoy the reputation of being one of the most trusted organisations in New Zealand as well as being recognised by New Zealand Trade and Enterprise as Supreme Winner of the inaugural New Zealand International Business Awards (2009).

From prestigious landmark developments, to functional and environmentally sustainable projects, Beca's repertoire is broad.

As a multi-disciplinary organisation with more than 2400 employees, we have the capability to work in a diverse range of sectors. We have operated in more than 70 countries worldwide, working out of 18 offices throughout the Asia Pacific. With such a spread of resources, Beca can tap into a rich pool of specialist knowledge and experience. We work closely with

our clients with a view to delivering award-winning solutions as a single collaborative team.

The Beca group is an employee-owned company, focused on providing our clients with independent and impartial advice. We are committed to building strong and lasting relationships by responding to the needs and aspirations of our clients and our communities.





Royal Australian Air Force

Our experience in this sector means we understand the Defence Force, its people and its operational needs. We use highly skilled staff with expertise on defence projects to help meet the needs of all stakeholders for every project we undertake. Our commitment to providing the most appropriate people to meet our clients' project needs and help to deliver it successfully means we often exceed our clients' expectations and we build strong, long-term relationships along the way.

Beca Defence

Beca has a long history of providing project planning, project management, cost management and engineering design services to the New Zealand Defence Force for the development of infrastructure and facilities on bases and in camps across the country. To complement these services, we also provide defence with capability advisory, business improvement, systems engineering and software engineering services.

Our successful track record has enabled us to work more closely with the Australian Defence Force, where we are on a number of panels. These include the Defence Infrastructure Panel (DIP), where we can

apply our expertise in Airfield Lighting and Pavements Design, as well as the Defence Material Organisation Support Services (DMOSS) Panel, specialising in Project and Business Support, Systems and Software Engineering, Information Technology and Platform Engineering. We have also been included in the Rapid Prototype Development and Evaluation (RPDE) Program, allowing Beca Defence to engage with the Australian Defence Force and the wider industry to help address complex technical problems in a collaborative environment.

Within and outside of the Asia- Pacific region, we have formed relationships with professional technology partners, who have synergies with our skill sets and technology capabilities, as well as with

our Beca values and standards. In 2009 one of these relationships was recognised by the Defence Industry Committee of New Zealand (DICNZ) when we were awarded the Minister of Defence Award of Excellence to Industry for our work as subcontractors to L-3 Communications on the P-3K2 Orion Aircraft Systems Upgrade.

Our relationships with international suppliers bring knowledge and experience to local industry that offers improved local support options for the defence forces. These engagements enable us to actively seek new opportunities to support the Australian and New Zealand defence forces and their national and international suppliers.



Our Services

Beca is a flexible, multi-discipline organisation with a diverse knowledge and resource base. This allows our Defence team to draw on a rich pool of specialist knowledge and experience to meet our clients' needs.

We operate with a philosophy of 'best person for the job', irrespective of location. This flexible approach allows us to put forward appropriate teams or individuals to best suit the requirements of each unique project, with the objective to deliver the project to, or above expectation.

A key strength is our ability to offer a comprehensive service, with experience in software, simulators, management services, building services, infrastructure and logistics support services. We use a combination of best practice project management and software tools and techniques as well as Beca proprietary tools that can be tailored and customised to suit our clients' needs.



Royal New Zealand Navy MC 09-0173-001

Software Services

Beca has extensive experience in the specification, architecture, design, development, integration, testing and support of software solutions, ranging from commercial enterprise line of business applications to real-time military data management systems. We have successfully delivered software services using a wide range of delivery methodologies and industry standards, such as IEEE 12207, RTCA DO-178B and Scrum.

In the defence space, Beca has a proven track record with system development and support. Our experience extends from electro-optical systems and tactical

data links through to navigation, military messaging and data management. Our staff members have experience in the integration of third party applications into real-time data handling systems. We have also assisted defence clients with acquisition, implementation and life cycle support of complex software solutions such as platform simulators and currently provide through-life software support of P-3 Orion Mission Systems for the Royal New Zealand Air Force (RNZAF).

- [Aeronautical assurance standards for software](#)
- [Integrated Mission Support Squadron \(IMSS\) software services](#)
- [Product development](#)



Royal New Zealand Navy

LAND TRANSPORT CAPABILITY PROGRAMME

WHAT ? The LTCP will replace the current GS(B) fleet with a range of modern vehicles incorporating latest technology enabling them to operate in a modern battlefield.

WHY ?

- Risk of Policy failure
- Unsuitable for current and future operating environments
- Insufficient Load Capacity
- Age of Fleet

Employment Contexts

Multiple scenarios

Power and communications

Regulatory compliance

Increasing Threat, Complexity, Capability



Royal New Zealand Navy
M/C 09-0173-001



Royal New Zealand Navy

Computer-based Training Aid Services

Today's competitive business environment creates increasing demands for improved efficiency in training. Organisations can benefit greatly from using computer-based training aids, which typically reduce the need for "on the job" training and increase the throughput of trained personnel. Beca has been involved in a number of defence projects related to computer-based training aids, from managing the acquisition of a marine engineering simulator suite to the development of a radar trainer.

Beca can help clients identify their training needs and analyse the return on investment from implementing a computer-based trainer. Through our software and management services, we offer a range of solutions from helping a client manage the acquisition of a computer-based trainer, to providing a turn-key solution where a trainer is designed and developed to meet a client's specific needs.

- Radar trainer
- Marine Engineering Synthetic Training Environment (MESTE)

Business Advisory and Improvement Services

Whether it is the delivery of a strategic initiative or improving the performance within the business, Beca can provide the necessary business consulting, project and people management skills. We have helped clients realise significant business improvements, implement strategic change and improve process management and control across a range of sectors and industries. At the same time, we have provided them with the skills they need to maintain the change.

- Business reviews
- Organisation design
- Planning
- Lean Six Sigma
- Valuations
- Business analysis
- Process and functional modelling
- Visualisation

Beca has experience in designing engineering and logistics support organisations, helping NZDF to establish new support units and to realise significant efficiency benefits from existing organisations. We apply our pragmatic analysis techniques, facilitation

and communication skills and in-depth engineering process and Defence experience to achieve these outcomes.

We have also seen excellent results with other organisations such as airports by applying Lean Six Sigma for business process optimisation in multi-stakeholder situations.

Project Management Services

Our project managers seek to thoroughly understand our clients' project objectives, drivers and constraints. We add value by bringing our leadership experience to meet or exceed our clients' short and long-term objectives.

Beca Project Management focuses on providing project and people management skills to enhance our clients' project and business successes; appointing a dedicated team and selecting an appropriate project delivery methodology.

Our service is based on our knowledge and understanding of project management principles, which we tailor to specific client and project needs. We have an established

track record of delivering successful projects on all scales, including some of New Zealand's most ambitious building and infrastructure schemes.

Strong teams are the foundation of every successful project. We pride ourselves on our ability to build, work within, and lead teams of clients, consultants and contractors to attain mutually satisfactory results.

We use open communication, supported by a range of tools and techniques to meet our clients' needs.

- [Project Management](#)
- [Project Definition Documentation](#)
- [Investment Case Development](#)
- [Requirements Management](#)
- [Cost Management](#)
- [Procurement Services](#)
- [Risk Management](#)

Building Services

Beca offers a comprehensive range of building services, including mechanical, electrical and fire engineering services. We bring together our design and planning experience to provide our clients with a complete building solution.

Beca has both the skill and practical experience to design systems that focus on minimising construction and installation problems and result in a total building concept. Our aim is to satisfy occupant needs and target energy economy. We recognise the importance of understanding total cost of ownership and are able to work with our clients to consider through-life value improvements in design and operation.

Reliable power and services are essential to the efficient operation of any business. From initial survey and conceptual design, to planning, detailed design and the valuation and maintenance of existing equipment, we have the experience and technology to deliver electronic and electrical engineering for our building clients.

- [HVAC](#)
- [Electrical Controls](#)
- [Building Management Systems](#)
- [Building Energy Management](#)
- [Electrical Services](#)
- [Fire Engineering](#)



Capability Acquisition Services

Our staff bring understanding and expertise in capability acquisition from a broad base of experience. Beca staff have been involved in capability acquisition projects small and large for organisations in defence, government and commercial organisations. We apply this experience and knowledge to provide the most appropriate solution to the particular acquisition project.

We provide a range of services ranging from discreet items of work such as capability gap analysis through to strategic and policy advice on procurement strategy.

The ability to provide expertise across this range allows Beca to ensure that, no matter what level of service we are contracted to deliver, our services will be tailored precisely to the clients' requirements.

- Capability studies
- Requirements analysis
- Requirements management (eg DOORS)
- Investment case development
- Procurement strategy

Infrastructure Services

Beca has a long history of providing engineering design services to both commercial and defence clients for the development of infrastructure and facilities across New Zealand and Australia.

A multidisciplinary team of specialists – many of whom are at the forefront of their professions - are able to give our clients informed advice on infrastructure projects from planning and concept design, through to completion. A sample of our infrastructure services includes Airport Engineering and Planning, Land and Geospatial Information Management, Environmental Management, Infrastructure Management and Architecture.

Asset Services

Beca helps our clients optimise the service delivery and the whole life cost of ownership of their assets and facilities. We achieve this by applying established engineering analyses to identify cost, performance and risk drivers and assessing the control or elimination of these drivers. A key feature of Asset Services is that it supports decision making with quantitative information rather than relying on subjective or instinctive opinions. This means Beca can identify significant capital cost savings for clients while establishing or maintaining their required levels of service.

- Logistics Support Analysis (LSA)
- Availability Modelling
- Supportability Engineering
- Asset Performance

Feature projects



Integrated Mission Support Squadron Services

Beca has a team of Software and Systems Engineers embedded in the RNZAF's Integrated Mission Support Squadron (IMSS) at the Whenuapai Air Force Base. This team provides Software Lifecycle Support engineering services for the upgraded P-3K2 Orion Aircraft Mission systems and the associated Ground Support systems.

Engineering services are conducted under the auspices of an RNZAF Authorised Design Authority (ADA) for Software Design. This software is designed and developed to RTCA-DO178B Software Safety Assurance guidelines - one of the most complex and

demanding standards to follow. Beca was also instrumental in assisting the RNZAF to analyse, document and develop the complex engineering processes and relationships that have been established to support the P-3K2.

In 2009, IMSS released the first software product to emerge from this new process: a Mission Fuel planning tool that has been integrated with the initial P-3K2 software build. This tool will be delivered as the first aircraft is introduced into service. Beca has responded to the client's needs and the team of experienced, security-cleared systems and software engineering professionals has continued to increase since the contract was first established. We are currently engaged in several major software projects as well as a number of research and analysis tasks.



Royal New Zealand Air Force

Defence National Airfield Maintenance Project (2009-2010)

As part of Beca's ongoing involvement in the Defence Aircraft Pavements panel, we undertook the role of Design Consultant for the Defence National Airfields Maintenance programme. This project involved the design, documentation and construction supervision of specialist airside projects at around 20 bases across Australia.

Airfield infrastructure is a key asset to Defence and this project played an important role in obtaining the maximum serviceable life from the infrastructure, reducing operational risk and maintaining a high level of serviceability from the airfields.

As design consultant, Beca also inspected and prepared detailed airfield pavement inspection reports for all bases associated with the project and assisted with whole of life maintenance plans for key airfield assets.

The airfield maintenance works programme involved the design and delivery of specialised works on busy operational airfields over an incredibly diverse range of locations and stakeholders. Our large team of specialised airport engineers enabled us to supervise a wide range of works concurrently around the country, ensuring the right level of expertise was on site at all times. The 2009/10 maintenance programme had good technical outcomes and was completed with a high level of cost certainty and minimal operational disruption to Defence.





Royal Australian Air Force



Royal Australian Air Force



Royal New Zealand Air Force

RNZAF Radar Trainer (2009-2010)

Beca Applied Technologies was commissioned by the RNZAF to develop a Radar Trainer to prepare operators for using the radar fitted to the P-3K2 Orion aircraft. The Radar Trainer aims to provide the operators with the skills and knowledge to effectively operate the radar from the outset of their flying training.

The Radar Trainer is a complex, PC-based system that includes three instructor-operator stations. Computer hardware emulates the user interface of the radar and the wider mission system on the aircraft to provide a high fidelity training environment. An instructor is able to control the "aircraft", create comprehensive training scenarios using

a wide range of vehicles and environmental conditions and insert events in real-time as the students work through the training exercise.

The Radar Trainer was developed using a combination of open source software applications and in-house developed proprietary applications. Beca's turn-key solution included assisting the RNZAF to define the project and system requirements, and to the design, development, integration and verification of the Radar Trainer. Beca also provided train-the-trainer-training on the instructor systems for the RNZAF.

Designed to leverage off the P-3K2 Orion's Data Management System as part of the P-3K2 Ground System, the Radar Trainer can be easily harmonised with improvements made to the aircraft to maintain training effectiveness and reduce the total cost of ownership.



Royal Australian Air Force



Royal New Zealand Navy MC 09-0173-001



Royal New Zealand Navy MC 09-0173-001

Land Transport Capability Programme (2009-2010)

The Land Transport Capability Programme aims to introduce an enhanced transport capability across the NZDF to replace the aging 'Unimogs' and other trucks currently in service with modern capability.

Beca services include providing a project definition study, developing the operational concept document, developing user requirement documentation, providing a capability study and a Front End Logistics Support Analysis (FELSA).

For the NZDF, planning the support of a new capability without knowing exactly what equipment will be purchased can be problematic. The FELSA work undertaken provides a framework and strategy such that, as exact details become available at a later stage, the support concept of the capability can be in place and operational at the time of delivery of the first equipment.

Although the programme is a complex one, these documents aim to provide the foundations for a successful project.

Marine Engineering Synthetic Training Environment (2007-2010)

Beca provided project management services for the acquisition, installation and commissioning of the Royal New Zealand Navy's (RNZN) Marine Engineering Synthetic Training Environment (MESTE) at its Devonport base in Auckland.

The MESTE is a suite of simulators that replicate real vessels in a 3D virtual environment for marine engineering training. Based on the ANZAC Class frigate and Protector Offshore Patrol Vessel (OPV), the simulators support full mission training.

Along with project management, Beca was involved in all aspects from the start, including developing the investment case and securing funding, assisting with developing user requirements, preparing tender documents right through to selecting the preferred supplier.

Beca was also responsible for refurbishing the facility to house the simulators. This involved architectural design, electrical and mechanical design, construction cost estimation, fire engineering assessment, and construction management.

Our integrated approach to project management and facility refurbishment meant Beca could provide the RNZN with a turn-key solution. Our work on this project was nominated by the RNZN for the DICNZ Minister of Defence Industry Awards for Excellence in 2009.

Beca is currently a member of the following supplier panels:

New Zealand

NZDF Supplier Panels C2308 for the following services:

- Procurement and Purchasing Suppliers
- Project Management
- Logistics
- Business Analysis

NZDF ICT panels

- Microsoft Web Application Development
- Architecture and Design
- Testing and Independent Quality Assurance
- Documentation

Australia DMOSS (Defence Materiel Organisation Support Services) Panel for the following services:

Project Support

- Process Definition and Improvement
- Project Management Support
- Data Management

Systems and Software Engineering

- Systems Architecture/Integration
- Safety Management
- Software Engineering

Acquisition and Sustainment Logistics

- Integrated Logistics Support Management
- Reliability, Availability and Maintainability
- Logistics Support services

Business Support Management

- Business support
- Procurement and Contract Management
- Strategic Business advice
- Strategic Communications advice

Electronic Engineering

- Global Navigation Satellite Systems
- Satellite Engineering
- Electro-Magnetic Interference/ Electro-Magnetic Compatibility (EMC)
- TEMPEST

Communications Engineering

- Communications Network Engineering
- Communications Engineering (RF/Tactical)

Platform Engineering

- Naval Architecture
- Maritime Systems
- Mechanical
- Electrical/Power
- Sensor Management
- Electronics Warfare Self Protection - Maritime
- Avionics Systems

Information and Communications Technology

- Information Systems Architecture services
- Technical Architecture services
- Security Architecture services
- Information System Design services
- System Design services

DIP (Defence Infrastructure Panel)

RPDE (Rapid Prototyping, Development and Evaluation) Programme

Defence Industrial Security Programme

Beca holds NZDF Facilities Security Clearance under the Defence Industrial Security Programme.



Australia

Melbourne
Brisbane
Sydney
Wollongong
Adelaide
Nowra

Chile

Santiago

China

Beijing
Shanghai

Indonesia

Jakarta

Myanmar

Yangon

New Zealand

Auckland
Christchurch
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Wellington

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