

PP24 NZ Defence Force Whangaparoa Training Centre



The new Navy training facility at Whangaparoa

Project: NZDF Whangaparoa Training Centre

Publication date: 2011

Client: NZ Defence Force

Architect: Pacific Environments Ltd

Project Manager: MPM Projects Ltd

Contractor: Ebert Construction Ltd

Region: Northland

Sector: Public Building, Defence

Tender: Traditional Lump Sum

Final Contract Value: \$7.0m

Construction timescale: February 2008 – December 2010

Form of Contract: NZS 3910

In our 24th Pathfinder Project, we explore how the project team on the Navy Training Centre at Whangaparoa utilised planning and risk mitigation strategies to deliver a two stage sustainable and state of the art training complex for the Navy and NZ Defence Force.

Background

The new \$7m NZ Defence Force training facility has been built for the Navy after an existing ageing facility was deemed not fit for purpose. The new facility was built in a 2-phase process and the project team worked closely and collaboratively with Navy so that the training centre remained operational through the construction process. The project's first phase started in early 2008 and the final phase was completed in later 2010.

The new facility has two wings and now accommodates 120 students and 30 staff. It has been designed to closely replicate the same conditions experienced on a Navy vessel with close quarters, dormitory-style sleeping accommodation, galley and bathroom facilities. The centre also has class rooms, a dining hall, a drill shed, an armoury and ablution block.

The approach adopted by NZ Defence Force was the standard NZDF 2-stage tender process with weighted attributes against project team experience, credibility and methodology. The detailed ROI then became an important part of the overall tender evaluation and scoring. MPM Projects led a specialist team that was selected on their ability to meet the original brief, designing and building an environmentally sustainable building to replace the existing dilapidated facility built several decades ago.

In addition to delivering a sustainable asset, the project team also encountered critical environmental issues around stormwater consents and the release of captured rainwater into a nearby river.

Challenges Faced

Use of Natural Conditions

The existing training facility was suffering from extensive fatigue with moisture damage that resulted in high operating costs to heat and manage the facility. It was originally planned that the new facility would utilise the existing foot plate of the old training facility, however, this was assessed and analysed to take into account the prevailing weather conditions.

On the basis of this evaluation it was decided that the new training centre would be re-oriented on the same site to allow the buildings to make the best use of the weather conditions, with the use of natural light and ventilation featuring throughout the facility as well as the building being designed to provide sun shading and shelter from the prevailing winds on the exposed parade areas. As a result, to maximise the benefit of the prevailing winds, the service area of the facility now faces into the wind whilst the buildings have been re-oriented to shelter the parade grounds and outdoor areas.

The natural conditions also created some problems for the project team due to the remote location of the facility. The weather occasionally hindered progress with the groundworks in Phase 1 of the project being delayed as a result. This learning was taken into the Phase 2 of the project and influenced the programming to optimise the weather conditions in the delivery of the project.

Budget Constraints

To accommodate budget constraints, the construction process was split into two phases which presented several programming issues. Effectively, the programme was split into two separate projects which created the opportunity to utilise the learnings from phase one and apply them to phase two of the project. It also created the opportunity to maintain the sustainable design features that should reduce future operational expenditure of the new training facility.

Successful Outcomes

Sustainable approach and design

The project was designed sustainably through the specification of materials as well as the use of features such as natural light and ventilation, water reuse and solar panels supported by the use of additional gas to provide hot water. The training facility was also future-proofed at the request of the NZDF so that the facility was designed to use as little water and energy as possible throughout the life of the facility.

Energy saving techniques were also used throughout the building which included smoothing the thermal mass of the building through features such as the polished concrete floor. During the project a feasibility study was undertaken to explore a variety of energy reuse techniques that included the use of solar and wind power and the respective payback periods. Following this feasibility study, solar panels were selected on the project. Also, simple measures were taken such rainwater capture, treatment and reuse – this was either released back into the local river or reused at the facility.

The project team worked collaboratively to demonstrate a whole of life concept and the benefits to the NZDF of incorporating a higher capital expenditure to realise lower operational expenditure through the life of the asset which led to the re-orientation of the facility from its original foot plate, the use of sustainable design features and the use of energy efficient materials such as double glazing.

Repetition

Taking the learning and best practice from Phase 1 of the project was critical. This meant that keeping key members of the project team together for the entirety of the project was critical to the project's success. This made it easier to deal with many aspects of the project, such as ground conditions, site access and restrictions, services on site, emphasis on the environment and sustainable technology, consents and project team relationships. It was this approach that enabled the project managers to negotiate Phase 2 of the project with existing supplier organisations rather than entering into an additional competitive tender process.

In addition, a workshop was held at the start of Phase 2 that involved key project participants to review Phase 1 of the project and to apply these lessons to Phase 2. This led to a re-prioritisation risks and amendments to the project programme. This approach and process created a different philosophy, methodology and programme to Phase 2 of the project. This was significant for specific parts of the project such as the stormwater drains and associated environmental consents and closer collaborative working across all the trades on the project.



It enabled the project team to take on board the learning curve, experiences and best practice from Phase 1 and apply them to Phase 2 of the project.

Key principles for repetition

- Benefits of working together beyond a single project
- Evaluating capex vs opex to benefit whole of life
- Focus on functionality not over complexity
- Capture learning & best practice and apply as future improvements
- Pre-planning is critical to mitigate risk
- Work closely with the client

Client Engagement

Throughout the contract, the project team work closely with the NZDF to deliver a modern, fit-for-purpose training facility for the Navy. This enabled the NZDF to manage the expectations of the Navy accordingly and when the final designs were presented to the Navy they could immediately see the benefits and the increased functionality that the new building would have for them.

The ongoing close collaboration between the NZDF and the project team enabled the successful delivery of the new training facility. Both the NZDF and MPM, the project managers, advised that these relationships were key to the success of this project throughout the project team.

Working together since this project completed

Since working together on this project, many of the project participants such as the architects, project managers, contractors and specialist contractors have now since worked together on other projects for different clients, taking the learning from this project into different working and project environments. This approach is typically reserved for longer-term working relationships with clients and alliance type activities, rather than smaller more typically competitive tendered projects.

Summary of Benefits

Applied learning from first phase to the second phase

Reviewing performance and learnings from Phase 1 and applying them to Phase 2 with the same key project participants to drive innovation and improved performance in Phase 2.

Use of natural conditions

Prevailing weather conditions were utilised in changing the orientation of the facility to maximise the use of natural light and ventilation as well as providing vital sun and wind shading to exposed open areas and grounds

Work closely with the client

The project team worked very closely with the client throughout the project to deliver on end user expectations as well as the facility remaining operational throughout the build programme.

Simple solutions

Keeping it simple was the mantra for this project. There were no over-complicated designs – the essence was on focusing on functionality and maintaining the simplicity of the building within a military layout.

Working together on projects since

Taking the learning from this project experience has enabled the project participants to work together on other projects with different clients since the completion of this project.

Key Lessons & Possible Improvements

Key lessons to take forward from this project have been identified as:

Working together since the completion of this project

The project team has continued to work together after the completion of this project taking advantage of the learnings from this project to deliver an enhanced and more value driven offering for different clients.

Workshops enabled more predictable delivery

These project and management review sessions at the completion of Phase 1 enabled the project team to manage project risks and deliver the project successfully and more predictably in Phase 2.

Managing the consents process

The project team must take into account all consents with stormwater consents proving to be a particular issue on this project with the river access direct to the sea.

Higher capex can result in lower opex

Analysis on this project focused the client on lower future operating costs of the new facility. To realise this, the client and project team had to focus on lower costs over the life of the building rather than the typical focus on lowering the capital cost at the construction phase.

Conclusion

The 2-phase approach to delivering this project enabled the project team to take on the lessons learned and experiences from Phase 1 and apply them to Phase 2 of the project enabling successful delivery of a modern training facility for the Navy. Lt Cdr Evan Nind, Infrastructure Development Manager (Navy), commented *“We are delighted by the outcome that we have achieved on this project. The user feedback has been excellent with particular emphasis on the design and layout of the training facility. We have managed to replace an ageing facility with a sustainable building that maximises and reuses the natural weather conditions.”*

The Navy training facility delivered for NZDF has been a major success in delivering a building that maximises the use of the local weather conditions and reusable energy sources that include reuse of water, solar panels and use of natural light and ventilation throughout the complex. A further key benefit to the project team is that they have taken the lessons from this project and worked together on other subsequent projects, reducing the impact of steep learning curves in building relationships and eliminating waste from the construction process.



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