

## Wellington Indoor Community Sports Centre



A view of what the new Sports Centre will look like

Project: Wellington Indoor Community Sports Centre  
 Publication date: 2010  
 Client: Wellington City Council  
 Engineering Design Services & Project Manager (Pre construction): Sinclair Knight Merz (SKM)  
 Architect/Design Manager: Tennent & Brown  
 QS/Project Manager (Construction): Davis Langdon Ltd  
 Contractor: Mainzeal Property & Construction Ltd  
 Region: Wellington  
 Sector: Leisure/Public Building  
 Final Contract Value: \$47.5m  
 Tender: Traditional Lump sum  
 Construction timescale: January 2010 – August 2011  
 Form of Contract: NZS 3910

**In our 16th Pathfinder Project, we investigate how the project team on the Wellington Sports Centre used a combination of technology and 'tried and tested' value management methods to maintain a sustainable design and deliver a value-add solution for Wellington City Council.**

### Background

The new \$47.5m indoor community sports centre in Wellington started construction on-site during January 2010 and is due for completion and operational by August 2011. The facility will have a total area of 12,500m<sup>2</sup> that accommodates 12 full sized netball playing courts, central amenity facilities and a viewing mezzanine as well as parking for 317 cars. The facility is also part of the Wellington offer for the 2011 Rugby World Cup and is widely expected to be a training facility for a major rugby nation, possibly the South Africa Springboks.

The approach adopted by the client, Wellington City Council (WCC), is ground breaking for a local government project. Embedded in the development of the brief for the sports centre were impact upon the environment, sustainability, and the whole life of the structure as well as community consultation and engagement.



In addition, WCC utilised value management and engineering techniques to maintain the sustainability aspects of the brief within the available project budget. The project has also benefited

from the use of Building Information Modelling (BIM) through the design and construction phases of the project.

### Challenges Faced

#### Community engagement & location for the centre

From the conception of the project there was considerable consultation and dialogue concerning where the new community centre was located.

Once the location was finalised, Wellington City Council then started the open dialogue with the local community which included residents, businesses and the sports federations regarding the project. WCC were also committed from the outset in challenging the warehouse-type design that typically dominates the leisure centre market by creating asset that would deliver the practical aspects required as well as being welcomed by the local community.

#### Budget constraints

The limitations of the budget could have significantly altered the design and sustainability features that have been integral to this project. It would have been easy to simply alter the design and reduce costs accordingly, however, the client with the appointed project team were committed to the environmental and sustainability concepts designed into the community centre. As a result the budget constraints were a major hurdle to overcome for the project team.

### Delivering whole of life principles

An integral part to this project was WCC procuring the project using whole of life principles rather than simply design and construction capital expenditure.

During this process, the client and the project team had to demonstrate how the design and sustainable features incorporated into the new building would demonstrably deliver value to the client over the life of the building. This is a significant shift for a construction client and a challenging exercise to bring the roles and budgets associated with capital and operational expenditure together.

### Dealing with schedules

This project faced a number of delays before getting to site which affected project scheduling and potentially the facility being incomplete by the time to Rugby World Cup is due to start. This ultimately has a 'domino-effect' on the project team as they move resources into position for project start. These delays had to be overcome by all project participants.

### Managing risk

The project team were committed on this project to having a proactive approach to managing and taking responsibility for risk on this project. How the project team responded to this challenge would be critical to its successful delivery.

### Successful Outcomes

#### Sustainability

Sustainable value for the city and its users, was the single most important aspect of the project brief for the community sports centre, and this provided a platform to deliver sustainable outcomes through good design practices. For the client, procuring projects that have effective sustainability solutions and standards is now a priority and influenced this project significantly. This provided a genuine focus for the project team creating an environment that encouraged collaboration, challenged the status quo to deliver alternative solutions and use of project prototyping.

The result of this collaboration and the sustainability challenge has delivered a design for the sports centre that is highly innovative. Rather than the typical warehouse-type design that dominates the leisure sector, the team developed a structure that responds to its function and is designed to mitigate the impact of the sheer size of a building that is nearly 150m long and over 100m wide.

The curved form of the vertical separated pre cast concrete panels forming the walls and the undulating roof eave ameliorate the building's bulk and scale. Natural lighting and ventilation delivers an open design that enables the building to 'breathe' and provide near optimal playing conditions. The ultimate benefit to the client as a building owner is that this design will save approximately \$200k per year in operational costs.

Other environmental impacts were also addressed at an early design phase. The approach of the team was to design a structure planned for use over a 70 year life span rather than the existing Building Code requirement of 50 years. Whole of Life Costing assessments were undertaken into the materials used on the project such as the use of concrete for supporting columns and aluminium for the roof to ensure lower renewal and maintenance cost over the course of the building's lifetime. Solar panels have

also been integrated into the project to provide hot water to the sports centre throughout the year.

### Value Management=Improved Quality & Functionality

Value Management and Engineering (VM&E) techniques were introduced to the project and they were used extensively to focus on delivering and maintaining the quality and functionality for sports use of the original design. It included maintaining the whole of life approach and sustainability features of the project within budget rather than eliminating it from the project to cut costs.

At an early stage the commitment of the project participants was to focus on maintaining the inherent quality and sustainability aspects of the design rather than taking the easier option of reducing costs by eliminating these parts of the design, however, the budget constraints combined with a strong commitment from all project team members to deliver on the original client brief enabled the success of the VM&E process.

There were five VM&E sessions during the design phase of the project, two sessions at the preliminary design phase and then a further three sessions during the detailed design phase, enabling the critical parts of the original design to be maintained. Critical to the success of the process was the project participants viewing the VM&E sessions as an opportunity to innovate rather than a barrier to project progress or simple cost cutting.



### Use of BIM

Building Information Modelling (BIM) was used extensively from project inception for all architectural, building services and structural designs being incorporated into the REVIT models. Key to the success of this approach was that all project team members were committed to using the system including all subcontractors who had access via the main contractor for the project, Mainzeal.

The use of BIM and the Aconex electronic communication system on the project produced a several key benefits:

- It was used early in the design process which enabled 3-D visualisation and flythroughs which was a useful tool in managing client and stakeholder/community expectations
- Sessions were run on-site to learn how to use the system and how it could aid the project process. As a result it proved to be a useful management tool for the project
- Enabled better communication within the project team
- Enabled better collaborative working within the team with key project team members engaged in modelling at the front end of





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the project process which assisted in managing out risk and creating certainty for all project participants

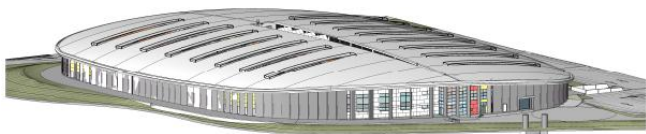
### Community consultation & engagement

During concept design, the primary sports codes, Netball, Basketball and Volleyball provided valuable detailed feedback on the playing conditions, amenities and equipment required for a top class indoors sporting facility. There was also early engagement with the local community and key regional stakeholders to consult on the building design and environmental effects, for both the sports centre in operation and during construction. Integral to the consultation and engagement process has been the liaison role of Jamie Delich, Wellington City Council's Recreation Development Manager. Jamie has been part of the project since inception and has a background specialising in the operation of sports facilities. Jamie has engaged with sports codes, local schools and community groups since concept design to ensure not only will the building be fit for use, but that the facility will be fully utilised from opening.

### Risk management & documentation

Throughout the project, workshops involving key project participants assessed and prioritised risks, then allocated each risk to a member within the project team responsible for each risk and ongoing monitoring and if necessary, mitigation.

The workshop approach worked well with all project participants



discussing and contributing to the risk profile and register. This approach led to team members taking ownership and responsibility for the aspects of the risk register that they had contributed to and agreed to manage.

It was recognised that the importance of getting to site with accurate information and documentation can also create time and efficiency savings. The use of the networked REVIT system aided this process.

**Continuity of the team** Finally, having the right skills, experience and people in the right positions at the right time was recognised as being critical to the success of the project. The project team stated that it considers at present, the project has exceptional strength in key roles.

## Summary of Benefits

### Procuring for Whole of Life and sustainability

True WLC assessment principles were adopted resulting in operational savings of \$200k per year. Focused on identifying the whole of life value rather than potential savings that could have been gained through capital cost cutting.

### Use of BIM

BIM has enabled enhanced stakeholder and client management as well as creating a networked resource for the project team to share real time project information.

### Address risk early and in a team environment

Enabling the project team to understand and contribute to the risk identification process and development of treatment plans which in turn encourages shared ownership and individual accountability of risk.

### Continuity in the team

Strength in depth in key positions was critical to the success of the project as it progressed.

### Early engagement of local and sporting communities

This engagement enabled the project team to manage stakeholder expectations as well as incorporating their requirements and views into the design of the centre.

## Key principles for repetition

- Use of early contractor involvement to inform more effective project decision making
- Focus on whole of life principles to influence capital procurement decisions
- Managing key stakeholder relationships – no surprises
- How continuity within the team is critical to success
- Risk mitigation and management workshops and associated responsibilities before the project starts
- Use of BIM to share up to date project information



## Key Lessons & Possible Improvements

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

- **BIM has contributed heavily to the success of this project:** In terms of client and stakeholder engagement and real time information sharing for the project team, BIM has enabled the project team to function more effectively and efficiently. The project participants have all benefitted from the use of BIM with its functionality enabling better communication, access to up to date information and providing absolute transparency between project partners. Its visualisation functionality has been used to manage key stakeholder engagement with both the client and the local community able to view flythrough of the building's design as it progressed. It proved to be an essential management tool for the project.
- **Value Management enables quality and value to be maintained:** The Value Management and Engineering workshops that were used during the design phase of the project enabled critical parts of the design to be maintained and overall satisfaction of the client brief. Many of the key sustainability design features would have been removed for the project to stay within budget without the use of these workshops. A key aspect to their success was the willingness of all members of the project team to actively contribute to these sessions and understanding the benefits that these workshop sessions would bring if successful.
- **Using Whole Life Costing principles in the procurement and design process:** This approach has created the opportunity to prolong the life expectancy of the structure and to reduce the operational expenditure of the facility by \$200k per year. By focusing on life cycle costing principles rather than purely on capital cost, the project team has delivered a solution that extends the life expectancy of the structure to 70 years and a considerable reduction in operational expenditure. In this project, the client has overcome the traditional silos of capital and operational expenditure with significant results.



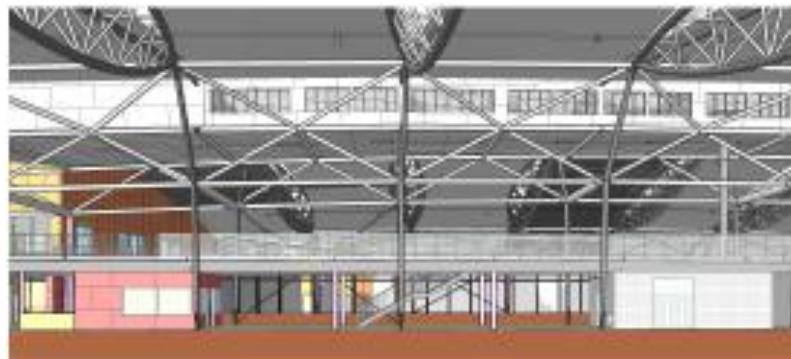
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## Conclusion

The Wellington Sports Centre project has been a huge success in focusing effort at the design phase of the project on maintaining quality and delivering value rather than simply reducing cost.

This approach has truly enabled early supply side involvement to affect the overall outcome of this project with extraordinary results to the operational savings of the sports centre over its lifetime.

Jim Coard, Project Manager at Wellington City Council, commented *"We are delighted by the outcome of this project to date. The approach adopted by the team to maintain the sustainability aspects of the original design and the use of technology and workshops have been critical to making this happen. We have learnt a great deal from this project that we will aim to take forward into other Council projects."*



Offices from East Court



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