



# GREEN DOLLARS

The new BNZ powers one of the first New Zealand buildings to be constructed with environmentally friendly ideals, from the recycled concrete up...

TEXT EDWARD ROONEY PHOTOGRAPHY ANDREW COFFEY



This is a project where old ways give way to new, both inwardly and outwardly. The external art deco facade of the former Jean Batten Building will remain, but behind that frontage will be 20 levels of cutting edge green construction.

Multiplex Group is developing the \$180 million model project for anchor tenant BNZ. It is the first time that Multiplex has entered into an integrated model to develop, construct, own and manage a building.

Multiplex Constructions Senior Design Manager Geoff Wicks says the green factor is being pursued under Environmentally Sustainable Design (ESD) criteria, borrowing the Australian four Green Star rating.

"Environmentally Sustainable Design is not new to the world, but it is new to New Zealand," he explains, of the project.

"We are currently using the Australian green rating tool to assess design. To

effectively use the Australian tool we have assumed a Tasmanian situation where their electricity generation, through hydro production, and climate are similar to New Zealand."

Wicks, a member of the committee developing the commercial rating tool for the New Zealand Green Building Council, says the BNZ project will be a test case.

"We are uncertain whether there's going to be any significant shift away from the Tasmanian model. This is unlikely but, until the New Zealand tool is finally launched, we can't be sure. We are undertaking a feasibility study at present for the client to upgrade the building from four to five green stars," says Wicks.

Issues concerning the facade, air conditioning and reducing the energy demand are the prime focus and they all challenge the traditional methods of design. In particular,

glass technology associated with facade design is one area where there have been huge advances in technology in a relatively short period of time.

The ISO 14001 Environmental Management System is being employed on this site, particularly for the recycling aspects of the construction process and the Green Star assessment.

"Concrete from demolition gets crushed and recycled, as does the reinforcing. There needs to be buy in throughout the project team on ESD but, where possible, de-risking on the Green Star rating is done in the design phase," explains Wicks.

Project Manager Paul Feltham says one environmental initiative on the site is how the rainwater is harvested and reused.

"During the demolition we are recycling rainwater and groundwater for onsite works and dowsing to keep dust down," he says.



**THIS PAGE** The demolition process involved craning machinery onto the top of building site; it then works its way down to the ground.





"IT'S IMPORTANT TO REMEMBER THAT WE ARE NOT JUST TICKING BOXES, IT IS A SHIFT IN OUR THINKING ACROSS THE BOARD," SAYS PROJECT MANAGER GEOFF WICKS.

"Water collected in the basement is filtered and pumped back up the building, thus saving on water consumption and reducing discharge of waste water.

"There will be recycling of waste throughout the project."

The target is to recycle in excess of 80 per cent by weight of demolition material.

Wicks says Multiplex has the advantage of having an Australian parent company, which can readily supply expertise from across the ditch.

"We've been able to tap into the experience of our Australian colleagues on ESD and will continue to do so. Our Australian project managers talk about ESD as naturally

as our New Zealand project managers talk about traditional construction," he says.

That said, there are challenges inherent in this project; many due to its 'greenness'.

"In terms of project challenges, we are working with today's technology on a building that's going to be delivered in three year's time," says Wicks.

"The challenge for us now is to deliver this building with the acid test coming in three years time when we begin the validation process and start to read the energy meters to confirm the design."

Wicks says that the ESD philosophy is more challenging than merely following a point by point checklist.

"When looking at construction materials for instance, you need to look at how much energy has gone into making those materials," he says.

"With recycled material you need to understand where it has been sourced from and how much energy (CO2 emission) you will consume getting it to New Zealand. The reinforcing for instance, is almost all recycled. The ceiling tiles contain about 75 per cent recycled material," he says.

There are issues with many aspects of the project, including the joinery and office furniture for example. Wicks says it is important to understand the composition of the material used to produce them.

**THIS PAGE** existing concrete on the site being broken up in preparation for reuse and recycling in its next incarnation.





"You won't necessarily appreciate that the desk you're working at has been produced in an environmentally friendly way but this is the level of the detail you need to explore," says Wicks.

In some areas, there are limited things to be done from an ESD perspective. The composition of concrete for instance, can make it difficult to work with. These are the practical aspects designers must consider.

Wicks says ESD principles in the construction can be carried through for the life of the building.

"Being a building owner rather than just a builder puts a different perspective on ESD. You become concerned with all stages of the building's life, not just the construction phase. And for Multiplex, it's also about owning and operating a green building, not just designing and building one," he says.

"It's not just the tenants who are demanding an environmentally sustainable design. Owners and developers are also starting to embrace these principles."

At a construction cost of over \$100 million, Wicks concedes he can't put an exact figure on how much the ESD pursuits have added to the overall cost.

"The moot point is the Capex cost but the definite advantage to the owner is the reduced Opex over traditional buildings," explains Wicks.

"The Capex is probably going to go up but the degree depends very much on the specific project requirements. You couldn't put your hand on your heart and give a percentage. You'd be a brave person to give that sort of advice."

However, says Wicks, one needs to look at the payback periods. Once a builder starts to reduce the building's energy demand, plant starts to get smaller and this frees up occupancy space.

Both Wicks and Feltham are avowed believers in the ESD and their dealings with suppliers and others in the industry have reinforced that philosophy.

"Multiplex is not alone in our realisation

that green building principles are the way of the future," Feltham says. "We have received positive feedback from our subcontractors and clients regarding ESD initiatives."

## What is green?

Graeme Finlay from Warren & Mahoney is a member of the project consultation group for the New Zealand Green Building Council. Here is his definition of what makes a building green:

"One which minimises its impact on the environment. In the future this will change to buildings, which are climate neutral or energy or water neutral with the aim of having no impact on the environment. In general terms, a green building is one which is energy efficient, water efficient, minimises its waste, uses materials with low environmental impact, is healthy and low in toxicity and minimises its impact on the local and wider site ecology."



## THE LIST

### CLIENT AND CONSTRUCTION

Multiplex Constructions (New Zealand) Ltd  
ARCHITECT Woods Bagot / Warren & Mahoney

QUANTITY SURVEYORS Rider Hunt

STRUCTURAL ENGINEERING Holmes

Consulting Group SERVICES ENGINEERING

Norman Disney Young FIRE ENGINEERING

Holmes Fire & Safety FIRE SYSTEMS

Entire Fire AIR CONDITIONING AND

MECHANICAL SERVICES Hastie

SECURITY SYSTEMS AND ELECTRICAL

WORK Allendale Electrical DRAINAGE

AND PLUMBING W A Chenery

ROCKANCHORS Grouting Services

WINDOWS AND GLAZING Thermosash

Commercial DEMOLITION WARD

PILING Brian Perry Civil EXCAVATION

Smith & Davies JEAN BATTEN GANTRY

STEEL Grayson Engineering

### THIS PAGE

Core earth samples; Duncan Sinclair, site engineer from Multiplex and Ray Wheeler, geologist from Tonkin and Taylor analyse water management in relation to the earth on which they will construct the new Bank of New Zealand building.

## VITAL STATISTICS

**\$105 million** ... construction cost

**30 Sept 2009** ... scheduled completion date

**4 levels of** ... underground car parking

**7 levels of** ... podium commercial office space

**10 levels of** ... tower commercial office, plant rooms on levels 19 and 20.

Top down basement construction incorporating a secant pile perimeter wall.

Concrete central core incorporating lift shaft and egress stairs.

Structural steel superstructure supporting a ComFlor 80 composite floor.

Temporary steel gantry to support Jean Batten Building facade