

# MAINSITE

JUNE 2010

IN THIS ISSUE | SOCIAL & CIVIL INFRASTRUCTURE



**MAINZEAL**  
Building Certainty

# CEO COMMENT

**With just six months remaining of 2010, it is a huge understatement that the year is moving fast!**

With all the background noise of the global financial crisis, Mainzeal's 2010 experience to date has been of clients and consultants working at break neck speed on a large number of significant projects to have them finished or brought to market for construction.

With this back-drop, Mainzeal's focus for the past two years has been 'Building Certainty' in all that we do. Of particular significance is the need for us to build quality and complete projects in a 'leak free, defect free' condition. This aspiration can only be achieved with leadership and training. As such, we are investing a large sum of money in developing a 'leak free, defect free' training programme for all our project staff. Roll out of this training will commence in July and I am confident that it will further support Mainzeal in being recognised as a quality construction company.

In the first half of 2010 there have been a growing number of project opportunities requesting early contractor involvement at project definition stage prior to the client locking down the design. This is the way ahead for New Zealand on larger, more complex projects. Inevitably the most cost effective and successful delivery relies on the skills and experience of the people being aligned to the risks being managed. Mainzeal's business philosophy is one of being open and transparent and working closely with the consultant and client team in 'Building Certainty' for all.

This will become even more essential as the Government signals its intent to adopt the PPP procurement model for the private sector to deliver public sector social infrastructure. This will require the construction industry to step up and be

capable of offering quality, well built, low maintenance assets for the private sector investor. Mainzeal has been developing its capability and capacity to fulfil this role and looks forward to what will continue to be a fast evolving market for businesses that can demonstrate 'Building Certainty'.

As evidence of our build capability, Mainzeal has successfully completed work on the Lion Nathan Brewery project. What is more pleasing is that within six weeks of practical completion the final account was signed. This is evidence of a team that has worked collaboratively with the client consultant team, built a relationship of trust, and can be proud of delivering an outstanding project.

Mainzeal has also mobilised as Siemens' civils partner in undertaking the HVDC Link to construct converter stations at Benmore in the South Island, and Haywards in Wellington. It is testimony to the depth of Mainzeal experience and longevity of service that many of our original Benmore/Haywards team from 20 years ago will be working on this project.

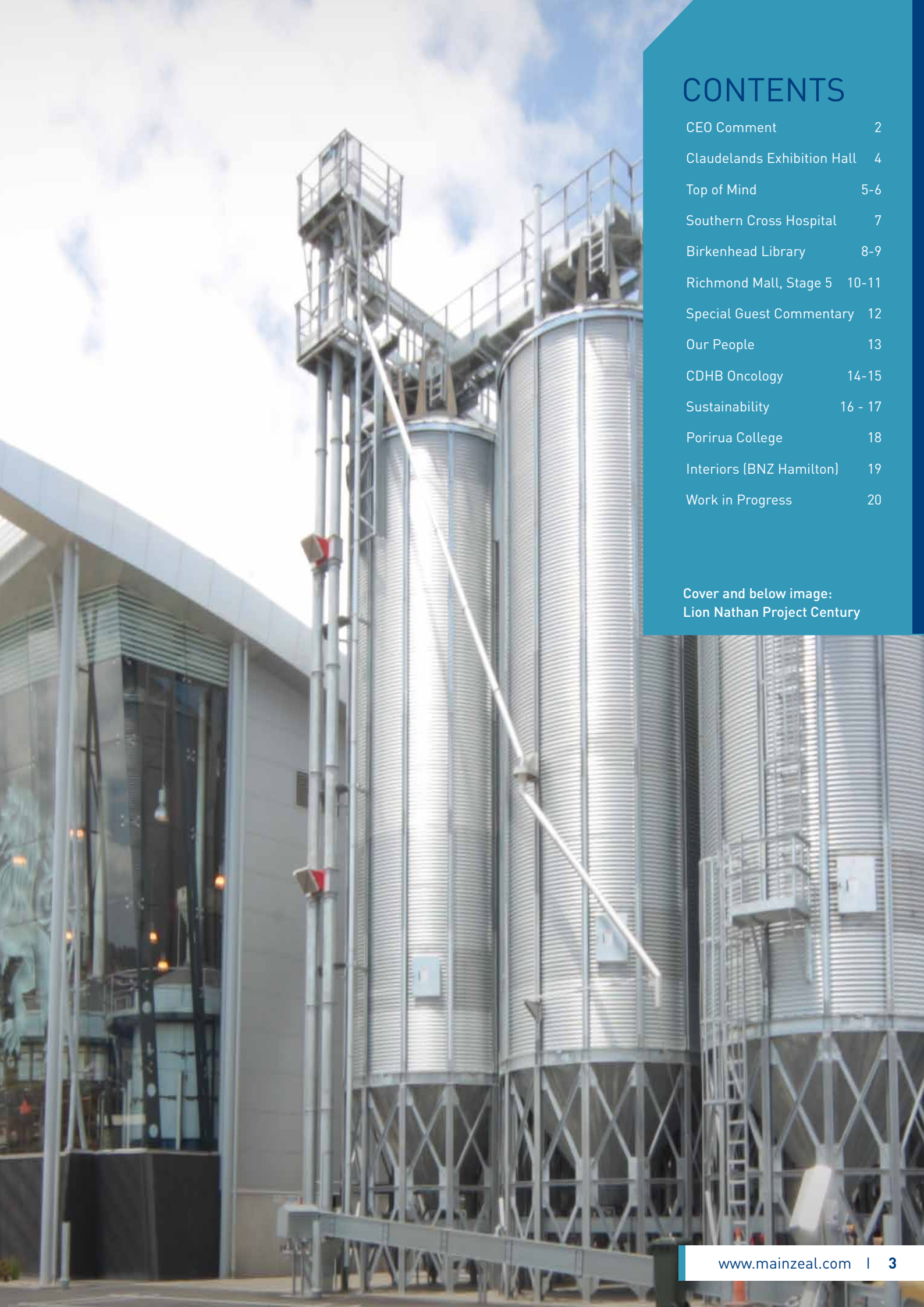
Mainzeal's ESD leadership has been underpinned by being awarded the first 6 green star new build commercial building in New Zealand, which has recently commenced construction in Auckland. This will provide a unique opportunity to demonstrate the company's integrated building envelope construction capability as we build the first fully activated double skin facade.

Finally, I thank our many clients and consultants for continuing to provide great construction projects for our Mainzeal teams to build throughout New Zealand.



**Peter Gomm**

Chief Executive Officer  
Mainzeal Property and  
Construction



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Cover and below image:  
Lion Nathan Project Century

# CLAUDELANDS EXHIBITION HALL

When Hamilton City Council called for tenders to construct the new exhibition hall at Claudelands Event Centre, most said the 70 working days provided to complete the project was impossible to meet.

But the local Mainzeal team saw the project as a challenge and took it on. What was the result? Not only did the team complete the exhibition hall on time, but it also came in under budget.

Project Manager, Suresh Nagaiya of N-COMPASS Ltd explains "It was a tremendous effort by Mainzeal to finish such a sizable project effectively in four months. They deserve a lot of credit for this achievement. At the time of tender, many of the other contractors thought the timeframe provided was nuts and it could not be achieved. Mainzeal took it on and accomplished this goal."

Hamilton City Council Deputy CEO, Blair Bowcott, was also extremely pleased with Mainzeal's effort and says "The local Mainzeal office worked together with our project manager and people at Hamilton City Council to come together as a team

and achieve this significant milestone. The end result was a great outcome for the Claudelands project."

By completing the project on time, Mainzeal provided Hamilton City Council with several significant benefits. Claudelands avoided the real possibility of losing the Motor Home & Caravan show to Auckland. Council also avoided a possible sizable damages claim from the promoter of the show that would have eventuated if Mainzeal ran over the deadline.

Mainzeal's Waikato and Bay of Plenty area manager, Finlay Irwin, is proud of the job his team did at Claudelands.

"Delivering on our contract commitments is what we're about here at Mainzeal. We went about the project in a logical manner, brainstorming a list of the risks associated with the development and working through it. Our Hamilton-based team has a high level of skill, patience and pure talent and I always had confidence they'd meet the deadline," Finlay says.

Finlay outlines that pre-planning was key in bringing the development to a successful completion.

"Our team pre-manufactured as much as we could off site, leaving no room for error. We also laid foundations in between exhibitions. Basically, we made the most of every hour during the construction period," he explains.

Finlay comments that his local team enjoyed being part of Hamilton history by working on this project.

"Every person on our team lives and works here in Hamilton. Their families and children will enjoy events in the exhibition hall at Claudelands for many years to come. It has been a great experience for our local guys to be involved in a part of making Hamilton history," he says.

Mainzeal's Hamilton office employs around 40 design and construction staff. The team has led some of the region's largest construction projects including Braemar Hospital, Wintec's campus redevelopment, Waikato Hospital, Hamilton Casino and Novotel Tainui projects.

Mainzeal is part of a nationwide organisation with over 40 years of construction history in New Zealand.



## BUILD STATS

CLIENT: Hamilton City Council  
PM: N-Compass Ltd  
ARCHITECT: SEKTA  
STRUCTURAL:  
Holmes Consulting Group

# TOP OF MIND

## NORTHERN REGION PAUL STEWART

Over the last few months, a number of successful projects that involved ECI (Early Contractor Involvement) during the design phase have been completed. These projects include Lion Nathan's Project Century, Massey University ISC and Whangarei District and High Court.

The result of the Mainzeal team ECI on these projects not only contributed to significant cost savings through value engineering and giving more price certainty, but helped build relationships and respect for the construction phase

of the project, with the client, its advisors and design consultants.

We are currently involved in two other significant projects where we are either currently providing ECI services or



where the client has asked us to make a submission to provide these services. I can assure you our people enjoy the opportunity to add their experience to the project team.

Both these projects show an enlightened client, well aware of the advantages of cost and risk reduction, avoiding re-design or rework, current market resource knowledge, supply chain input and early procurement of key elements, ensuring proper planning occurs to allow the client's "business as usual" to continue with minimum disruption. We are able to provide cost certainty before the design is complete by offering GMP, or TOC (Target Out-turn Cost) models.

We have also been engaged in a number of Design and Build projects recently, which really has given us the advantage of bringing our supply chain (subcontractors) in early to fully utilise their skills with our chosen consultants.

Apart from the Project Century feature in this Mainsite, two other special projects carried out in the Northern Region are featured. Birkenhead Library is an awesome architectural masterpiece which its users will enjoy for many years to come. It was a difficult project build, but one where the team produced a great result. The other is Claudelands Exhibition Hall Design & Build in Hamilton. This was a project that others

thought could not be completed in time, but the Waikato team saw the risk and the reward and delivered.

These examples show a better way of doing business in our industry and if you would like to know more, come and talk to us about how to achieve Building Certainty on your next project.

# TOP OF MIND

## CENTRAL REGION

DAVE O'DONOVAN



I cannot be sure if it is the weather or the economic green shoots but the mood in Wellington and the wider Central region is optimistic.

Firstly the weather. The lower north island has had an exceptional autumn with little rain or wind to trouble our projects. All projects are benefiting and particularly the WICSC (Wellington's new Sports Centre) and HVDC Pole 3 (our Contract for Siemens at Haywards) where we are still in the ground.

And there are some green shoots! We are currently facing an extended period of tendering with good opportunities in Education, Health, Retail and Building Industry Infrastructure. What's also good is that we are getting the time to make great submissions on these projects to ensure we have the best team.

Lots to do and never a dull moment.

Between writing the comment and going to print there have been many days of rain. Murphy's Law!

## SOUTHERN REGION

PAUL BLACKLER

I recently had the privilege of attending the sod turning ceremony for the Pole 3 HVDC project at Haywards Substation, Wellington.



This is an exciting project for Mainzeal to be involved in as construction partner to Siemens. Substantial works are to be completed at Haywards Substation in Wellington and Benmore Substation in the South Island, which is another example of Mainzeal's national capability in action.

Works at Benmore commenced late April and will see the teams on site challenged by the remoteness and very harsh climatic conditions - especially during the winter months. It is the sort of location that you would normally associate as difficult to get people excited to work in. Not so with this project with members of the Mainzeal national team volunteering to be involved!

"It can't be done" was the statement from an international subcontractor reviewing the nominated completion date of Christchurch Hospital's new Oncology Bunker. Needless to say they were full of praise when the Mainzeal team completed works seven days ahead of schedule. Our team continues to work at Christchurch Hospital through the award of the Christchurch Woman's Hospital Expansion Project. This

project has many technical challenges due to its location and the ongoing operational requirements of a functioning hospital below the construction area. Both projects are examples of how a collaborative approach ultimately brings benefit to our clients.

When commenting on the economic recovery as far as it relates to the construction industry in the Christchurch market, 2010 to-date could best be described as a 'roller-coaster ride'. January and February both showed signs of growth, only to have March and April erode any gains made. At the time of writing in early May, confidence appears to be growing again. Consultants report an increase in enquiry rates and a number of larger value projects looking positive for release to the market. It is a volatile market we operate in, highlighting yet again the need for businesses to be adaptable and able to respond quickly to constantly changing market dynamics.

The Southern Region maintains a healthy and diverse portfolio of projects and is grateful for the recognition we receive from our clients of the added value that Mainzeal brings to their project.

# SOUTHERN CROSS HOSPITAL, NEWTON

## BUILD STATS

CLIENT: Southern Cross Health Trust

ARCHITECT: Warren and Mahoney

ENGINEER: Beca

PQS: Rider Levett Bucknall

Southern Cross Hospital is New Zealand's largest private hospital network.

It offers a broad range of elective surgery, provided throughout its network of 14 hospitals.

Mainzeal's first involvement with the Newtown Southern Cross Hospital included some interior alterations in 2007.

Then in November 2008 Mainzeal was awarded the contract to build the extension project.

The first stage included a new 1224m<sup>2</sup> footplate building which links to the existing hospital via two corridors.

The extension is on an extremely tight and banked site which backs directly onto the operating hospital. Close communication with the hospital team

ensured disruption was kept to a minimum and there were no surprises.

The facilities in the new building include a four bed ICU, two bed HDU, and six single bed private rooms each with their own ensuite. Offices, nurses' station, staff change and utility spaces are also provided. Further space is available for future fitout as theatres.

The second phase of the project involved altering and refurbishing parts of the existing building.

The new extension has a timber and steel structure which sits on a concrete slab. The exterior is primarily clad in aluminium composite panel with long-run metal roofing.

Mainzeal received high praise from equipment installers who were working directly for the client.

Sergio Esteves, Director of Medical Design Innovations said, "Every month our team is involved in similar installations either in Australia or New Zealand but very few come close to our expectations and many are delayed by poor management. Your management and coordination skills are evident and I can only wish to work on other projects with Mainzeal."



# BIRKENHEAD LIBRARY AND CIVIC CENTRE

Winner of the Excellence Award in the Special Purpose Property Award category at the PCNZ Rider Levett Bucknall Property Industry Awards held on Friday 18 June 2010.

After a seven year wait, the Birkenhead Library rebuild commenced in January 2009.

Taking the Mainzeal team just 11 months to complete, the Birkenhead Library and Civic Centre is a contemporary building.

The basement floor is made up of carparks, book return, public entry and utilities.

The ground floor has a public entry from

Nell Fisher Reserve, a community notice board, library workroom with associated areas, public space, public toilets, issues desk, plunket, CAB, Council services, returns, staff areas, archives (including Chelsea Archives) and meeting rooms.

The mezzanine floor contains the children's area, children's toilets, study spaces, outdoor deck, meeting room, staff desk and service access to the roof.

Essentially a steel framed building with precast basement walls, a number of innovative uses of materials were also

selected to suit the design concept.

Laminated purple heart and Alaskan yellow cedar fins were used to screen the west facade and the mezzanine and exterior deck. Aesthetically sculptural, these screens are also practical as compliant barriers.

The building also has low E glazing and double glazing, ensuring minimal disruption from the outside noise.

Laser cut painted sheets form an internal perforated screen to the south



# BUILD STATS

CLIENT: North Shore City Council  
ARCHITECT: ArchOffice  
CONSULTANTS: SKM, Maltbys and  
Browne and Thompson

facade. Glazed vertical slots (with glass alternating green and blue) are set within the precast panels.

Perforated ceiling panels are also laser cut and dapple light from roof lights. These panels also act as air extracts and supply for the smoke extract fans.

Precast patterned lightweight panels to the south facade are fire rated and installed in a manner to continue the sense of lightness and transparency.

The use of lightweight concrete reduces the level of additional insulation required. A sandwich panel glued to the inside face, stopped and painted, alleviates the need for framing.

There is on-site public parking for 31 cars making access to the building easy, not to mention the convenience of a drive through book return!

With WiFi, RFID, Internet and BMS technologies, the cutting edge architecture, space planning and design of the Birkenhead Library and Civic Centre makes this building a 'state of the art' facility for community use.





## RICHMOND MALL, STAGE 5

Mainzeal has continued a valuable relationship with both the client and consultant team on this Stage 5 project.

With more than 70 shops, privately owned Richmond Mall is the largest Mall in the North of the South Island. Built in five stages, Mainzeal has been successfully involved in all five stages.

The works on this project included a single level car park structure with a high-quality toilet facility, mall

management office on a mezzanine floor and retail space downstairs for five additional tenancies including Postie.

Mainzeal commenced the project on the Queen Street site in Richmond in February 2009. The project was completed on time in October that same year.

Wellington based Project Manager Russell Goggin of Forme Construction Ltd said:

“I was pleased to note that the first programme submitted at the time of tender acceptance was unrevised and was used as a working document until hand over.

I have been in this business over 20 years and this would have to be one of the best run projects I have ever been involved with. The Richmond project was extraordinarily well done.”

## BUILD STATS

CLIENT: Tinline Properties Ltd  
ARCHITECT: The Buchan Group  
ENGINEER: Powell Fenwick  
QUANTITY SURVEYORS:  
Rider Levett Bucknall



This stage was an integral part of the overall expansion /redevelopment of this Mall to continually increase its presence and to increase its market share within the Tasman region.

Mainzeal completed the project remedial free and on budget.

In early 2011 the final stage (circa \$15m) will bring the client's 15 year plan into reality.



# A GREEN REVOLUTION IN OUR BUILDINGS



## A Green Revolution in our Buildings - By Dean Riddell, Principal of Davis Langdon & Chairman of the New Zealand Green Building Council

It's just four years since the New Zealand Green Building Council was established to provide independent and technically robust measures of the environmental performance of buildings.

When the Green Building Council was established, we estimated around two or three projects would be certified each year. Since then 40 buildings have gained Green Star ratings, including two 'world leadership' rated 6 Green Star Design rated buildings - the Christchurch Civic Building and the Geyser Building in Parnell, Auckland.

A total of 41 buildings are registered for certification and around 420 organisations belong to the Council, including construction companies, building owners, local and central government, universities, architects, engineers and consultants.

Another sign of how far green building has come in New Zealand was the appointment, in April, of New Zealand Green Building Council Chief executive Jane Henley to the top job at the World Green Building Council. This recognises the progress in New Zealand under Jane's leadership.

Alex Cutler has now been appointed CEO

of the NZGBC, having worked sustainability practices for the more than 15 years, most recently at PriceWaterhouseCoopers, where she was an associate director.

NZGBC's goal, from the start, was to drive the development and adoption of green building practices through market driven initiatives, so our buildings could be more productive, more efficient and more environmentally sustainable.

### So what is driving all this activity?

There are seven main factors behind the upswing in interest in green building

#### 'Future-proofing'

Governments and corporates are incorporating green principles into their property requirements to help 'future proof' their assets against changes in the business and regulatory environment.

#### Corporate social responsibility

Building green is a sign of a company's commitment to the environment. When IAG decided to build a new Green Star certified head office, for example, a prime motivation was to demonstrate that corporate social responsibility starts at home.

#### Healthier places to live and work

Green buildings are healthy buildings. The Greening America's Schools report found that green schools and universities deliver a 41.5% improvement in health of students and teachers including reduced incidence of asthma, 'flu, respiratory problems and headaches. They also measured a 15% improvement in student learning through good lighting and ventilation, which also helped reduce cross-contamination of illnesses.

#### More productivity

Green buildings consistently outperform non-green buildings in comfort and productivity. Natural light, fresh air and access to views of the outdoors, as well as control over individual workspace temperature and lighting, all directly affect productivity. A post-occupancy study of the Green Star NZ certified Meridian Building

showed that staff productivity has improved by about 9%.

#### More appealing to tenants

The BCI Australia Green Building Market Report (2008) found that the prospect of increased tenant demand is one of the main reasons for committing to green building, with 65% of respondents nominating it as an important factor. Building owners are rewarded with decreased vacancy periods and an increase in occupancy ratios.

#### Returns on investment

Green buildings deliver stronger returns on investment. The McGraw Hill Construction Report (2007) found that building green increased property values by 7.5% and return on investment by 6.6% through attracting tenants more readily, higher rents, reduced tenant turnover, and lower operating and maintenance costs.

#### Energy efficiency

Green buildings are built for high energy and water efficiency, so they are cheaper to operate. They achieve energy savings of at least 20-30% when compared with industry standards - and sometimes much more. An immediate example is the Christchurch Civic Building which estimates saving \$1.3 million in energy costs per year.

Once an emerging trend, green building has become an integral part of today's construction industry, and the NZGBC will continue to drive the business case for green building in New Zealand.

#### For more information

[www.davislangdon.com](http://www.davislangdon.com)

The Road to Green Property: <http://www.davislangdon.com/ANZ/>

[www.nzgbc.org.nz](http://www.nzgbc.org.nz)

Side note:

Peter Gomm CEO Mainzeal is a member of the NZGBC Board.

# OUR PEOPLE

## Best of Mainzeal Awards

Garyth Jones receiving the CMT Award from Warren Chapman



Thursday 25th March marked the date of the inaugural Best of Mainzeal Awards.

The Best of Mainzeal will be an annual awards ceremony that recognises both exceptional individual performers who stand out amongst their peers, and projects that have demonstrated excellence in the areas of health and safety, sustainability initiatives, innovation, quality and financial performance.

Mainzeal's success is not limited to these categories, and in the future it is our intention that these awards evolve in a way that allows more expansive recognition.

This year's awards ceremony took place in Auckland at 'Parnells on the Rose Garden'. Attending the Awards evening were the finalists in each of the award categories as well as representatives from the regional offices. Guests at the function included Bob Yellowlees, Keith and Jan Watchman and representatives from Carters and Holcim.

Congratulations to all finalists and winners.

**PROJECT OF THE YEAR AWARD**  
Winner - Braemar Hospital, Waikato  
Sponsored by Carters - Your Building Partner

**PROJECT SAFETY AWARD**  
Winner - Manukau Civic Centre, Auckland  
Sponsored by Brian Olsen

**PROJECT SUSTAINABILITY AWARD**  
Winner - Vogel Campus Stage 1A, Wellington - Sponsored by Holcim (New Zealand) Ltd

**PROJECT MANAGER AWARD**  
Winner - Mike Prince, Wellington

**PROJECT MANAGER COMMENDATION AWARD** - Winner - Allan Scott, Waikato

**SITE MANAGER AWARD**  
Winner - Garry Kirkbride, Auckland

**QUANTITY SURVEYOR AWARD**  
Winner - Victor Snelius, Waikato

**CMT AWARD (WARREN CHAPMAN CUP)**  
Winner - Garyth Jones, Auckland  
Sponsored by Warren Chapman

**QST AWARD (Gavin Watchman Memorial Cup)** - Winner - Andrew Johnston, Waikato

**APPRENTICE AWARD (Bob Yellowlees Cup)** - Winner - James Meafua, Auckland



John Pengelly receiving Project Sustainability Award for Vogel Campus Stage 1A from Steve Jackson, Holcim



Allan Scott receiving Project of the Year Award (Sponsored by Carters - Your Building Partner)

## BUILD STATS

### CLIENT:

Canterbury District Health Board

PM: Canterbury District Health Board

ARCHITECT: Warron and Mahoney

ENGINEER: Beca



# CANTERBURY DISTRICT HEALTH BOARD ONCOLOGY

The new Oncology Unit at Christchurch's Public Hospital began in June 2009.

This P&G and Margin project incorporates a new waiting room (holding a capacity of 40 people), a bunker (to hold one of two new Linear Accelerators purchased by CDHB) and a new chemotherapy unit.

Mainzeal was engaged early so that it could work closely with the design team throughout the design process. The end result meant many of the technical hitches had been dealt with long before work commenced.

The bunker had to be constructed to an extremely tight programme. At one stage the supplier of the new linac machine stated "If you get this done on time it will be the fastest build I have ever seen of a bunker". In rising to the challenge, the Mainzeal team of carpenters completed and handed over the area seven days ahead of programme.

The bunker is constructed from low strength fly ash concrete with some walls up to two metres thick. Drying the concrete was challenging as there were strict temperature parameters required by the engineer. Thermo couplers were used to monitor the temperature of the concrete with the aim of keeping the core within 20 degrees of the outside ambient temperature. At its hottest the core was reading close to 60 degrees! The walls

were insulated with 100mm polystyrene once the doka formwork was struck, and the 20 degree margin was maintained.

The building, which measures a little over 100 square metres, had over 400 cubes of concrete in the floor walls and roof as well as two twenty tonne precast panels and two ten tonne panels. These panels were solely used as soffit formwork for the one metre thick concrete roof.

The Oncology waiting room is finished in copper cladding, becoming a prominent feature in the hospital grounds. The Mainzeal team proudly handed this area over to the client for occupation two weeks ahead of programme.

Once the new chemotherapy suite is



complete the Oncology Unit can care for twice the number of patients currently being treating.

As part of the chemotherapy works, existing clinic and treatment rooms have been upgraded to meet new hospital requirements. This has been particularly difficult to achieve working inside an operating facility. It was imperative that there was as little disruption for the client as possible. These rooms have been upgraded one at a time so that treatment can carry on in other rooms.

We had a great team of staff and sub contractors who worked extremely well together to achieve the final goal. This has allowed the job to run relatively problem free.



The CIS Tower in Manchester features an entire facade elevation made of solar PV panels.



## SUSTAINABILITY

### Energy neutral or Zero Energy Buildings (ZEB) are the pinnacle of green building design.

Given that it's always better to save energy than generate it on site, ESD engineers are pushing the boundaries of passive design to the extent that we are now seeing the first large office buildings without air conditioning popping up around New Zealand. Natural ventilation strategies are not for the fainthearted requiring considerable modelling effort up front and encompassing a degree of performance risk, but the rewards are significant with potential energy savings of up to 60% on offer in office buildings. Energy savings of this order make a significant contribution to the business case especially when considering the

operating cost of the building over its entire lifecycle.

In addition to natural ventilation, demand management includes highly efficient lighting, lifts, IT equipment and the like. Recent advances in LED lighting technology mean that we can achieve 75% savings by switching from incandescent lamps while enjoying 50,000 hours of continuous operation before failure reducing maintenance costs. US federal lighting standards will prevent the sale of incandescent lighting between 2012 and 2014 paving the way for scale and therefore economy in the manufacture of LED's.

Once energy demand has been minimised, the final challenge is how best to offset this residual energy demand with onsite generation technologies.

These can include photovoltaic's (solar panels), wind turbines, biogas digesters, tri-generation plants and incinerators.

Anaerobic digesters treat blackwater and produce combustible methane gas which can be used in the building. The cost relative to gas produced would likely make this technology prohibitive in the short term, although buildings in Australia are pushing the boundaries of blackwater treatment due to water scarcity concerns. The Gauge is a 6 star building in the Melbourne docklands with an aerobic blackwater treatment and recycling system which produces non-potable water for use in toilet flushing and landscape irrigation.

Tri-generation is a technology finding its way into many buildings in Australia due to the reduction in carbon emissions



The Bahrain World Trade Centre has three 29m diameter wind turbines integrated between its twin towers. These turbines produce 1300 megawatt hours annually - enough to offset 15% of the total energy demand for the two giant skyscrapers.

arising from the use of natural gas versus grid electricity which is brown coal fuelled. New Zealand's latest example of tri-generation is the Christchurch Civic Building where landfill gas is piped to a large generator which burns the gas producing electricity, heat and cooling via adsorption chillers. The on-site incineration of waste produced in a building also offers a possible energy source although consenting issues and emissions will likely make it a difficult technology to use in practise.

New Zealand's first 6 Green Star building, Geyser in Parnell, makes effective use of a double skin active facade and other demand management strategies to slash energy use to just 27% of a typical office/retail building of its size. It is the second air conditioning-free building by path breaking developer Samson Corporation and follows on from the award-winning Iron Bank (also naturally ventilated).

In terms of integrating generation

technology into the fabric and form of a building, solar and wind are making real strides. New Zealand is often described as the Saudi Arabia of wind due to our southern latitude and long slender shape which produces consistent, laminar winds ideal for generation. We also have significantly higher values of solar irradiance than our peers in Germany for example who are layering everything in solar PV panels. So the prospects for developing 'energy neutral' buildings here in New Zealand would seem fairly good through the use of wind and solar.

There is now a range of wind turbines designed specifically for use on buildings in urban environments. Key challenges include turbulent air and wind shear in built-up environments. Vertical axis turbines seem better able to cope with these conditions than conventional horizontal axis turbines although there are examples of both in operation. Noise, vibration and safety are other

hotly debated issues when it comes to building-mounted turbines.

Here in New Zealand Vector are trialling the Swift micro wind turbine on 6 buildings around the country including the Sky Tower in Auckland where the turbine is mounted at over 220m high and enjoys high average wind speeds of 7.5 m/s. In 2007 a legislative change made it simpler for distributed generation installations which is good news for the technology. It means that generation devices can be grid connected and will feed excess energy back to the grid offering the building owner a credit on their account.

Regardless of the technology chosen, it is almost certain that we will see increased use of integrated generation technology in our built environment as we progress towards sustainable, zero energy buildings.

# PORIRUA COLLEGE - MOTIVATING ENVIRONMENTS

When the Porirua College redevelopment is complete, the school will have been almost completely rebuilt.

Mainzeal was contracted to build Stage 2 of the redevelopment following a competitive tender process.

The intention of the new buildings is to support a 21st Century learning model, and the predominant Maori and Pasifika culture of the school community is having a strong influence on the design of the buildings and landscaping.

The overall vision has been to break down the institutional 'cells and bells'

style of traditional secondary school buildings in NZ. This encourages greater interaction, engagement and motivation of students in an open-style learning environment.

The Stage 2 facilities were built around the concept of a series of 'Houses' - Rangituhi, Kenepuru and Whitireia - with each building providing a new learning community for 150 students. Incorporated in each house are learning studios, a multi-purpose co-curricular studio, seminar rooms, outdoor learning spaces and a large internal group learning and presentation space.

The impressive 'kite' roof form provides a dynamic and iconic symbol for the new Porirua College.

The houses have a slab foundation base with a timber and steel structure. An LVL bow string truss runs through the axis of each house. The buildings are clad in Hardies Exo Tec façade panel and Alucobond, and the roof is Coloursteel.

The group learning area in the heart of each house is double height with high level windows providing natural light. The

concrete slab is lowered in this space but has a proprietary raised plenum floor creating a floor level to match the outer spaces and forming a cavity for services.

The building services include sprinklers, mechanical air supply, fibre-optics and a full security system.

In addition to building the new houses, Mainzeal has also upgraded the school's central services and has re-roofed the gymnasium.

This project was right in the centre of the school. It abutted the main entrance and the carpark and it sat between the school and the playing field. Proximity was so close that the school itself operated with a Certificate of Public Use.

While the project was underway, on-site Gateway placements were made available for some students. This led to permanent employment for one student who expressed a wish to stay in the construction industry. The Gateway students were all Site Safe passport trained and worked under the supervision of Mainzeal and its subcontractors.

## BUILD STATS

CLIENT: PORIRUA COLLEGE BOARD OF TRUSTEES

PROJECT MANAGER: DAVIS LANGDON LTD

ARCHITECT: OPUS INTERNATIONAL

CONSULTANTS LTD

ENGINEER: OPUS INTERNATIONAL

CONSULTANTS LTD

SERVICES: NORMAN DISNEY YOUNG LTD

PQS: MALTBY & PARTNERS LTD



# INTERIORS

## Les Mills, Hamilton.

Part of the \$1 million refurbishment project of Les Mills in Hamilton was won by Mainzeal after an invitation to tender. This invitation was forged through existing relationships between Auckland staff and project managers "The Building Intelligence Group".

The project was an exciting and colourful showcase for Mainzeal Interiors, Hamilton.

Keeping the programme on track meant coordination of a live environment operation from 5.30am to 9.00pm.

Regular access was required to the facilities. On track with the project, it took just four months from start to completion.

The refurbishment consisted of an upgrade of the following existing

areas over three floors and an area of approx 1500m<sup>2</sup>:

- Cardio Suites for cycling
- Large aerobic area
- Main gym weights and machines
- Staff and public amenities
- Reception area and offices
- Male change area
- Female change area

Key considerations for each of these areas were identified and targeted in the initial stages. This ensured a quality finish and vitality being returned to a building approaching ninety years.

Mainzeal would like to thank the management and staff of Les Mills who assisted us greatly in achieving a successful outcome.

The project was completed to programme in April 2010.



## BUILD STATS

CLIENT: LES MILLS  
PROJECT MANAGER: THE  
BUILDING INTELLIGENCE GROUP



# WORK IN PROGRESS

## NORTHERN REGION

### AUCKLAND CONSTRUCTION

Client: University of Auckland  
Thomas Building Extension  
Client: Eden Park Development Board  
Eden Park North Light Stand  
Client: NZ Defence Force  
Navy Museum and Stormwater upgrade  
Client: Manukau City Council  
Norman Kirk Pool  
Client: Sea & City  
North Wharf Buildings  
Client: Sea & City  
North Wall Structure  
Client: Samson Corporation  
Geyser Building

### AUCKLAND INTERIORS

Client: Department of Corrections  
Auckland Prison East Cells and Ventilation  
Client: Department of Corrections  
Auckland Central Remand Prison  
Client: Counties Manukau District Health Board  
Middlemore Hospital Edmund Hillary Block  
Client: Counties Manukau District Health Board  
Middlemore Hospital AMC Links, Lifts, AT and R  
Fitout  
Client: New Zealand Police  
South Auckland Multi Agency Centre  
Client: Auckland District Health Board  
Oncology Bunker 4 ADHB  
Client: New Zealand Transport Agency  
NZTA Office Refurbishment

### WAIKATO/BAY OF PLENTY CONSTRUCTION

Client: Waikato Institute of Technology  
Wintec Avalon Campus Student Hub  
WINTEC Block F Redevelopment  
Wintec Carpark  
Client: Hamilton City Council  
Claudelands Exhibition Hall  
Client: NZ Police  
Hamilton Central Police Station Custodial Area  
Upgrade  
Client: Pacific Terminals  
Construction of Silo Base 2  
Client: Bank of New Zealand  
BNZ Partners and Retail Fitout  
Client: Les Mills Hamilton  
Refurbishment of Gymnasium  
Client: Lakes District Health Board  
LHSIP - Rotorua Hospital

## CENTRAL REGION

### PALMERSTON NORTH CONSTRUCTION

Client: Ministry of Justice  
Levin new Courthouse  
Client: Foodstuffs Properties (Wgtn) Ltd  
PN Pak 'n Save Alterations Stage 2  
Client: Foodstuffs Properties (Wgtn) Limited  
New World Broadway

## WELLINGTON CONSTRUCTION

Client: AMP Capital Investors  
Vogel Campus Stage 2  
Client: Wellington International  
Airport Ltd  
Wellington Airport International  
Passenger Terminal  
Wellington Airport International Passenger  
Terminal Civil Works  
Client: Siemens/Transpower  
NZ Inter Island HVDC Pole 3 Project  
Client: Wakefield Health Ltd  
The Bowen Centre  
Client: National Library of New Zealand  
National Library Investigative Works  
Client: Blair Wright Group  
New 2 level light commercial premises  
Client: Wellington City Council  
Wellington Indoor Community Sports Centre

## WELLINGTON INTERIORS

Client: Capital & Coast District Health Board  
CCDHB Data Room  
Client: AMP NZ Office Willis Street Ltd  
State Insurance Tower  
Client: Buddle Findlay  
Buddle Finlay Fitout  
Client: Air New Zealand  
Level 0, South West Pier  
Client: Grand Arcade Properties Ltd  
80 Boulcott Street  
Client: Zeal Fitout  
Fitout of 2 levels of office space

## SOUTHERN REGION

### CHRISTCHURCH CONSTRUCTION

Client: Ministry of Justice  
Nelson Courthouse  
Client: Air New Zealand/Nelson Ltd  
Air New Zealand Hangars  
Client: St Andrews College Board of Governors  
St Andrews - Prep School  
Client: Christchurch District Health Board  
Christchurch Woman's Expansion  
Client: CIAL and Air New Zealand Ltd  
Air NZ Christchurch Regional Lounge  
Client: Tinline Properties Ltd  
Nelson Tasman Charity House Project  
Client: Transpower  
HVDC Pole 3 Project

## CHRISTCHURCH INTERIORS

Client: Avonhead Primary School Board of  
Trustees  
Avonhead Primary School - Gym  
Client: Hillmorton High School Board of Trustees  
Hillmorton High School - Special Needs Unit  
Client: Paparoa Street School Board of Trustees  
Paparoa Street School - Extensions  
Client: Fendalton Primary School Board of  
Trustees  
Fendalton Primary School - Library

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**MAINZEAL**  
Building Certainty

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