

THE RISING STAR

Canberra offers plenty of challenges when it comes to constructing energy efficient buildings, with its climate ranging from the sleety sub-zeros to the baking dry forties. Doma Group have succeeded admirably with the Sirius Building, a five Green Star commercial office building for the Commonwealth Department of Health and Ageing, developed by Doma in joint venture with Mirvac.

Not only have they achieved the Five Green Star rating for design and will be submitting the as-built submission this month, the building has also been designed to achieve a 4.5 star NABERS rating for the base building and a 5 Star NABERS rating for the fitout, with an environmentally responsive façade and energy efficient services. The \$200,000,000 project comprises 45,000 m2 of flexible office accommodation over ten floors with two levels of basement car parking. Doma worked under a D&C contract and also completed an integrated fitout, including workstations and loose furniture.

“The Sirius Building was delivered significantly under budget and approximately four months ahead of program,” said Doma Project Manager Drew Mathias. “This is a testament to the team’s commitment to managing the construction program and time on site. There were approximately a million man hours worked during the project, which was completed with safety as the highest priority. Our low number of non-conformances recorded under the OFSC Government Accreditation Scheme during the project is a testament to this fact.”

Extensive energy modelling was carried out as part of the design process, and the results informed the design of the facade, which was custom manufactured in China by Yuanda. The facade takes into account natural light levels and thermal energy patterns throughout the building. Energy modelling was also used to estimate energy consumption for services. Another Green Star feature of the Sirius Building is an Aerocycle Aquatherm water recycling system, which has 98 per cent recovery of energy used in the water treatment process.

Before commencing construction, an existing building had to be demolished, and a 90 per cent materials recycling rate achieved. The site also posed a challenge in the form of inground contaminants, which required a two month remediation effort before the excavation for the two level basement carpark could be completed.

A crew of 9 Doma Management worked with 127 subcontractors and a team of consultants led by Peter Russell, Director of May and Russell Architects, to complete the project. All up, approximately 2,500 workers were inducted on site over the 3 month demolition and 21

month construction program.

Doma Group are currently embarked on a range of other developments in the ACT, including a \$40 million mixed-use commercial and residential development, and a second residential and hotel development, both in Barton. Doma Hotels, another arm of Doma Group, developed and operates a range of high end short and long term apartment accommodation in Canberra and also Bateman’s Bay, in addition to Hotel Realm, Canberra’s newest five star hotel.

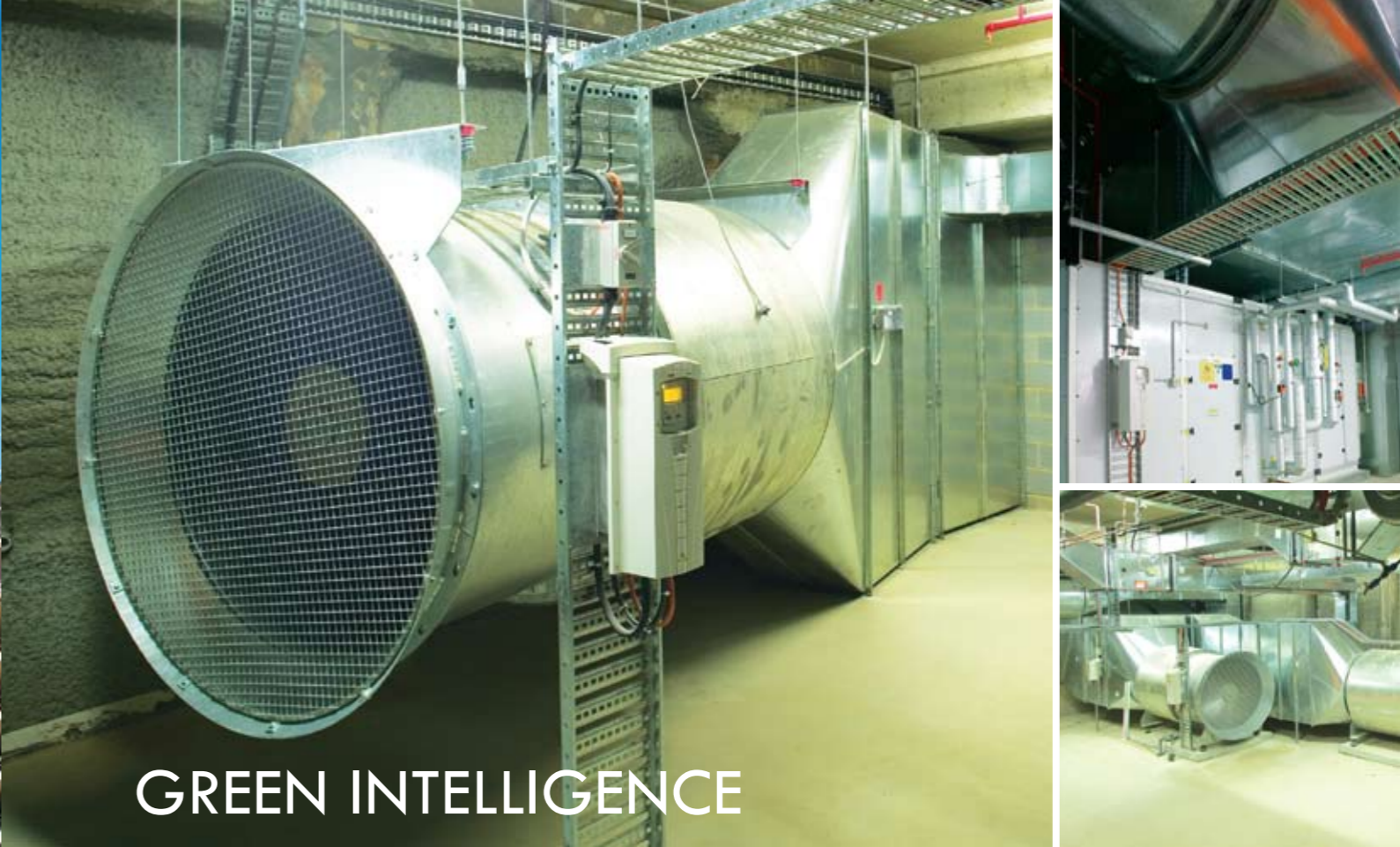
The company has also recently purchased land on a man-made island in Lake Burley Griffin near the Kingston Foreshore, with plans to construct high-end luxury apartments. One of Doma’s strengths in the ACT development arena is the group’s ability to take on every aspect of a new development in the residential, commercial, retail or hospitality sectors, from site acquisition through to ongoing management.

For DOHA, the overall level of responsibility and detailed follow through being in the hands of the one lead contractor meant a much earlier and trouble-free handover of new offices, with environmentally responsible systems and spaces which have been tailored to the clients needs.

Doma Group
PO Box 5419
Kingston ACT 2604
18 National Circuit
Barton ACT 2600
p. 02 6162 0641
f. 02 6162 0646

MAIN CONSTRUCTION COMPANY: THE DOMA GROUP
COMMERCIAL/RETAIL SIZE: 45,000 M2
PROJECT END VALUE: \$100 MILLION
COMPLETION: NOVEMBER 2009
ARCHITECT: MAY RUSSELL
STRUCTURAL ENGINEER: AWT ENGINEERS
CIVIL ENGINEERS: HUGHES TRUEMAN, BASSETT
SURVEYOR: PCM

SIRIUS BUILDING



CANBERRA SET IN CONCRETE

Since 1970 Belconnen Concrete have been a force in construction in Canberra, ACT. A family run business that started on small residential projects, have now graduated to pumping, placing and finishing an estimated 120,000 cubic metres of concrete every year, making them one of the largest concrete companies in Canberra.

Many of the staff are trained in house, which means that employees are highly skilled experts in their area. This enables the company to guarantee the quality of their work, offering an exemplary degree of quality assurance, as well as allowing them to pursue best practices. The company's team of thirty staff have, in many cases, been with Belconnen Concrete for many years, with half of the employees being at the company for at least ten years, while some of the staff have been employed by the company for more than 25-years.

The commitment to the company from its employees is mirrored in the commitment the company has made to its clients. So successful are the company that most of its trade comes from word of mouth recommendations from satisfied clients and the company are proud to have been involved on many of Doma Construction sites in the ACT over the past 15 years.

At Sirius Building, Belconnen Concrete have worked pumping, placing

and finishing an estimated 22,000 cubic metres of concrete in columns, slabs, walls and stairs. Belconnen Concrete were highly prepared for the development with the use of three specialized Separate Placement Booms, each of which have a maximum reach of 39 metres. These booms allow the company to achieve a large area of coverage placing Belconnen Concrete as innovators at the forefront of their trade.

It is for these reasons Belconnen Concrete set the standard for Concrete Pump, Place and Finish in Canberra.

BELCONNEN CONCRETE PTY LTD

PO Box 1002

Fyshwick ACT 2609

p. (02) 6280 2700

f. (02) 6280 2799

e. reception@belconnenconcrete.com.au



When Canberra sizzles or sleets, workers for the Department of Health and Ageing will be kept comfortable by innovative ideas in action. Northrop Engineers provided the expertise which gave DOHA's Sirius Five Green Star building its climate control systems.

They performed extensive modelling in the initial stages of the project for aspects such as thermal loads, daylight levels and air flows. They also commissioned further modelling of comfort levels, energy use and computational fluid dynamic modelling, incorporating all the data into the plans for the project's systems and providing solutions for each challenge Sirius presented.

Firstly, the large western facade creates a large heat load, which is partly offset by the architect-specified louvres, but still required careful thought. Also, all the air conditioning risers emerge from precast panels, and it was Northrop's task to specify the locations for the openings, based on their HVAC system design.

"There is no reheat on the floors, it was a challenge maintaining conditions," said Northrop Project Engineer, Adrian Purnell. "Issues were resolved by different control strategies and varying the volume of air to each temperature control zone on each floor.

"The swirl diffusers we specified have high induction characteristics minimal to minimise drafts and cold spots. We undertook ADPI testing with the supplier, Holyoake, where we set up in their lab and did readings of velocity and temperature throughout the room. On Sirius we were bringing together a lot of best practice ideas from other buildings."

These ideas include the use of high efficiency magnetic bearing chillers, condensing boilers, low temperature variable air volume systems, swirl diffusers, rainwater in cooling towers, a BMCS for control of the HVAC plant, and a separate dedicated system to monitor energy use.

Northrop have been providing engineering solutions since 1976, and provide a range of consulting services across structural, civil, environmental and sustainability, master planning, hydraulic/fire services, mechanical and electrical building services and water services to projects ranging from adaptive reuse to multi-story residential, commercial, retail, industrial, Defence, health care, parklands, and recreational and community facilities. They have offices in Canberra, Sydney, Brisbane, Newcastle, Wollongong and the Central Coast.

Northrop was involved in the Charles Sturt University Thurgooona Campus building project as the Sustainability Consultant and the Mechanical, Electrical, Hydraulic, Civil and Structural Engineers. The CSU Building was the first regional building in Australia to achieve a 6 Green Star rating. The building exceeded Green Star benchmarks by achieving a peak load reduction of over 65% and a simulated NABERS Energy 5 star rating plus an additional 65% carbon dioxide reduction. The use of PCM Smartboard as a ceiling material was an Australian first, and additionally, the use of Micronial PCMs in the floor screed was a first in the World.

Northrop also won the ACT Institute of Engineering Excellence Award in 2009 for their work at 55 Wentworth Avenue, Kingston ACT. The project features Northrop's innovative Taskmaster powerboard on the workstation desks, which controls task lights, phone chargers and computer monitors and is connected back to the main lighting control system.

NORTHROP CONSULTING ENGINEERS PTY LTD

15 Aintree Court

Phillip ACT 2606

p. (02) 6285 1822

f. (02) 6285 1863

e. Canberra@northrop.com.au

www.northrop.com.au



KEEPING COOL

Hastie Air Conditioning (ACT) the Mechanical Services Contractor worked closely with the Builder Doma and Northrop Consulting Engineers for the Sirius Development of 45,000m² NLA including integrated fitout. Hastie (ACT) implemented the Green Star design into As Built reality with close co-ordination with all building services. Hastie (ACT) utilised their high calibre mechanical engineering expertise and a skilled workforce of 60 staff and subcontractors, headed by the Hastie Project Team, completing the \$12.5 Million contract in 18 months.

“Hastie has been involved in a variety of 5 Star commercial purpose built end user buildings in both a design and construct. During this period we have gained vast experience in HVAC system installation, commissioning, and fine tuning of systems for greater energy efficiency through building management control systems, resulting in lower energy costs for clients/end users,” said Hastie (ACT) General Manager Michael Jones.

“A key to higher energy efficiency is the close working relationship between Hastie (ACT) and the Independent Commissioning Agent. A detailed selection process for all equipment ensured the most energy-efficient pumps, fans, AHU’s and Chillers were installed. Also quality filtration systems and CO (Carbon monoxide) detection/monitoring/control will override the AHU outside air to minimise energy use without effecting comfort conditions.”

With Green Star Accredited engineers and project managers working on every project, they have positioned themselves as a leading HVAC contractor, able to resolve design complexities. The Sirius challenge was

to construct the services with only limited plant space, and coordinate a demanding services installation programme.

Other sites Hastie (ACT) have completed include Section 92, 16 Marcus Clarke St, a new Nine level office building with roof plantroom designed for an ABGR 5 Star Rating and 5 Star Green Star Rating; the National Portrait Gallery in Parkes; Royal Australian Mint Building Upgrade and Process Equipment to ABGR 4.5 Star; Projects currently under construction are Canberra Hospital Neurosuite new ICU Unit; and Equinox Business Park, four New buildings, one with central plant and three with VRV systems, all designed for NABERS 5 Star Rating and 5 Star Green Star.

“Hastie ACT has been in operation for only three years, however with the support of the Hastie Group our Project Team has been built around employing experienced local people. This background gives us local knowledge of subcontractors and suppliers, local climate conditions in Canberra and expertise in catering for the ACT’s market,” said Michael Jones.

HASTIE AIR CONDITIONING (ACT) PTY LTD

1/2 Lyell Street
Fyshwick ACT 2609
PO Box 7118
Canberra BC ACT 2610
p. 02 62802800
f. 02 62806728
www.hastiegroup.com.au

CREATIVE CONNECTIONS

Government runs on communications, so DOHA’s Sirius Building got the best possible technology, supplied by AMP-NETConnect and installed by Multisystem Communications. The two companies worked in synergy to design and deliver a voice and data cabling system with over 10,000 outlets spread throughout the building’s 40,000m² NLA.

Multisystem Communications, founded in 1993, is a Canberra based, locally owned business. Their technicians worked on site full time for 11 months installing the LAN with a copper cabling system, the main distribution for the voice cabling network, a fibre optic backbone for the entire building and Wi-Fi points. “Because it was an integrated fitout, a great deal of liaison and coordination was required,” said Multisystem spokesman Adrian Whittaker. “The big challenge of the job was the size. We are very grateful to Doma Group for the opportunity.

“We work closely with the technical people and manufacturers. As a company policy we have close liaison with them and get them on site throughout to identify issues.”

Multisystem also provided the as install drawings, testing and documentation for the 25 year warranty on components. All cabling was low smoke, zero halogen cabling, which is not PVC based and is RHS (Reduction of Hazardous Substances) compliant. Further greening the installation, most cable offcuts were recycled.

AMP NETConnect are part of the Tyco Electronics Group, a worldwide company with over 100,000 employees, annual turnover exceeding US\$13 billion and an R&D budget of \$800 million a year. This means AMP NET can manufacture and supply turnkey

communications solutions for the most complex of client needs. “With Sirius, it was a matter of understanding the environment, and where the Department is going long-term,” explained AMP NETConnect spokesman Greg Spencer. “We were chosen as much for our technology as our support structure, which gives long term support to the customer. We did 12-18 months consultation with the client for Sirius, looking at 10-15 years goals so we could develop infrastructure that would support those goals over the life of the building.”

AMP NETConnect has supplied communications solutions for the most challenging Government clients: Australian Federal Police HQ, Centrelink, the ATO, the new Attorney General’s Department, the H Drop project at Bungendore for Defence, and are also involved in the NBN rollout. Their talents are available across all sectors from health to major commercial enterprises, and they are members of the Green Building Council of Australia.

Multisystem Communications also worked with AMP Net-connect on the New Attorney Generals Department offices at 3-5 National Circuit Barton and continues to install the industries leading structured cabling solutions for a wide variety of clients including Corporate, Government, Building, and Defence Agencies throughout Australia.

MULTISYSTEM COMMUNICATIONS

U2/48 Hoskins Street
Mitchell ACT 2911
t. 02 6242 4199
f. 02 6242 4177
e. websales@multisys.com.au
www.multisys.com.au



SUSTAINABLE DESIGN

May+Russell Architects were chosen by the DOMA Group to create a new building for over 3,000 employees from the Department of Health & Ageing with the aim of achieving a 4.5 Star ABGR rating and a 5 Star Green Star Certified Rating with an environmentally responsive façade and energy efficient services.

The building is named the “Sirius Building”, after the ship of the same name which was the flagship of the First Fleet that arrived in Botany Bay in 1788, thus recognising the significance of the location of the building – in Philip, ACT.

The underlying design concept of the building reflects this heritage, responding with its elements, materials, colours and textures contributing to an emotional link to the great wooden ships of that era. The building comprises 45,000m² of office accommodation in two contiguous office towers facing Furzer and Worgan Streets centered on Scarborough House.

The Sirius Building design references the first fleet and HMS Sirius with a narrative design of building façade, sunscreen, wind baffles, café and landscape elements.

Peter Russell, Principal Architect, May+Russell, comments on the building design and the window covering specifications:

“The building was specifically designed to achieve a 4.5 Star ABGR rating and 5 Star Green Star Certified Rating. We believe in sustainable design and incorporate sustainability aspects into everything we do.

“Controlling glare was our number one factor when specifying the window coverings however we also didn’t want to compromise on the level of light entering the building, or the outlook.” commented Mr Russell.

Annie Kenney, Commercial Manager for Riteway Curtain & Blinds in the ACT, ensured that the window covering specification from May+Russell was met by recommending Hunter Douglas Commercial TWI-NIGHTER® Venetian Blinds which Peter Russell had also used on previous projects.

“Hunter Douglas is a global brand that is committed to the environment and locally, we are a member of the Green Building Council of Australia. As a worldwide leading brand, our customers have

come to expect quality and innovation, and that’s what we delivered on this project” said Ms Kenney.

“The Hunter Douglas Commercial TWI-NIGHTER® Venetian Blind conceals the blind’s rout holes, greatly reducing the light passing through the blind. Aesthetically the blinds looked great once installed as there was a built in channel at the top of the reveal to house the Venetian Blind.”

Hunter Douglas Commercial installed approximately 2,000 blinds with a dimension of 2100mm x 1800mm in Cool White 131.

Unique aspects of this fit out included 30 blinds made with a unique tensioning system so that they could be hung on the out-sloping windows. The tensioning system, sill brackets and locking rings were sourced and custom made by Hunter Douglas in Europe. Eight blinds were angled and were therefore hand made to ensure the windows were adequately covered, while an additional 30 blinds had extra long drops.

In addition to supplying blinds to meet the sustainability requirements as specified, Annie from Riteway Curtains & Blinds worked very closely with both architect Peter Russell from May+Russell Architects and builder Joe Tonkovich from Doma Constructions Pty Ltd to ensure that all elements of this large project were met on time and on budget. Riteway Curtains & Blinds counted on their extensive experience in servicing the commercial market, harnessing relationships with leading architects throughout the ACT and partnering with them to ensure the best outcome for all parties.

Hunter Douglas Commercial is the commercial division of Hunter Douglas Australia, and works closely alongside the architecture, design and building community to create some of the most high-profile buildings in Australia. The product managers at Hunter Douglas Commercial are dedicated to innovative design and producing products specifically for the commercial market.

HUNTER DOUGLAS COMMERCIAL
338 Victoria Road
Rydalmere NSW 2116
t. 1 300 733 078
www.hunterdouglascommercial.com.au

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WWW.ANCR.COM.AU