THE JEWEL IN SYDNEY'S CROWN

Barangaroo represents an extraordinary opportunity for the urban renewal of the 22 hectare former container port into a vital new extension of Sydney. It is to be a new global financial hub with spectacular Barangaroo Reserve and is set to become one of the first precincts in the world to be climate positive.

OWNER : Barangaroo Delivery Authority
MAIN DEVELOPER : Lendlease

Embarking on Barangaroo South, Lendlease have committed to a game-changing urban redevelopment process which is expected to evolve over the next decade and beyond. They have done so with the firm goal of demonstrating the highest levels of ecological sustainability, world-class innovation in design and socially-mindful planning.

The entire Barangaroo project area comprises 22 hectares of land on the western edge of the CBD and right on Sydney Harbour, land which was previously used as wharves for shipping containers. The site is owned by the NSW Government, and is being managed by the Barangaroo Delivery Authority.

There are three separate zones to the site. Barangaroo Reserve, the northern portion, is a public headland park with bushland, walking trails, recreation areas and a restored waterfront which echoes the original state of the shoreline including tidal pools. Sandstone from the site was excavated for use in the landscaping and shore-scaping, and a 2-level underground carpark and massive cultural space constructed in the void created by excavation.

Barangaroo Central will include arts, cultural and recreational facilities, a Metro Station and be a place for events and entertainment.

At Barangaroo South, a thriving, mixed-use 7.5 hectare urban precinct is taking shape, which includes approximately 490,000m^2 of commercial, retail and residential space, and 2.9 hectares of public space including a waterfront square, green space and a promenade which extends along the waterfront to connect the three separate zones of South, Central and Barangaroo Reserve.

On completion, Barangaroo South is expected to be home to around 1,200 residents across eight apartment buildings varying from prestige harbourside medium density residences to high-rise apartments.

Work has almost been completed on the first of these buildings, with construction well advanced on Anadara, designed by FJMT architect, Richard Francis-Jones, and Alexander, designed by PTW architect, Andrew Anderson.

Another key element of the masterplan is the commercial projects which will provide sustainable and flexible workspaces for 23,000 office workers with approximately 320,000m^2 of premium office space.

The largest share of this space will be located in International Towers Sydney, three high rise office towers designed by Lord Richard Rogers of the internationally acclaimed RSH+P architecture practice. The towers have been designed to offer flexible floorplates of more than 2,300m^2, and incorporate leading-edge sustainability features, abundant natural light and spectacular harbour views.

Excavation of the shared basement for the three commercial towers is well underway, as is piling for the foundations, with completion of the first commercial tower expected in 2015. Three major anchor tenants have already signed lease agreements for space in the first two towers, which according to the Barangaroo Delivery Authority is the biggest commercial property pre-commitment in Australian history.

On every level, this is construction on a grand scale. Lendlease estimates they will induct approximately 100,000 construction workers onto the site over the course of the project, including over 500 Indigenous workers.

In terms of sustainability, this is a big picture development. Barangaroo South has been officially recognised by the international C40 Cities Climate Positive Development Program as a world-leading example of achieving climate positive outcomes, and is a PILOT project for the new Green Star – Communities rating tool being developed by the Green Building Council of Australia. The commercial towers are being designed to achieve 6 Star Green Star Design and As Built ratings, and the residential developments to achieve 5 Star Green Star ratings.

The masterplan also includes elements such as a dedicated cycle ways, links to buses, a pedestrian link to Wynyard station, and a new ferry terminal.

The whole of Barangaroo South will be using a centralised District Cooling Plant with a harbour water cooling system, which could save up to 100 million litres of water from the Sydney mains network every year. This will be the largest harbour water system operating in Sydney, and will also deliver a far more energy-efficient solution than individual building systems.

Overall, Lendlease is aiming for Barangaroo to be a carbon-neutral precinct; with on-site renewable energy generation including 6,000m^2 of solar panels used to offset all public space energy use and energy used by the 1,00,000 million litre/day capacity blackwater recycled water plant which will supply recycled water throughout the precinct and surrounding suburbs.

The entire Barangaroo project has an estimated dollar value of $6 billion, yet just as important are the triple bottom line values embedded into every stage of the process from planning through to implementation.

As the largest urban regeneration project in Sydney since the 2000 Olympics unfolds, Lendlease will be demonstrating new approaches to meeting the needs of people and enhancing the urban fabric, while also showcasing breakthrough methods of designing and building sustainable and liveable cities.

For more information contact The Barangaroo Delivery Authority, AON/Maritime Trade Towers, 201 Kent Street, Sydney NSW 2000, phone 02 9255 1700, fax 02 9255 1712, email, info@barangaroo.com, website www.barangaroo.com

Below Rygate Surveyors completed monitoring, surveying and reporting for works on the Barangaroo project site.

Rygate Surveyors provide timely and innovative design and development solutions for clients through certainty and reliability of land and property information. The team has been meticulously working on the Barangaroo project with Lendlease since 2005.

Their scope of work for Barangaroo included completing a survey to locate detail and levels of the proposed site and adjacent streets in the Millers Point and Walsh Bay precinct to form the basis of information for the design competition for the Barangaroo Development.

They were also retained as Consultants to undertake various additional detail and level surveys and title investigation, reporting and advice for a Due Diligence report on proposed structures in relation to complex stratum boundaries for the proposed development sites.

Part of the surveying works completed on site included the Groundwater monitoring wells that were completed with well covers flush to the ground surface. The elevation of the top of the PVC casing was measured to the nearest centimetre. A notch was then embedded in the casing to indicate the location that was surveyed.

All boreholes on site were surveyed on their completion by Rygate Surveyors to Australian Height Datum (AHD) for location and elevation as well as all survey data being imported into the project database for future monitoring and evaluation.

Rygate Surveyors provide a wide and reliable range of services within the surveying, spatial and land development industries, together with advanced racecourse design planning and advice. The team strives to ensure that all surveying requirements are performed meticulously and client expectations are exceeded at every turn.

The wide range of expert services offered by Rygate Surveyors includes:

- Boundary Surveys
- Topographic Surveys
- Setout for new buildings, roads and civil
- Lease Plans
- Racecourse Design
- 3D Modeling
- Subdivision
- Strata Plans
- Stratum Subdivision
- Project Management
- GPS Surveys
- Sun Shadow Diagrams

The team has worked hard to gain a reputation for being a highly respected, innovative, efficient and profitable surveying and land management surveying firm in Sydney.

The team at Rygate Surveyors deliver professional and successful outcomes by maintaining goals and standards. The company's main goal and purpose is to provide timely, innovative design and develop solutions to maximise clients financial returns through certainty and reliability of land and property information.

For more information contact Rygate Surveyors, Suite 904, Level 9, 89 York Street, Sydney NSW 2000, phone 02 9262 6800, fax 02 9262 6843, email surveyors@rygate.com.au, website www.rygate.com.au

Below Hunter Douglas Commercial supplied Screen Nature Ultimetal motorised Roller Blinds for T1 and T2.

Hunter Douglas Commercial is recognised as an innovator leading the market in interior and exterior window coverings, ceilings and facade systems. The range spans blinds and awnings for residential and office applications to external awnings for schools, education facilities and almost any other commercial application.

Hunter Douglas Commercial is part of Hunter Douglas Limited, one of Australia's and the world's largest established window covering companies, which has been operating in Australia for over 60 years. Hunter Douglas operates in over 100 countries, with the Australian operation employing over 300 staff, allowing production capability within Australia for a project this large.

With numerous prestigious commercial projects completed using the Horiso Climate Ready Control Systems, Lendlease commissioned Neil Krotzsch, Director of Horiso Engineering Division to design a shading and control system solution for the three ITS towers in Barangaroo South.

In essence, the ideal solar shading system would need to ensure direct sunlight enters the floor spaces to maintain comfort levels of the occupants, provide enough view through to showcase the Harbourside location of the building, while also minimising solar glare and maximising the building's overall energy efficiency.

Lendlease partnered with Commercial Specifier, Turner Brothers to put these specific requirements out to tender. Hunter Douglas Commercial responded with its newest and exclusive fabric for roller blinds, Screen Nature Ultimetal, and was ultimately selected as the supplier for T1 and T2.

It was an easy decision to select Screen Nature Ultimetal (SNU) for T1 and T2 due to its unique feature of metallisation on one side, providing a perfect marriage of thermal and visual comfort. The ultra-fine layer of aluminium on one side of the fabric also dramatically improves solar energy control. This results in 70% of solar energy being reflected by the fabric, which can translate into a significant reduction in energy costs.

SNU combines a high level of solar reflection with excellent glare control. This means the fabric provides good interior thermal protection, while at the same time fully optimising natural light and retaining excellent transparency and sharpness of view. No other fabric in the market has been found to feature these same properties. The benefits and features offered by Screen Nature Ultimetal are unparalleled, and it has already created a lot of excitement in many international high profile projects.

Created from an all-natural glass core yarn, Screen Nature Ultimetal is 100% PVC free, 100% Halogen-free, has no VOCs, is incombustible with a MO fire rating. Certified GREENGUARD®, OEKO-TEX standard 100 and Sanitized® Antimicrobial protection, making it ideal in commercial buildings.

Research has indicated that people prefer to work in daylight conditions and to stay in contact with the outdoors; settings that improve a person's well-being and productivity. Hunter Douglas Commercial products improve the indoor environment by optimising interior brightness and glare levels and maintaining a visual contact with the outdoors.

Hunter Douglas Commercial was required to develop a fully-customised solution, to ensure the blinds were incorporated into the window frame of the building's structure. This meant special end caps, the Screen Nature Ultimetal fabric in the specific Barangaroo grey colour and customised bottom bars were specifically developed to incorporate the blinds seamlessly into the building.

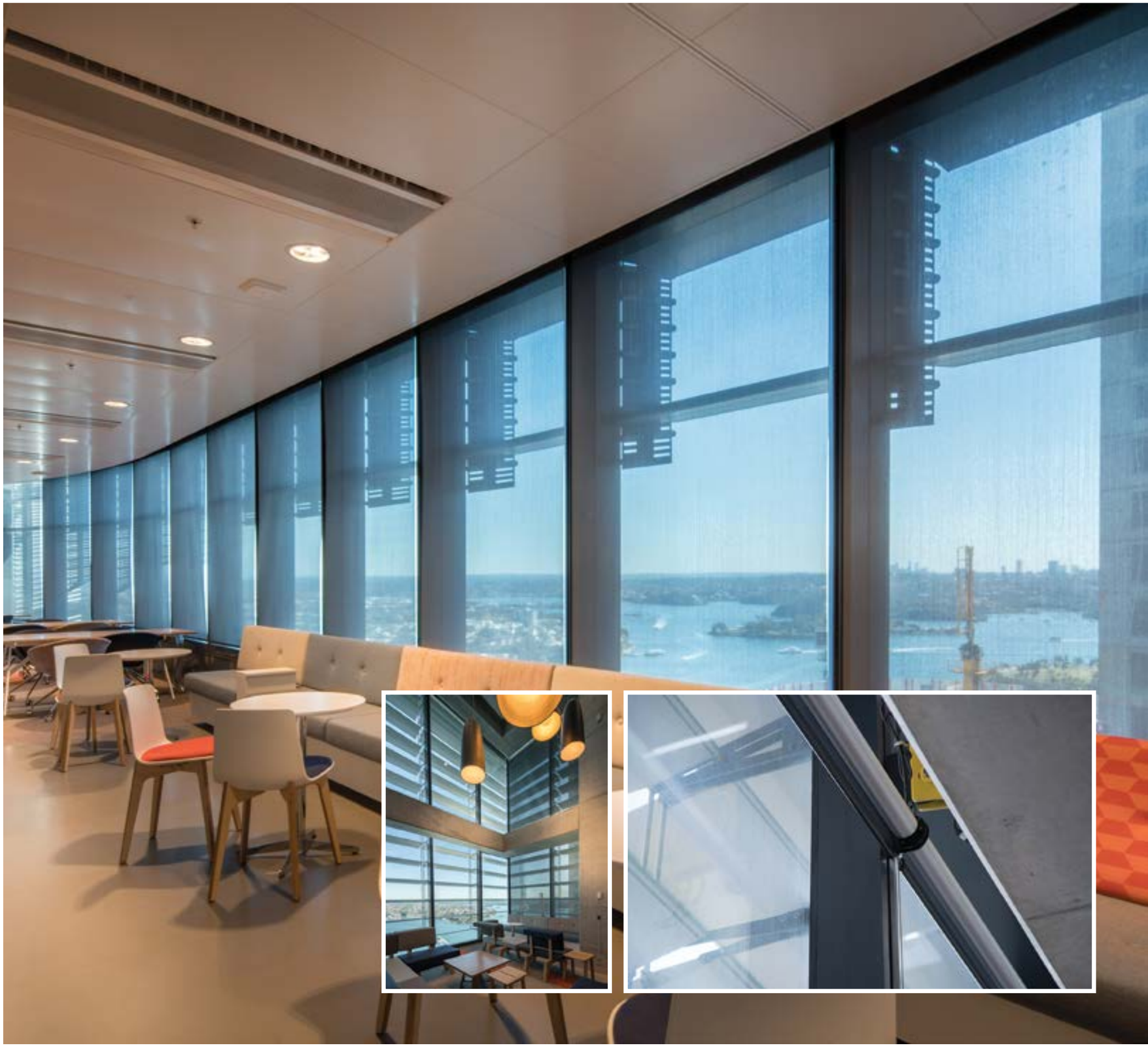
The Hunter Douglas Commercial Roller Blinds are programmed with Horiso's Climate Ready Control System. The system works by tracking sun position and measuring overshadowing components and controls the blinds accordingly to ensure maximum shading performance.

The Barangaroo South Tower Two project involves the manufacture and installation of over 3,958 linked roller blinds throughout the 41 levels of Tower. Installation commenced in September 2014, with construction and full installation expected to be completed at the end of 2015. An additional 2,140 linked roller blinds will be installed in Barangaroo South T1.

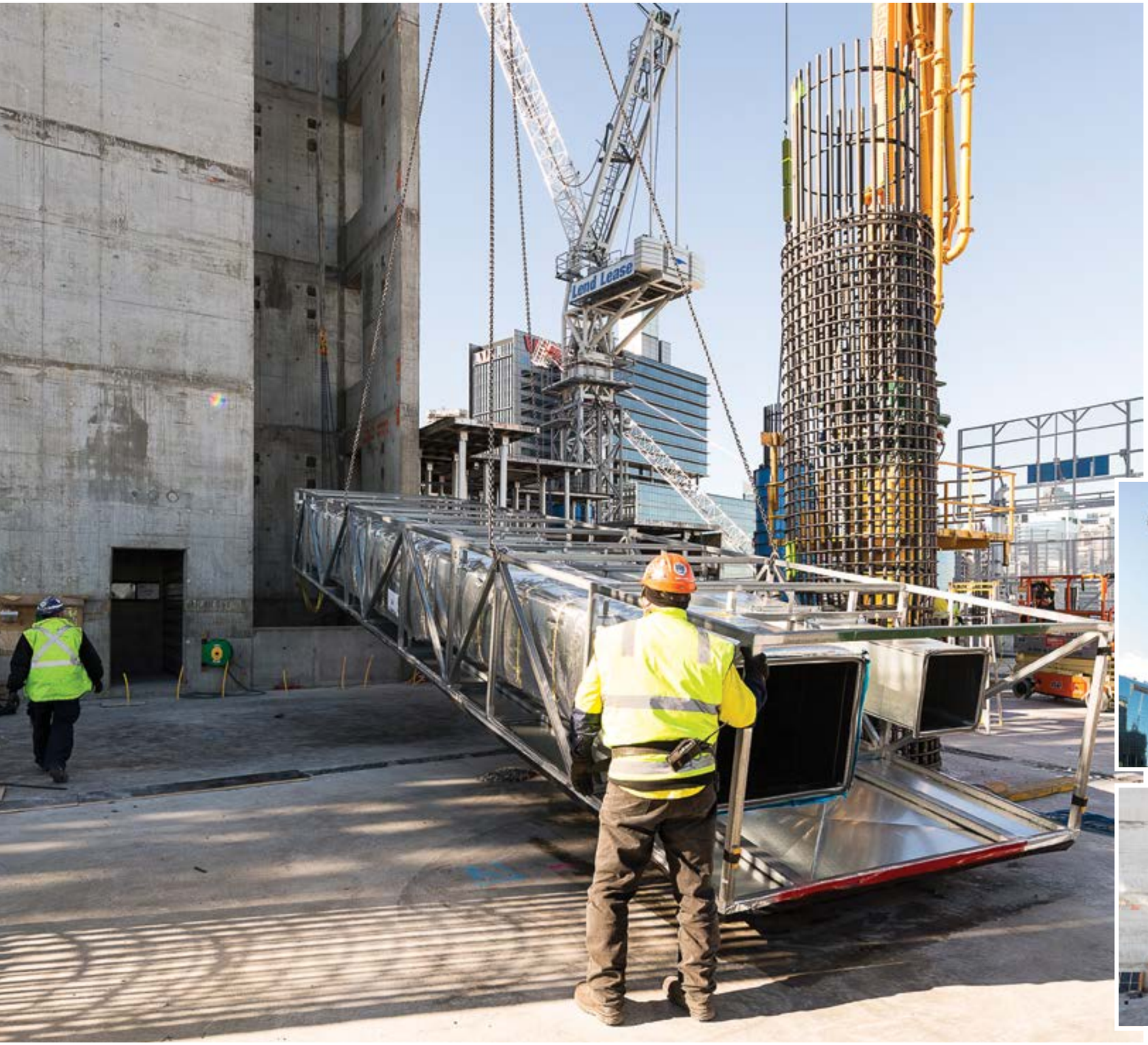
HunterDouglasCommercial

WINDOW COVERINGS

For more information contact Hunter Douglas Ltd, 338 Victoria Road, Rydalmere NSW 2116, phone 1300 733 078, website www.hunterdouglascommercial.com.au



Below A.G. Coombs and Lendlease introduced a new way to install building services rises at Barangaroo South.



Barangaroo South is the largest commercial development in Australia and one of the largest single construction projects in Sydney's history. Set across 7.8 hectares, the landmark Harbourside development by Lendlease will include apartments, cultural facilities, shops, restaurants, a hotel and 'International Towers Sydney', a world class commercial office complex.

Designed by acclaimed architects Lord Richard Rogers and Ivan Harbour of Rogers Stirk Harbour and Partners, the three commercial office towers will provide over 270,000m^2 of flexible modern workplaces, with leading edge technology infrastructure and a zero carbon footprint.

The towers sit upon a large shared basement that also houses a central water treatment plant and a district cooling plant. A.G. Coombs was appointed by developers Lendlease to deliver mechanical services to Tower Two, at 42 levels, and Tower One at 49 levels.

As lead services coordinator, A.G. Coombs is responsible for coordinating detailed design, supply, delivery, installation, testing, commissioning, warranty and subsequent fine tuning and maintenance of the towers' mechanical systems.

In delivering these services, world leading Building Information Modelling (BIM) capabilities and innovative services prefabrication and installation techniques are being applied.

The single biggest safety risk identified by Lendlease at Barangaroo was the installation of building services risers in the three towers. Previous methodology required piecemeal installation, with trades working on cantilevered scaffold over the riser voids.

This entailed risks from working-at-height and the risks of debris, materials or tools falling from above, alongside other risks associated with manual handling of multiple riser components and multiple trades working in the same area.

A.G. Coombs and Lendlease introduced a new way to install services risers – one that has not been applied before to very tall buildings in Australia. Ductwork, pipework, fire rated walls and platforms and other building services features have been pre-installed into engineered 3-storey frames in an off-site dedicated prefabrication factory.

By prefabricating them in this way, well in excess of 4,000 hours of complicated site installation per tower are transferred into a controlled factory environment and the need to work at height is almost eliminated. This new approach to services installation has significantly reduced construction risk on this landmark project and is set to become an industry standard in Australia.

Recognised with the 2015 "KONE Award for Innovation" at the 2015 national Property Council of Australia / Rider Levett Bucknall Innovation and Excellence Awards, prefabrication is clearly resetting the safety standard at Barangaroo.

For more information contact Susan Waterer, Corporate Communications, A.G. Coombs Group, 26 Cochranes Road, Moorabbin VIC 3189, phone 03 9248 2700, fax 03 9248 2712, email swaterer@agcoombs.com.au, website www.agcoombs.com.au

Below Yuanda Australia supplied and designed the external façades for the three Barangaroo commercial towers.

Yuanda Australia were awarded the design and supply contract for the external façades to the three large commercial towers on Barangaroo South, Towers T1, T2 and T3.

Each tower employs a "sibling" philosophy having similar floor plates and façade types. In contrast the unique external shading system for each tower varies remarkably, being the differentiator between the towers. Large vertical sunshades cantilevering up to two metres off the glass façades dominate the shading system. The size and shape of the sunshades varies in an honest response to the environmental loads on the building: T1 has red coloured glass fins, T2 has silver feathered fins and T3 has gold composite ribbons.

From a very early stage in the construction process, Yuanda have been advising the builder on design and installation methodologies that would make the prefabrication and installation of the complex curtain wall panels simpler. Yuanda pre-fabricate all components and attach the fins to a fully unitised panel on site. The 1500mm wide panel is installed complete with the 2000mm cantilevering fin as a single unit.

The exceptionally large and detailed sunshade components of the towers were the most challenging component in terms of design, fabrication and installation. Each tower had a very unique challenge that needed to be solved.

The T2 feathered fins required acoustic testing to verify that wind blowing through the feathers has no harmonic responses. The gap between the feathers was adjusted to avoid any noise being generated.

The glass fins on T1 were broken and then subjected to 100km/hr winds to determine if there were any safety issues having glass cantilevering so far off the façade.

The complex ribbon fins to T3 had to be trial assembled twice in the factory to ensure tolerances between panels are maintained. Because of the sinuous nature of the fins, uneven gaps between curved corners and the vertical or horizontal fins would ruin the appearance. By careful tolerance control and fabrication techniques, Yuanda are able to create a high quality façade that will be unique in Australia.

Because of the size of the fins, lifting the panel out of the edge of the building with the fin attached was nearly impossible. Highlight Aluminium and Yuanda developed a solution of using the loading platforms and a monorail to lift the panels from the floor without flipping panels. This solution allowed for full unitisation of the panels.

T2 (silver feathers) has fins cantilevered up to 1800mm from the façade. The complex wind environment around the buildings had to be modelled and ground breaking wind analysis was undertaken to determine the lateral pressures on the fins in multiple configurations on the buildings. Yuanda determined the resistance to fatigue from the results of the wind tunnel testing. This in depth fatigue analysis was a first for Yuanda.

Fabrication quality control was essential to align over 40 floors of vertical fins. Each fin connections and its supporting brackets had to be manufactured to tolerances of less than 0.5mm. This exceptional tolerance requirement meant that full trial assemblies in the factory had to be undertaken to ensure fit on site.

T1 glass fins are even larger, cantilevering 2000mm from the glass line, however the proven method of wind tunnel modelling for calculating lateral pressures on the fins, fatigue design and installation methodologies have been adopted for this tower, resulting in a very streamlined design and build process.

Yuanda is uniquely positioned to deliver a project of this immense scale: Intricate components needing negligible tolerances combined with thousands of square metres of façade panels could only be delivered by housing all three tower fabrication under one roof. Yuanda was able to set aside a single factory for the project so that all personnel fully understand the level of quality needed thus minimizing any errors on site.

In addition the management and design teams in Australia were able to plan the construction process, effectively eliminating errors on the project and ensuring fit of the curtain wall and the fins to the towers.

For more information contact Yuanda Australia, 3/40 Brookes Street, Bowen Hills QLD 4006, phone 07 3251 6100, fax 07 3251 6150, website www.yuanda.com.au

BAFS JOINT VENTURE ENSURES A SOLID FOUNDATION

A successful collaboration between Bauer Foundations Australia and Advanced Foundation Solutions (AFS), is laying the foundation for the ground breaking Barangaroo development in Sydney.

Once in a lifetime a projects comes along that is truly revolutionary and for these two companies, Barangaroo on the edge of Sydney Harbour is a case in point. Destined to change the face of the Sydney CBD, the Barangaroo project was an opportunity to bring together the planning and engineering excellence of both organisations as well as the local knowledge and resources of Sydney based Advanced Foundation Solutions (AFS).

Bauer Foundations Australia is part of the international Bauer group, established in 1789, headquartered in Germany. The BAUER Group is an international construction and machinery manufacturing concern based in Schrobenhausen, Bavaria. The stock-market listed holding company BAUER Aktiengesellschaft is the parent of more than 110 subsidiary businesses in the fields of construction, equipment and resources. The BAUER Group employs about 10,300 people in over 80 countries. AFS recently celebrated 10 years of business and have performed piling works all over the east coast of Australia. In late 2013, Soletanche Freyssinet, a subsidiary of Vinci a world's leading construction and concessions company acquired AFS. The Soletanche Freyssinet business model groups together more than 180 business units in over 100 countries working in specialist construction sectors, with a reputation for quality and innovation in geotechnical, environmental and civil engineering construction. This joint venture, formally called Bauer AFS, was formed in 2011 specifically to tender for the foundation piling works at Barangaroo South.

Both Bauer and AFS specialise in foundations and geotechnical works, which involves all forms of piling works, ground retention systems and ground improvement. Bauer AFS, one of the first subcontractors on site at Barangaroo, commenced work in January 2012 and is responsible for constructing the structural supports (known as piles) for the shared basement and three commercial towers which will be built on site.

The first challenge facing the integrated joint venture team was the presence of hazardous materials, including asbestos and the large number of obstructions on site. As an old industrial site the contaminated ground required special treatment, plus the removal of obstructions including concrete, timber piles and even an old sea wall. The site also consisted of various backfill materials, including sandstone, bricks, concrete and rubble, up to 16 metres below ground level.

Due to the historic asbestos on site, it was deemed best practise to undertake the works in full Personal Protective Equipment (PPE), including half face masks and disposable cover all suits, which led to a number of challenges in itself, including heat stress, fatigue and dehydration. In an effort to combat those issues, Bauer AFS created a mobile, portable facility now known as a 'Respite Shed' which allowed their team to take short breaks with regular water hydration and a cooling mist spray to assist with managing heat stress and fatigue. The innovation has since been short listed for a Work Cover NSW Safety Award.

Overcoming the challenging ground conditions and complex logistics on site required the input of a wide range of specialists including safety, quality and technical experts before the piling work could even begin. The piling involved excavating down into the sandstone bedrock and the placement of steel cages and concrete into the ground to provide the structural foundations for the basement and buildings. In total, approximately 1,000 piles will be installed and concreted by the time the major works were finished in August 2013.

On the technical side, BFA's & AFS's large capacity piling BG40 rigs were used to create the 2.4 metre diameter 'mega piles' that carry the main tower columns. However to complicate the process further, it was necessary to pre-treat the pile locations with a bentonite-cement-silicate grout prior to pile excavation—in order to improve drilling stability through the fill material. Another important consideration for the team was the fact that around 100 of the piles are located adjacent to the potential route of the future Sydney metro tunnels. So these piles needed to be designed to withstand possible movement which could occur during the construction of the tunnels.

An ongoing challenge for Bauer AFS has been the grand scale of the project and with so many other subcontractors working on site, managing the interface and logistics has been critical. Special training schemes where developed on site to assist BAFS site personnel minimise the risk of many pieces of machinery working closely together. To keep the company's work schedule on track, a team of up to 50 people are on site five and a half days a week, including both management and site personnel.

As the project is continuously in the spotlight, and also located close to residential and commercial buildings, Bauer AFS have also put in place additional controls in regards to noise, dust and pollution management.

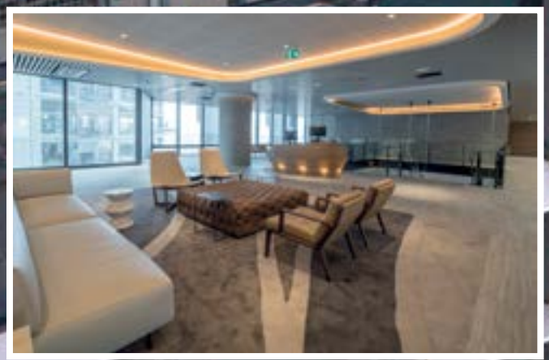
While the project is unlike anything Bauer or AFS have taken on before, the challenges have been more than outweighed by the satisfaction of having a hand in such an iconic project—and one that will truly enhance this global city.

For more information contact Bauer Foundations Australia Pty Ltd, 154 Enoggerra Road Newmarket QLD 4051, phone 07 3352 7444, fax 07 3352 7244, email info@baueraustralia.com.au or visit www.baueraustralia.com.au

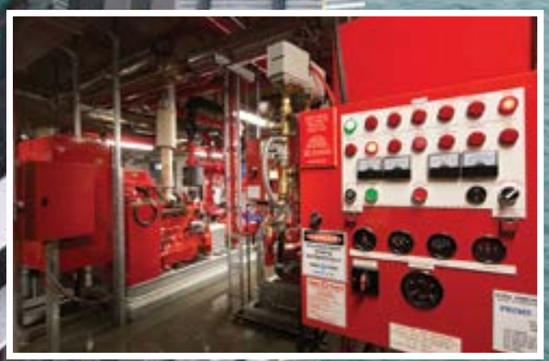
or ***Advanced Foundation Solutions Pty Ltd,*** Suite 108, 7-11 Clarke Street Crows Nest NSW 2065, phone 02 9437 6100, fax 02 9437 6200, email info@afsolutions.com.au or visit www.afsolutions.com.au

Barangaroo, NSW

Below ASP Access Floors provided and installed ASP Ultrafix Access Floor System.



Below Warren Smith and Partners provided all hydraulic and fire engineering consultancy services.



A project that many companies would relish the opportunity to be a part of, ASP Access Floors were fortunate in being awarded the contract to supply and install the ASP Ultrafix Access Floor System throughout the base building and in fit out works.

The environmental focus on Barangaroo was strongly emphasised by Lendlease. For the access flooring on Barangaroo, ASP Access Floors employed an environmental consultant to complete a Life Cycle Analysis of the product to be used. This life cycle analysis was then submitted to Carbon Zero for certification, eight offsets were purchased to ensure the ASP product was carbon neutral.

The Seven Hills based company had the advantage as it is their own designed product that they can design and manufacture specifically to suit individual project details. On Barangaroo a key challenge for ASP Access Floors was around the perimeter of the building where there was a special cantilever detail designed to span over the window flashing.

Projects for supply and installation of access flooring are carried out all over Australia through their head office in Seven Hills. ASP Access Floors have distributors in the Northern Territory, Western Australia, South Australia and Victoria, whilst internationally, they have distributors in UK, Europe, Middle East, Asia, New Zealand and North America.

ASP Access Floors are working on a number of other large projects in Australia including Equinex ME1 Melbourne, Commonwealth Bank Brisbane and ANZ Sydney.

For more information contact ASP Access Floors Pty Ltd, 32 Prime Drive, Seven Hills NSW 2147, phone 02 9620 9915, email sales@aspfloors.com.au, website www.aspfloors.com.au

Warren Smith & Partners undertook the design, documentation and construction quality control engineering consultancy services in relation to the fire and hydraulic services. Works have been completed on the three main Barangaroo South commercial office towers T1, T2 and T3, smaller commercial buildings, two residential waterfront buildings R8 and R9, a retail facility on the site, three major residential towers R4A, R4B and R5 and the Barangaroo Headland Park.

Warren Smith & Partners also provided hydraulic and fire engineering consultancy services for the Hickson Place Loggia which will form part of a covered square formation between tower T3 and the commercial building C2. The roof of this structure will consist of an inflatable cushion system. The Commercial towers have been leased and Warren Smith & Partners have also been engaged for the design and construction quality control of the hydraulic and fire services for all of the tenants fitout works.

One challenge the team encountered consisted of the combined fire system infrastructure that provides fire protection, detection and warning to the entire Barangaroo South precinct. This part of the project required innovative design solutions and close collaboration with the fire engineer, Fire and Rescue NSW and the architectural and engineering team.

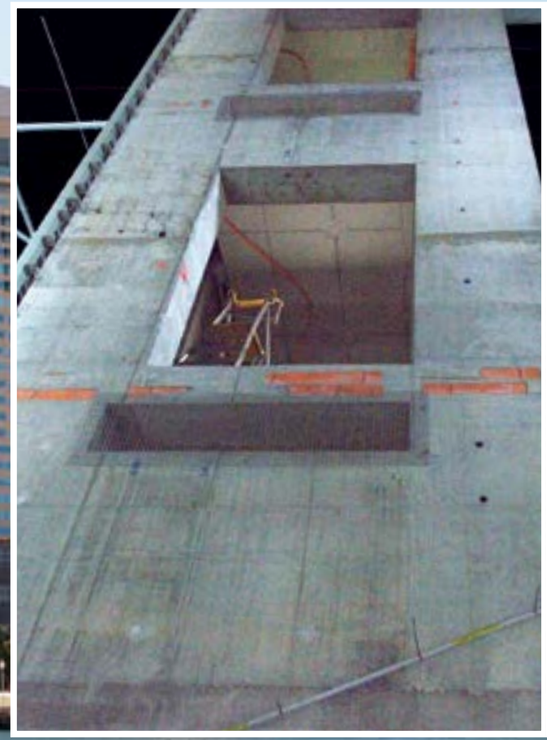
All documentation on the project was completed using REVIT BIM software and coordinated to an LOD 300 and LOD 500. State-of-the-art fire sprinkler software was used to calculate the extensive fire sprinkler/hydrant infrastructure and building networks. Other innovative areas of the design included the use of a press fit fitting for the hydraulic water system pipe work to reduce the use of oxygen/acetylene on site and allowing for the urinal waste pipework from the commercial office towers to be separately collected for fertiliser reuse purposes.

Warren Smith & Partners founded in 1981, have a total staff level of 42 providing hydraulic, fire and civil engineering consultancy as well as being accredited with Sydney Water as a Water Service Coordinator and designer for water, sewer and storm water infrastructure. Warren Smith & Partners have successfully undertaken over 5,000 projects, including, Darling Walk, 420 George Street, 161 Castlereagh Street (Sydney), Art Gallery of NSW, Sydney Opera House, National Portrait Gallery (Canberra), Royal North Shore Hospital, Sydney Adventist Hospital and Charles Perkins Centre (The University of Sydney).

For more information contact Warren Smith & Partners Pty Ltd, Level 1, 123 Clarence Street, Sydney NSW 2000, phone 02 9299 1312, fax 02 9290 1295, email wjs@warrensmith.com.au, website www.warrensmith.com.au

Below Reid Construction Systems provided pre-assembled connections for the floor-to-core walls.

Below Dial A Dump provided all waste management and recycling services on Barangaroo.



When it comes to Engineering Solutions for concrete construction, structural connections and concrete lifting systems, Reid are recognised for their extensive skill and capabilities. The team at Reid were chosen to undertake works for the Barangaroo project in Sydney.

Reid provided pre-assembled connection for the floor-to-core wall connections and basement levels to diaphragm wall. ReidBar™ is the fastest and most efficient coupling system for reinforcement on the market. The team at Reid helped to achieve the 4-day floor cycle by not only providing the fastest system on the market but also removing labour from site.

Reid Construction Systems established a dedicated production line for the assembly of the connection system for Barangaroo. Reid worked tirelessly to ensure the scheduling and manufacturing processes were seamless in order to meet the dynamic demands of such a unique project.

Other projects where this system has been utilised include:

- Supreme Law Courts (Brisbane, Lendlease)
- 180 Brisbane (Brisbane, Watpac)
- 568 Collins Street (Melbourne, Hickory)

Reid are suppliers of lifting, reinforcing, fastening and propping solutions for concrete precast and on-site tilt-up construction. They offer the complete package of engineered solutions for the Australian and New Zealand concrete construction industry. This includes sales, service, design, engineering expertise, technical support, delivery coordination and more.

Reid is at the forefront of innovative concrete technologies, with the design of precast concrete and tilt-up concrete construction systems a particular specialty.

Their products help solve construction problems and enable better performing buildings to be constructed more quickly, more efficiently, and at a lower overall cost. Reid supply leading brands including:

- Swiftlift™ Concrete Lifting solutions
- ReidBar™ Threaded Reinforcing
- Nirvana™ Insulated Concrete Panel System
- And an extensive range of architectural concrete products

For more information contact Reid Construction Systems, 1 Ramset Drive, Chirnside Park VIC 3116, phone 1300 780 250, fax 1300 780 122, email sales@reid.com.au, website www.reid.com.au

Dial A Dump Industries was appointed as the contractor responsible to handle all waste management and recycling services for the development at Barangaroo. The sheer volume of waste that is generated from a site of that size is quite remarkable and Dial A Dump handled the work with ease.

Dial A Dump Industries have developed a new extra-large capacity bin which is an impressive 49m^3 and is the largest bin which can be found in the market to date. They have also developed a truck and trailer combination which allows the option of carrying two bins on each load, therefore transporting large volumes of waste with one movement and ultimately reducing the amount of truck movements from site along with allowing for a reduction in Greenhouse emissions. Dial A Dump Industries have a firm commitment to reducing their carbon footprint which is also a high priority for the Barangaroo project.

The crew at Dial A Dump were asked to achieve a 98% recycling rate for the Barangaroo site waste. Without their world class recycling facility at Genesis Eastern Creek, this would not have been achievable.

Dial A Dump Industries is currently in the process of launching a world class Waste to Energy facility which will supply electricity back into the local grid. Construction on this innovative facility is due to start in late 2014. This facility will accept all of the residue waste from their Genesis facility, and thereby diverting 100% of the waste away from landfill.

The Company is recognised to be amongst the fastest growing and most innovative companies in New South Wales.

Dial A Dump commenced operations in 1984 and rapid expansion occurred in following years. This in turn led to diversification into industrial and commercial property investment and management.

The Group is licensed by the EPA to transport, store, recycle, reprocess and dispose of wastes. Dial A Dump benefits from a huge inventory of bins, a large fleet of modern trucks all fitted with state of the art GPS tracking, experienced drivers and a suite of specialist equipment to solve access and operating problems.

For more information contact Dial A Dump Industries Pty Ltd, 32 Burrows Road, Alexandria NSW 2015, phone 02 9519 9999, fax 02 9516 5559, email sales@dadi.com.au, website www.dadi.com.au

Below Andreasens Green provided the plants for the six hectare Headland Park at Barangaroo.

Below BildaVOID supplied degradable void form to accommodate for settlement on the Barangaroo project.

Andreasens Green provided the 675 trees, 2,212 shrubs and 70,199 groundcovers and grasses required for the new six hectare Headland Park at Barangaroo. A three year growing contract was required to ensure adequate time to produce the advanced trees needed to create immediate impact and the layered canopy effect upon the Park's opening.

The Headland Park design team created a plant palette that included a wide range of indigenous species, many that are not commonly grown on a commercial scale. Specialist seed collectors and propagation teams were used to harvest local provenance material from across Sydney and place this into production for supply. Andreasens Green's Mangrove Mountain Nursery was selected as the site for undertaking this pre- grow contract due to its favourable climatic conditions and the land area which allows ample space for the production of the advanced tree stock.

Andreasens Green Wholesale Nurseries have been a major supplier of plant material to the Landscape and Construction industries since its establishment in 1981. The company has grown to become one of Australia's leading wholesale nurseries with over 150 acres under production across four sites in New South Wales and Queensland, and are well established to handle the supply of trees and plants to large green infra-structures such as Barangaroo.

Several nursery locations provide Andreasens Green with diverse growing conditions and climates, enabling a wider variety of plant material to be grown. The company grows a vast range of species, in sizes starting from tubestock through to super advanced trees and ex-ground material. Andreasens Green are the specialists in Pre-Grow contracts. A full time team is dedicated to overseeing these orders, from the production phase, and maintenance phases, right through to the delivering of the plant material to the job site at the required time.

Andreasens Green has been involved with a wide range of projects over the years, supplying all levels of government, residential and commercial projects across the East Coast of Australia including many of Sydney's most recognisable sites such as Darling Harbour and Sydney Olympic Park.

Andreasens Green is proudly managing the plant supply for a new era of iconic projects across Sydney, and has just completed the supply of One Central Park on Broadway, which is now home to a multitude of species totalling 100,000.

For more information contact Andreasens Green, 1543 Elizabeth Drive, Kemps Creek NSW 2178, phone 02 9826 1911, email sales@andreasensgreen.com.au, website www.andreasensgreen.com.au

Lendlease approached BildaVOID Concrete Void forming Systems during the early development stage of the Barangaroo project. Lendlease were searching for a product that would give them a void to allow for settlement. The void form needed to have a high load bearing capacity and able to accommodate an overall settlement of the entire project of at least 50mm.

The project required the supplied product to disintegrate. However, Lendlease sort a way of delaying this process and engaged Spanos Waterproofing Pty Ltd to apply a specialised waterproof coating to the void formers prior to the concrete pour.

BildaVOID's SupaVOID is the strongest void former on the market with a load bearing capability between 7.740 kg (77.4kN) and 10,250kg (102.05kN) per m^2 depending on the thickness of the panel.

Not only does BildaVOID supply degradable void form, they also supply polystyrene waffle pods and precision cut polystyrene void formers. BildaVOID has successfully created an excellent reputation as a high quality supplier of concrete void form products, with a thorough understanding of the construction industry and the ability of being able to offer assistance from their in-house technical team of experts.

Their commitment and dedication to providing a superior product and excellent customer service has enabled them to become a leading manufacturer and distributor of concrete void form products in Australasia.

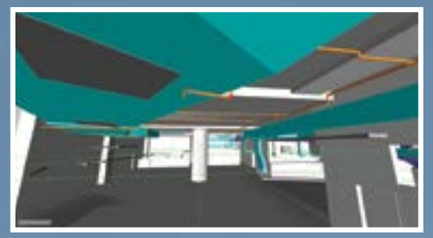
Some other projects BildaVOID has been involved with include:

- The Olympic Stadium Homebush Bay
- Centre for Advanced Animal Studies
- Sydney Opera House
- George Bass School, BUPA Baulkham Hills
- Queensland Curtis LNG (QCLNG)

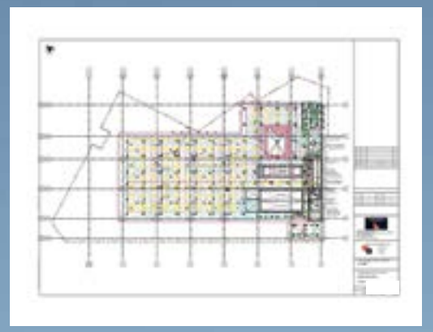
For more information contact BildaVOID Concrete, PO Box 199, Berowra Heights NSW 2082, phone 1300 369 253, fax 1300 768 272, email info@bildavoid.com.au, website www.bildavoid.com.au

PREMIER FIRE PROTECTION

The Premier Fire Group of Companies specialises in the design, supply, installation, commissioning and servicing of Fire Protection Systems. The company provides fire protection services to clients within New South Wales and Queensland from its offices in Sydney, Brisbane, Townsville, Mackay and Airlie Beach.



All installation and service work is carried out by the company's employees and dedicated specialist sub-contractors.



"Since 1987, Premier Fire Protection has grown in size and reputation to be one of the most successful and reliable fire protection companies in Australia" said a company spokesperson.

"We believe that we provide a high level of service to all our clients and this is supported by the relationships that we have developed and maintained over the 28 years that we have been in business".

Premier Fire joined with Triple M Fire to form a Joint Venture to tender and subsequently win the contract to supply fire protection services on the Basement and three commercial tower buildings at Barangaroo.

"This has been a very successful partnership where two like-minded and successful companies have joined together on one of the largest and most complex buildings built in Australia."

For more information contact Premier Fire Protection Services (NSW) Pty Limited, 2 Railway Parade, Thornleigh NSW 2120, P.O. Box 281, Beecroft NSW 2119, phone 02 9980 8777, fax 02 9980 9676, email info@premfire.com.au, website www.premfire.com.au

Below Southwell Lifts Hoists provided hoists to the mailroom and kitchens.

Southwell Lifts & Hoists, an Engineering business building and supplying equipment throughout Australia for 70 years, were awarded the subcontract to design, manufacture and install two hoists for Westpac's mailroom and kitchen.

Despite the scope of the Barangaroo site, logistics of the kitchen hoist being located on levels 27 and 28 of Tower Two international towers, and the complexity of the task, Southwell had no problems installing the hoists, which was transported and installed in pieces via the builder's lifts to level 27. Southwell says it was a pleasure to work with Lendlease to accomplish a smooth transition of the installation.

"The fact is we are able to tailor these hoists to fit in so many unusual applications like this and often with no pit and headroom available," comments Director, David Head. "Southwell Lifts & Hoists are proud their hoists will play a role in contributing to this new extension of Sydney's global financial hub."

Southwell design and manufacture lifts and hoists within Australia and are able to install and service a wide range of robust heavy-duty products which include lifts, goods hoists/lifts, freight hoists/lifts, goods personnel hoists, attended freight hoists, car lifts/hoists, heavy duty scissor lifts and airport ground support equipment. The success, continued growth and endurance of Southwell Lifts & Hoists can be attributed to their experienced sales, design and manufacturing teams and their ability to tackle custom projects with confidence.

Southwell Lifts & Hoists team have successfully achieved multiple works for some of Australia's best known builders and pride themselves on working well with other trades and having the flexibility to complete projects on time and within budget no matter what the project constraint may be.

Current and upcoming projects for Southwell Lifts & Hoists include:

- 333 George Street, Sydney - Truck Lift
- The Helio Apartments, North Melbourne - Car Lift
- Department of Defence, Townsville - Goods Hoist
- The Royal Hobart Hospital. Tasmania - Goods Personnel Hoist
- Hitachi, Forestdale, Western Australia - Goods Hoist
- CSIRO, Clayton, Victoria - Goods Personnel Hoist
- Bega Hospital, New South Wales - Goods Hoists

For more information contact Southwell Lifts & Hoists, 36 Edward Street, Camden NSW 2570, phone 1800 244 787, mobile 0418 966 282 email sales@southwell.com.au, website www.southwell.com.au