

ITS ALL ABOUT THE CURVES

DEVELOPER AND BUILDER : Billbergia
ARCHITECT : Scott Carver and Plus
CONSULTING ENGINEER : Lucas Consulting Engineers
STRUCTURAL ENGINEER : Aurecon
SERVICES ENGINEER : Northrop Consulting Engineers
ELECTRICAL ENGINEER : Haron Robson
CONSTRUCTION VALUE : \$341 million



The \$341M Marina Square waterfront village setting comprises of 768 luxury apartments which includes beautiful natural finishes and intelligent design to maximise light and space. The 46 store retail precinct is a vibrant new community hub which epitomises premium harbourside living.

Offering a new dimension to harbourside living to Sydney Siders, Billbergia's new multi-use Wentworth Point Marina Square offers a range of luxurious residential apartments and a premier retail precinct.

Made up of seven core buildings ranging from 8 to 28-levels, the tower contains 768-apartments that have been designed to maximise light, space and capture the harbours breathtaking outlook. Billbergia's vision was to create the harmony of natural tranquillity and urban vitality that characterises every apartment embodying the waterside living.

The project's construction commenced in September 2016, with a peak workforce of 800 tradesmen onsite.

Marina Square's large footprint required significant planning to ensure the luxury finish was maintained throughout the building process. Completing three months ahead of the project schedule, the project required 850 footing piles, 76,000m³ of concrete and 9,000t of reinforcement, post tensioned slabs and a hybrid of precast and in situ concrete walls.

Being a waterfront structure, there were a number of considerations that need to be taken into account due to ground conditions which comprised of soft sandy silt and the formation rock varied in depth from 20 to 25m excavation level. Billbergia chose a versatile piling system that was designed to take the load of the building and also allow for the lack of lateral ground strength. The water table was located just below the bottom basement level of the development. A waterproofing membrane system was chosen for the lower level areas of the carpark and lift shaft pit, to future proof against any issue.

The apartments themselves offer a private sanctuary from city life, offering light filled spaces created by floor-to-ceiling glass. The natural finishes unify the inside of the apartments with the external environment, creating a connection with the Sydney's landscape.

The kitchens include sophisticated islands with an intuitive design to be both highly functional and beautiful with two luxurious

palettes of wood and stone. The contrasting grey-washed oak tile and white carrara look reconstituted stone with charcoal accents provide an elegant metropolitan finish. Marina Square's elegant bathrooms and ensuite also mirror the wood and stone themes with layers of Grigio, white marble-look or natural stone to create a unified scheme throughout the apartments. The Dual rose and handheld showerheads, frameless showers and optional stone surround baths were designed to create a luxurious spa like mood.

Marina Square's retail precinct will be a vibrant new hub for the community, offering a range of retailers including major supermarket brands. A village feel has been created by offering a range of tenancies, catering to an easy relaxed lifestyle. Bakeries, baristas and chic small eateries make it convenient to meet up with friends for coffee or enjoy an open air brunch while taking in the water views along with Marina Square's stunning architecture.

The development's façade is a combination of ribbon precast and panellised window systems, that features two awnings at the side of the development that span 120m and suspend 10m off the ground. The awnings curve in dual dimensions, dipping down then up, as well as radially following the contours of the building. These stunning complicated ribbons are well integrated into the curtain walls for an awe-inspiring architectural finish.

The curved nature of the design proved challenging to construct as a significant amount of structural steel membranes were required for the awnings and special roof sheeting was needed for the awnings on the market as they also follow the unique curved design.

Billbergia mainly focus their work within the Sydney regions, currently working on Rhodes Central in Rhodes. However, Brisbane Skytower, residing in Queensland with a height of 270m, making it one of the tallest residential towers in Australia is also a proud product of Billbergia.

For more information contact Billbergia, Suite 101, 25 Angas Street, Meadowbank NSW 2114, phone 02 8878 6900, email info@billbergia.com.au, website www.billbergia.com.au

Below Apollo Kitchens provided all of the kitchen and bathroom joinery and cabinetry for the Marina Square project.



APOLLOKITCHENS

Apollo Kitchens is one of the leading and most experienced fixed joinery supplier in Australia. Their services include design, manufacturing and installation for both residential and commercial kitchens. Established in 1968, they employ award winning designers working with their state-of-the-art facilities and have established a reputation for their innovative and flexible designs, outstanding craftsmanship and service.

Apollo Kitchens applied their high standard for the Marina Square project. Their scope of the work included the manufacture and installation of the fixed joinery for the apartments. All of the joinery was made to measure per apartment to ensure minimal gap filling. Apollo Kitchens also manufactured and installed the cabinetry for kitchens, bathrooms and laundries.

Marina Square comprises of 768 residential apartments constructed across two striking towers with five low rise boutique buildings. This development is the centrepiece of a thriving waterfront village and close proximity to Sydney Olympic Park.

Two understated palettes were chosen for residents to choose from. The 'Stone' scheme spoke to the metropolitan aesthetic, incorporated grey-washed Oak tile and white Carrara-look reconstituted stone, with a high contrast charcoal accent. The counterpoint 'Wood' palette features forest-engraved glass splashbacks with whitewashed Oak tile and Calacatta-look stone benches, for a softer and tranquil space.

Apollo Kitchens applied a protective finish on all their joinery products, including plastic seals for each door panel, which prevented any unintentional damage during

installation of other services and appliances. The company also provided a quick turnaround for the manufacturing of the units with their inhouse automated paint line.

Some of the kitchens included an integrated laundry with a unique pull out pantry with a ironing board inside the joinery. Hidden corner storage units were installed to utilise all accessible storage. The drawers were created with shark nose handles to create a seamless finish. Apollo Kitchens was able to incorporate all the appliances into a kitchen with limited size constraints while ensuring that they all work functionally and look great.

Apollo Kitchens celebrated its 50th anniversary this year, and has four manufacturing plants and an additional four showrooms in New South Wales which are located in Smithfield in Western Sydney, Waterloo near Sydney's city centre, Beresfield in Newcastle and Erina on the Central Coast.

Apollo Kitchens is still expanding with their new facility up and running, producing large quantities of kitchens and fixed joinery. The new system embraces modern methods of manufacturing and Apollo Kitchens are participating in industry conferences and tours, as well as discussions with government representatives, regarding the need to adapt to meet construction demands.

"We have recently announced our new high tech factory to meet industry demand for the future. We intend to set a new benchmark for Australian manufacturing. The new Smart Factory and Head Office will allow the company to continue its high quality and highly customisable offering for larger volume projects," said Apollo Kitchens' Managing Director, Peter Bader.

Apollo Kitchens is currently working on some of Sydney's major commercial and residential developments including Fairwater for Frasers Property, Ashfield Central and Arlington Grove for Ceerose, Orchards for Sekisui House and GrandH by Deicorp.

APOLLOKITCHENS

For more information contact Apollo Kitchens, 17 Long Street, PO Box 2558, Smithfield NSW 2164, phone 1300 908 090, email sales@apollokitchens.com.au, website www.apollokitchens.com.au



Below Trinity Windows supplied and installed the windows, sliding doors, curved glass and window awnings for the project.

Trinity Windows fabricates, supplies and installs windows and doors for the residential and commercial sectors, along with design, engineering and assessment of aluminium for the construction industry. Their services include frameless and automatic entry doors, office partitions, façade glazing, spider and patch fitting, privacy and sunshade louvres, and bi-folding doors.

Their scope of work for the Marina Square project included supply and installation of all the awning windows for the apartments in Buildings 4, 5, 6 and 7, along with windows and sliding doors for the ground floor, as well as the windows, curved glass and sliding doors for the commercial buildings and shopping centres.

The project comprised a total of 150 aluminium framed crystal glass windows and sliding doors. Double glazing was used on all the glass to organically reduce heating from sunlight in order to meet strict energy efficiency requirements.

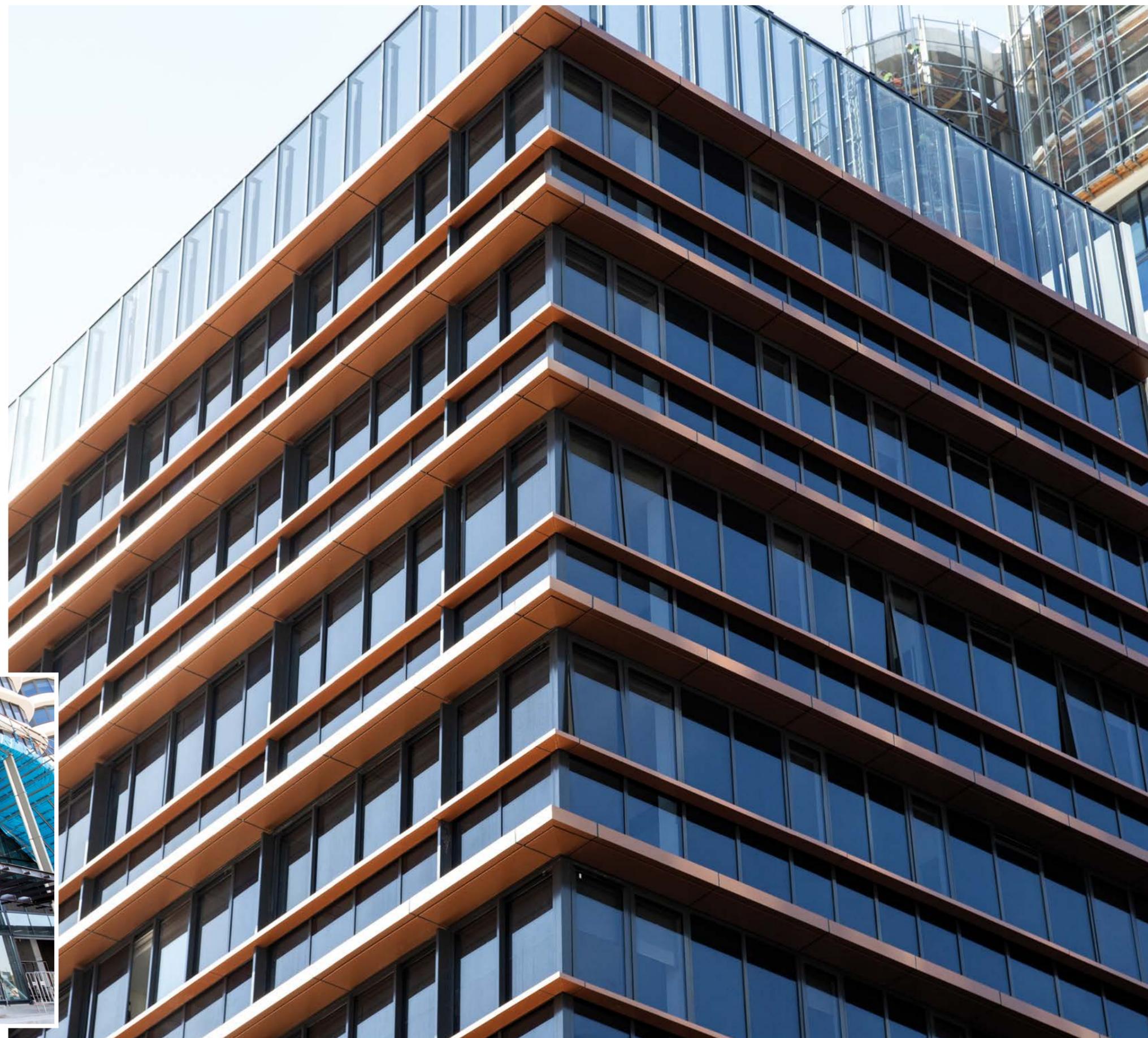
Trinity Windows deployed 60 skilled workers for the project. The procurement of the design that suits the programme schedule ensured on time completion.

The shopping centre included a bulkhead curved full height glass which was designed, engineered, fabricated and installed by Trinity Windows. The glass is double glazed and triple coated for added protection with a gold sheen finish.

The complexity in the design of the large glass panels along with the full height extruded aluminium sections that were required for the shopping centre was the most challenging aspect of the project for Trinity Windows. However, careful consultation and coordination with Billbergia along with inhouse engineering and liaison with the façade consultant ensured successful completion with no problems.

Trinity Windows provide their services across New South Wales. Other major projects they have include the Burwood Grand for Decode Construction and the Veridian Apartments in Kogarah for Westbourne Construction.

For more information contact Trinity Windows, 91 Mandoon Road, Girraween NSW 2145, phone 02 9631 5577, fax 02 9636 7061, email info@trinitywindows.com.au, website www.trinitywindows.com.au



Below Golden Eagle Painting carried out the painting of the walls, ceilings, apartment doors, lobby and the external of the project.



Golden Eagle Painting provides painting and decoration services as well as patching and skimming. The family owned business was established 25 years ago and have had a long working relationship with Billbergia since their very beginning. The company prides itself on its organisational structure, with the father and son duo being the director and supervisor who communicate continuously on the progress of projects, ensuring a high level of attention to detail and quality.

For the Marina Square project, Golden Eagle Painting was contracted to paint the general walls, apartment doors, general ceilings, laundry and bathrooms, lobby, entry feature walls, as well as car park and all of the external works including precast and in situ concrete. The company painted a total of over 10,000 walls, 7,500 ceilings and 6,000 pieces of timber.

The paint colours chosen for the project were the beautiful Argos Cream and Crisp White from the Wattyl range. These light colours convey a soft and elegant appearance which will appeal to prospective buyers as well as enhance natural light to liven the internal spaces. With a team of 25 employees deployed for the project, work onsite commenced in November 2017.

Golden Eagle Painting opted to use a spray painting method for the high ceilings in the retail area and Coles. This was a new technique that they used and had to be completed at night in order to avoid spraying any other contractors and their equipment.

The main challenge that Golden Eagle Painting encountered was a difficulty in manoeuvring machinery as they had 10 painters all using scissor lifts at the same time. There was also some congestion experienced with other tradespersons who were working in the same areas which limited access availability. However, due to time coordination and a great team management they were able to work around this.

The team also decided to work seven days a week as well as conduct night shifts in order to complete the job and ensure everything was completed ahead of schedule. The night shifts were introduced for this project in order to complete the retail area as well as preventing overcrowding. It turned out to be a huge success as they had separate day and night shift employees rotating work continuously.

“We learned a lot from rotating our employees and introducing night work. It has given us another perspective of how to efficiently complete major tasks,” said Golden Eagle Painting Director, Abdul Sarakbi.

Working with Billbergia on a number of projects, Golden Eagle Painting have supplied their services across Homebush, Rhodes and Sydney Olympic Park region. The company also provide their expertise throughout Australia, working with various builders.

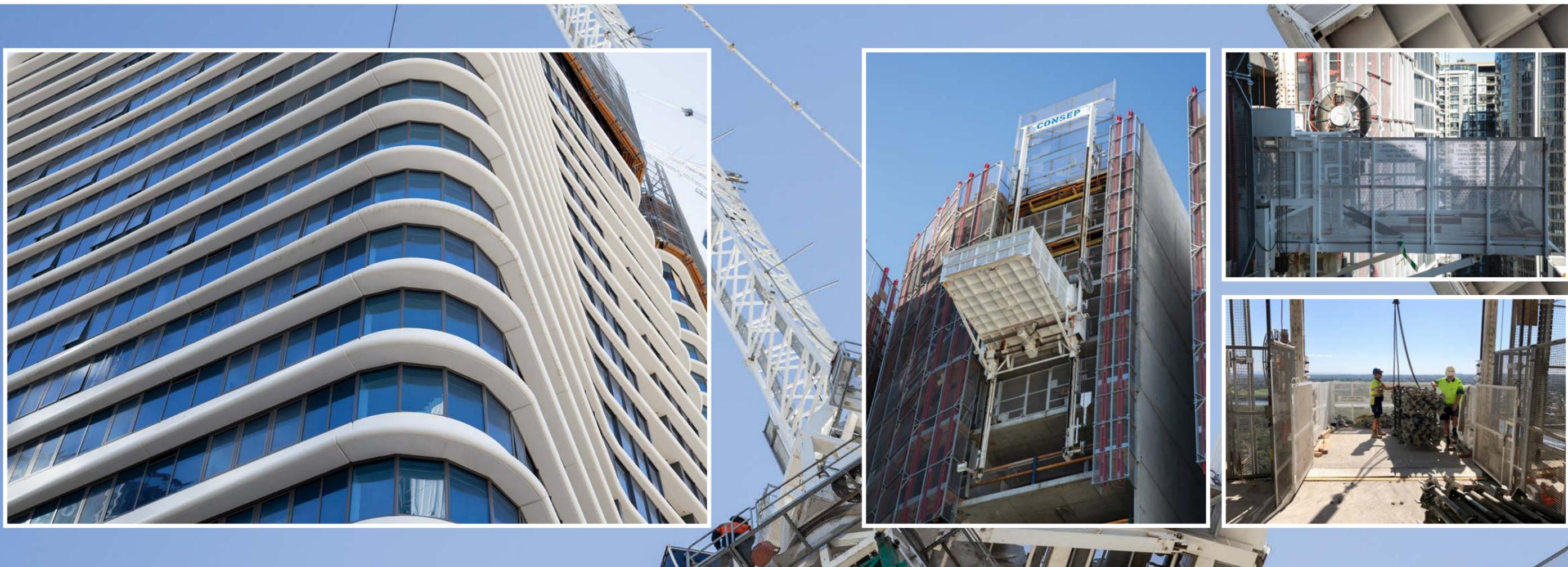
“I would like to give a special thank you to Billbergia and its great team. Golden Eagle is honoured to be working with Billbergia for over 25 years and we would like to thank the entire team for working with us,” said Abdul.



For more information contact Golden Eagle Painting, 296 Nobel Avenue, Greenacre NSW 2190, mobile 0410 541 429

Below Precast Elements delivered the walls, columns and balustrades on all four buildings of Marina Square.

Below Consep provided two Model CH200 Consep Hoists to cycle building materials and formwork safely and efficiently.



Precast Elements provided the Marina Square Project a total of 4,200 precast panels, balustrades, walls and columns, that were manufactured, installed and finished in all four buildings in varying shapes and sizes, ranging from 200kg to 12 tonne.

The elements were composed of six different concrete mixes that were designed to ensure high strength (ranging from 40-80 MPa) and suit each shape and application. An innovative product called lightweight concrete was also used for certain applications, that were too heavy for the crane once complete. This ensured that they were able to maintain the largest possible panels, reducing the number required to cover the space and made for a more efficient installation.

All the panels were complex, but the balustrades provided a unique challenge to Precast Elements. Designed as an architectural feature, the curved balustrades give the appearance of a white ribbon that wraps around the whole building, all the way to the top. These balustrade panels are unique and one of a kind architectural feature. The ribbon design's complex nature required a sophisticated mould to accommodate the curves in the building's facade and the edge design.

Despite the logistical complexity of the project with nine install zones per level all requiring installation with four cranes at a time, Precast Elements were able to install up to 250 elements within six days per level for the 28-storeys.

"Precast Elements enjoyed working collaboratively with the Billbergia team and we are very proud of the final result," said Precast Elements Directors, David Cullen-Ward and Millie Booth.

Precast Elements manufactures, installs and finishes precast concrete products with experience in high density residential buildings, industrial/commercial, transport infrastructure, civil and special structures.

For more information contact Precast Elements, 49 Pine Road, Yennora NSW 2161, phone 02 9003 1330, email info@precastelements.com.au, website www.precastelements.com.au

Consep provided two latest generation Model CH200 Consep Hoists for the Marina Square development and delivered end-to-end support and services for the project's duration. Detailed engineering drawings for the hoist locations were set out which included interfacing with perimeter screening, hoist installation, climb and decommission patterns along with certification for all works.

The Consep Hoists were used to cycle formwork and other building materials within the construction zone, ensuring safe, efficient and reliable transport of materials while taking the pressure off the tower cranes, allowing them to focus on other duties. In particular, the Consep Hoist's unique ability to service the Live Deck and provide immediate service to the freshly poured slab, even in high winds, streamlined formwork cycles. The added flexibility of the Consep Hoist as a movable crane landing platform offered further benefit for transport of building materials on the project. Some other exciting features include remote monitoring so troubleshooting of issues can be resolved offsite, and distribution of loads over multiple levels greatly reducing, if not eliminating the need for back propping.

"I would like to thank Consep for their services on the project. The hoist in my opinion delivered and the feedback I received from

the formworkers was positive. During the life of the project the hoist operated without fault and the climbs were very efficiently done," commented Sam Brown, Structures Foreman for Billbergia.

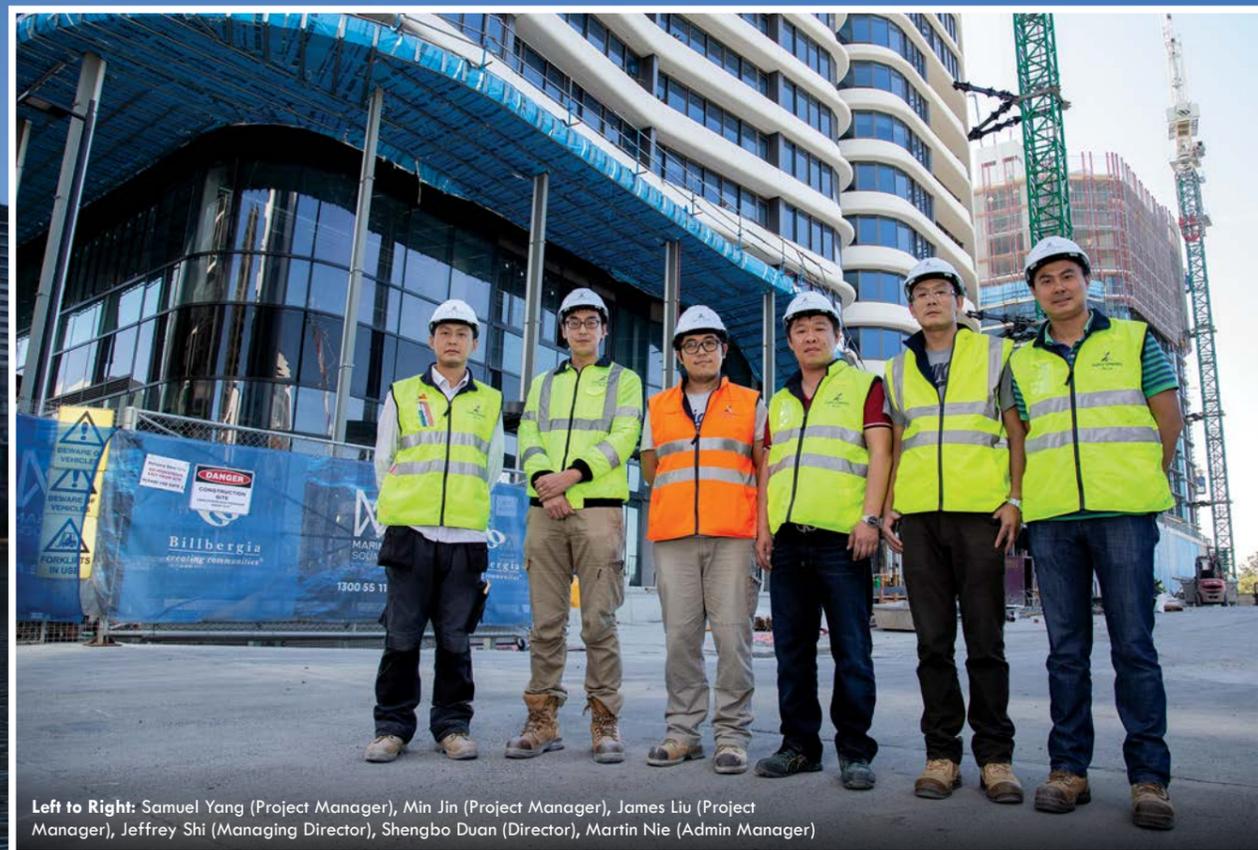
Consep's site crews worked closely with Billbergia to minimise Consep site time and man hours during the project, while maintaining unprecedented Consep Hoist availability. The Consep Hoist on the E1 tower was delivered, fully installed and handed over to Billbergia for use in under three days, ahead of time and under budget. With some fine tuning to scheduling, this already impressive installation time was reduced to delivery, installation and handover to Billbergia for use in under two days for the E3 tower, offering even greater time and budget savings.

The Consep Hoist delivers on demand and crane independent vertical movement of formwork and other building materials. This provides faster formwork cycles and increased project safety, all backed by Consep's skilled site crews and experienced engineering and manufacturing teams.

For more information contact Consep, 59 Newton Road, Wetherill Park NSW 2164, phone 02 9756 5299, fax 02 9756 5102, email sales@consep.com.au, website www.consep.com.au

Below Sunny Interiors supplied and installed the walls and ceiling lining works to the cores in Block E of the project.

Below Grasshopper Environmental provided their construction waste and recycling management services to Marina Square.



Left to Right: Samuel Yang (Project Manager), Min Jin (Project Manager), James Liu (Project Manager), Jeffrey Shi (Managing Director), Shengbo Duan (Director), Martin Nie (Admin Manager)



Sunny Interiors provides ceiling and partition services to the commercial and residential market including plasterboard ceilings, suspended ceilings, wall partitions, wall fascias, bulk heads and office fitouts. Their experienced site team are highly skilled professionals, who work hard to ensure that every project they undertake is delivered in a safe manner, on time and on budget.

Sunny Interiors completed the supply and installation of walls and ceilings lining works to cores E2, E3, E4 and E5 for Marina Square Block E and also completed the commercial fitout for the shopping centre to core E1 and the Coles Supermarket.

Conventional materials were used for the apartments, including plasterboard, water and fire resistant walls, Hebel panels and concrete panels, while fibre cement was used for the balconies. For the commercial buildings, each wall was different in terms of fittings, size, thickness and materials. The shopping centre took some time to complete as it was necessary to continuously check and consult with drawings, specifications and confirm everything with the site manager.

Sunny Interiors had a total of 42 employees at its peak on the project, who commenced work in November 2017 and completed it by the

end of July 2018. This is the first time that they worked for Billbergia, which gave them the opportunity to demonstrate their capabilities.

“All the site office team is very happy with our performance, especially the safety focus and the huge manpower we have. We were always ahead of the project schedule and we were able to provide all the solutions for any problems they had onsite,” said Martin Nie, Sunny Interiors.

Sunny Interiors focus their work within New South Wales. Other projects they currently have include Macquarie Park Building F for TOGA, Crows Nest Project for Paynter Dixon and Kingswood Stage 2 for Skyton.

For more information contact Sunny Interiors, 86 Bowden Street, Ryde NSW 2112, phone 02 9802 5087, email martinnie@sunnyinteriors.com.au, website www.sunnyinteriors.com.au

Grasshopper Environmental is a family owned company that provides professional and responsive waste management services, with an established reputation for ethical waste management and consistent quality service.

For the Marina Square project, Grasshopper Environmental was responsible for the complete construction waste and recycling management. This included the provision of equipment such as crane bins, forklift bins, bulk skips, plastic runner bins, office and lunch room bins and the removal of putrescible waste from the site. The company also collected and managed data and reported on the breakdown of the waste materials removed from the site for the builder.

As there were many different working levels throughout the job, it was identified early in the project that the handling of waste materials from around the site back to the central waste compound was going to be a challenge.

Grasshopper Environmental worked with Billbergia to come up with a ‘Waste Management Plan’ that streamlined waste handling. This included strategically placing appropriately sized waste equipment around the site and designing a forklift

attachment for ease of transportation to the main waste compound. These electric bin lifts were designed specifically for this site to provide effortless handling of waste on each level of the building.

As the construction phases changed, the waste output and demands changed accordingly. Grasshopper successfully partnered with Billbergia to ensure that the waste management was as effortless as possible and provided a waste handling process which worked as an ‘On Demand Service’ at all times.

Grasshopper provide their services throughout the Sydney metropolitan area and Blue Mountains. Other clients they are currently working with include Acciona/Sydney Light Rail Project, Sydney Metro Alliance, John Holland, JQZ, Richard Crookes, FDC Building and Buildcorp.

For more information contact Grasshopper Environmental, 200 Walters Road, Arndell Park NSW 2148, phone 1300 147 277, fax 1300 147 299, email enquiries@grasshopper.net.au, website www.grasshopper.net.au

YME METAL PROJECTS

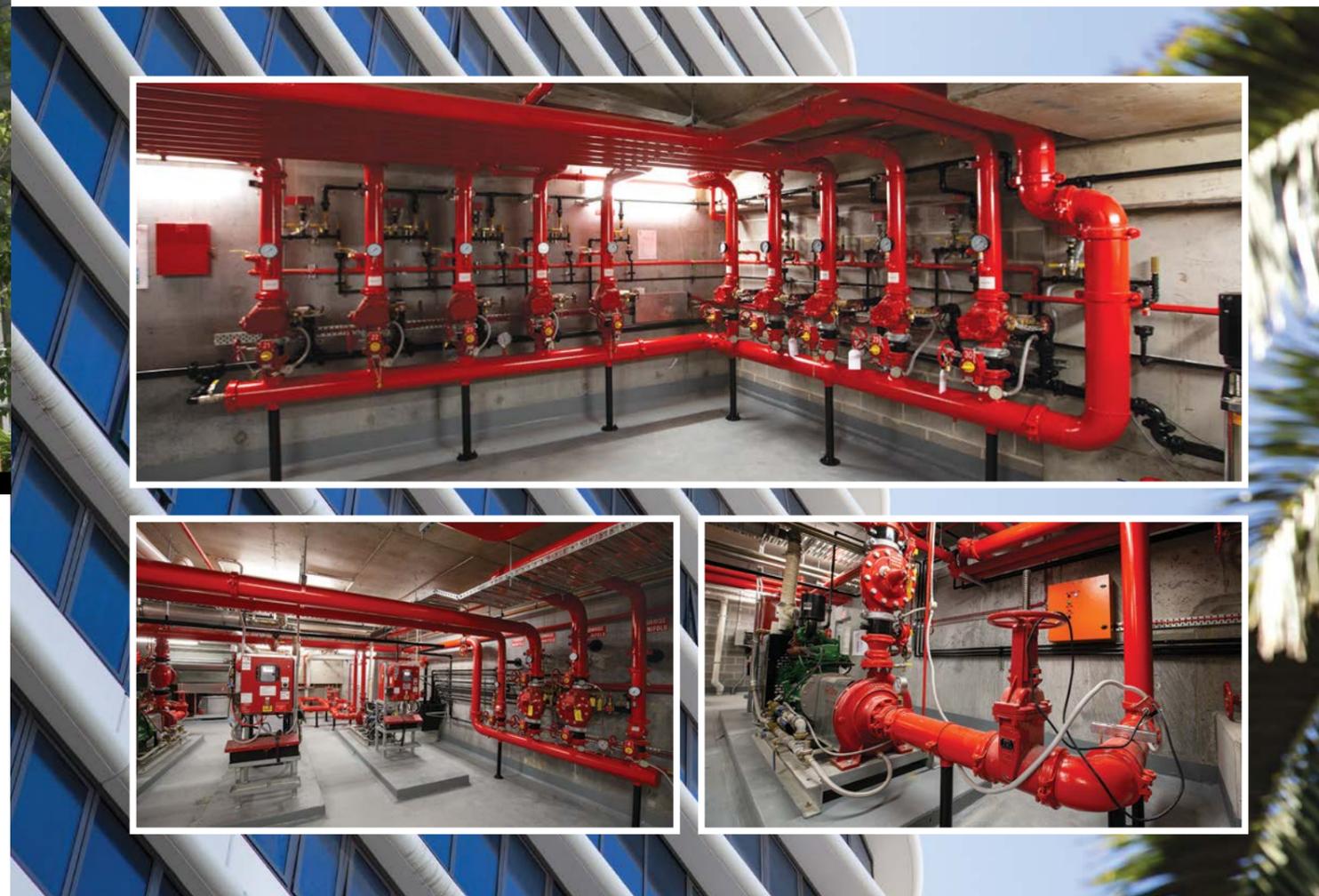
Building The Future



Below Absolute Fire Safety completed the hydrant services and fire sprinkler systems and provided portable extinguishers for the project.

YME Metal Projects offers a metal fabrication service for the commercial, industrial and residential sectors, across Sydney. YME represents many years of experience in fabrication and installation of aluminium, steel, glass, and stainless steel products.

YME Metal Projects caters with medium to large commercial and industrial developments, having collaborated with various well known builders and developers in Sydney and in conjunction with this collaboration, YME have established a reputable company. They pride themselves on working closely with the architects and engineers of a project to design, develop and fabricate a product that is to the specification and requirement of the client.



RESIDENTIAL

Residential Services | Fencing, Pool Fencing, Awnings, Louvres, Security Fencing, Balustrades and Various Metal Products | Complete Supply & Installation

COMMERCIAL

Commercial Services | Custom Design & Fabrication | Standard Construction | Engineered to Draft Specifications & Requirements | Tenders | Site Installation

CUSTOM

Custom Design & Fabrication Services | New and Existing Developments | Bespoke Designs & Fabrications | Estimation & Cost Planning | Design Management

Absolute Fire Safety is an Australian owned company that provides complete fire protection design, installation and maintenance of all fire protection services. With over 30 years experience in the industry, their services include fire sprinkler systems, fire alarms and detection systems, occupant warning systems, fire hydrant and fire hose reels, suppression systems, portable fire extinguishers and full hydraulic design of fire services.

The company was contracted for the Marina Square project for design, supply and installation of the combined fire sprinkler and hydrant services and portable fire extinguishers throughout the entire complex including the retail and residential towers. The work Absolute Fire Safety completed on the project stands out in terms of the sheer size and speed of which the project progressed, as well as the complexities of multiple fire systems throughout the buildings. Provisional work onsite began in May 2017 and was completed by September 2018.

Absolute Fire Safety worked closely with Billbergia's management and construction programme to overcome the tight schedule required on a project of this size with the project being run as separate portions including the seven residential towers, shopping centre and associated carparks.

"Due to the great effort of our staff, suppliers and the team at Billbergia working together made this project a success," said Jason Hughes, Director of Absolute Fire Safety.

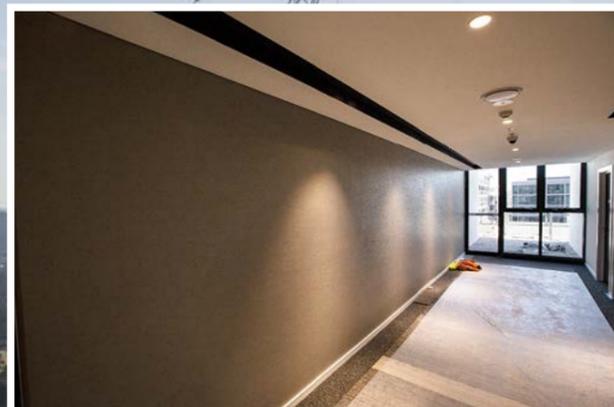
Absolute Fire Safety is proud to have been part of creating such a fantastic complex and is looking forward to strengthening their relationship and working with Billbergia on future projects.

Absolute Fire Safety offer their services throughout New South Wales including the Sydney Metro and Country areas with many other projects underway.

For more information contact Absolute Services Pty Ltd trading as Absolute Fire Safety, 2/13 Aspinall Place, Mulgrave NSW 2756, phone 02 4577 5335, fax 02 4577 5337, email info@absolutefire.com.au, website www.absolutefiresafety.com.au

Below Ankon Contractors completed the interior sheeting, carpentry, insulation and partitions, as well as painting preparation.

Below Earth Exchange provided waste and logistics management and removal of clean fill for the Marina Square project.



Ankon Contractors is an interior plasterboard specialist with nearly 20 years in the business. They provide a broad range of services for residential and commercial interiors including drywall, plaster and insulation.

For the Marina Square project, Ankon Contractors was responsible for all the interior carpentry, setting out lining and sheeting, raising frames, adding partitions, installing insulation, and prepared all surfaces for painting. With a peak of 120 tradespersons deployed onsite, the company commenced work September 2017 and completed it in August 2018.

For the four residential towers, Ankon Contractors installed door frames, partitions, ceilings and all the interior lining. For the retail side they added walls, custom ceilings and elevated platforms. The work also involved creating the impressive entry lobby for the apartment towers which included feature custom curved ceilings and a high amount of detailing and fittings throughout to create a modern and appealing entrance.

Ankon Contractors' team also made suggestions and changes to the architect's initial design to better suit construction. "Sometimes

in some instances what works on paper does not work onsite, so we provide suggestions as to what works instead and make necessary changes," said Konti Mirashi, Director of Ankon Contractors.

The biggest challenge that Ankon Contractors experienced was the retail side of the construction which involved a high degree of detail, technicality, and exotic materials. Especially on the façade which had to be premade offsite and the entire process had minimal tolerance for errors.

Ankon Contractors' 'can do' attitude and their experienced team were able to successfully complete the task with no setbacks. "We discuss everything between ourselves as well as communicate and cooperate with the engineers and architects to make any alteration that the client wants. Anything can be done," added Konti Mirashi.

For more information contact Ankon Contractors, 710/46 Savona Drive, Wentworth Point NSW 2127, mobile (Konti) 0427 280 103

Earth Exchange provides waste management solutions across a broad range of industry verticals including waste, recycling and construction. Based in Rhodes, Earth Exchange was established in 2007 as a logistics coordinator for the removal of all waste types including general solid waste, asbestos, restricted and unwanted earth from large construction sites across New South Wales. They also manage the supply and delivery of compactable VENM/ENM to various DA approved development sites, or sites with Environmental Protection License authorisation.

For Marina Square, Earth Exchange was responsible for the removal of clean fill, waste and logistics management of excavated clean material excavated natural material, solid waste and recyclables which included clay, gravel, sand, soil and rock fines. Earth Exchange had a team of one project manager and 10 subcontractors deployed at the project's peak.

The material excavated from the Marina Square site meets the requirements for Virgin Excavated Natural material which is not contaminated with manufactured chemicals or with process residues as a result of industrial, commercial, mining or agricultural activities, and also does not contain any sulphide ores or soils or any other waste.

Therefore, no additional safety measures had to be addressed for this project.

The main challenge that Earth Exchange experienced was the high volume of excavated material that needed to be removed consistently within a strict time frame, however they were able to overcome this with a high level of coordination and ensuring that there were back up options available at all times if needed.

Earth Exchange focus their work within the Sydney Metropolitan area and are currently working on the Main North Shore project for Laing O'Rourke where they are providing waste and logistic management services.

For more information contact Earth Exchange, 29 Marquet Street, Rhodes NSW 2138, phone 02 9736 3300, email info@earthexchange.com.au, website www.earthexchange.com.au