



NATSPEC Product Partners

Quality Reputation Support



2018
Case Studies and Technical Articles



Regulations drive quality to reduce risks for clients and public alike. They also add obligations onto designers. NATSPEC gives designers tools, including specifications, to set the minimum required technical properties of products to meet these obligations.

In recent years, products entering Australia with inadequate, even false, evidence of conformity relative to applicable standards have been rising. The advent of global trade wars will also increase the possibility of “dumping” non-conforming products into Australia. Similarly, materials are increasingly not being used in accordance with applicable regulation. This reduces the safety profile of Australian buildings and puts clients and public at risk. With over 40 years in practice, NATSPEC helps designers manage this risk, efficiently.

NATSPEC constantly strives to improve construction quality and productivity in the Australian built environment. To help you combat inferior quality and stay abreast of construction industry innovation, NATSPEC works tirelessly to bring new products to market like the National Construction Product Register (NCPR) and BIM Properties Generator.

Richard Choy
Chief Executive Officer
NATSPEC//Construction Information

Product Partners Program

The NATSPEC Product Partners program was developed to provide manufacturers with an opportunity to place a branded worksection in the National Building Specification. The objective is to allow design and construction industry professionals to easily access a proprietary specification from manufacturers, offering reputation, quality to Australian Standards, and support. Selection of products is also easier, saving you time and reducing your risk.

NATSPEC is the trading name of Construction Information Systems Limited, ABN 20 117 574 606.

NATSPEC, founded in 1975, is a not-for-profit organisation that through professional associations and government property groups, is owned by the design, build, construct, and property industry. It is impartial and is not involved in advocacy or policy development.

NATSPEC's major service is the comprehensive national specification system endorsed by government and professional bodies. NATSPEC, the National Building Specification, is for all building structures with specialist packages for architects, interior designers, landscape architects, structural engineers, service engineers, and domestic owners. AUS-SPEC is the Local Government specification system for the life-cycle management of assets. Packages include Urban and Open Space, Roadworks and Bridges, Public Utilities, and Maintenance. NATSPEC is also responsible for the National BIM Guide and its associated documents.

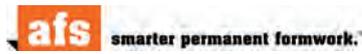
NATSPEC's objective is to improve the construction quality and productivity of the built environment through leadership of information.

Stakeholders

- Air Conditioning and Mechanical Contractors' Association of Australia
- Australian Elevator Association
- Australian Institute of Architects
- Australian Institute of Building
- Australian Institute of Building Surveyors
- Australian Institute of Quantity Surveyors
- Chief Minister, Treasury and Economic Development Directorate (ACT)
- Construction Industry Engineering Services Group
- Consult Australia
- Department of Finance (Federal)
- Department of Finance (WA)
- Department of Finance, Services and Innovation (NSW)
- Department of Housing and Public Works (QLD)
- Department of Infrastructure, Planning and Logistics (NT)
- Department of Planning, Transport and Infrastructure (SA)
- Department of Treasury and Finance (TAS)
- Department of Treasury and Finance (VIC)
- Engineers Australia
- Master Builders Australia
- Standards Australia



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Branded Worksections have been compiled by NATSPEC and our Product Partners using the latest regulations and standards. Download for free at www.NATSPEC.com.au



01 General

0181p BOSTIK in adhesives, sealants and fasteners
0181p MAPEI in adhesives, sealants and fasteners
0184p ENSYSTEX termite management
0184p FMC termite management
0184p TERMGUARD termite management
0184p TERMSTEEL termite management
0191p GERFLOR sundry items
0192p ANCON structural components
0194p RAVEN door seals and window seals
0195p DTAC tactile indicators and stair edgings

02 Site, urban and open spaces

0252p LAWN SOLUTIONS in landscape - natural grass surfaces
0279p PASCO BUZON in paving - on pedestals

03 Structure

0310p AFS wall systems in concrete - combined
0310p DINCEL in concrete - combined
0310p AQUORON 1000 HYDROGEL in concrete - combined
0310p CONQOR B52 HYBRID-HYDROGEL in concrete - combined
0310p MAX FRANK in concrete - combined
0311p FIELDSERS KingFlor in concrete formwork
0325p DEFLECTA concrete protection
0325p AQUORON 7000 HYDROGEL concrete protection
0341p FIELDSERS SlimFlor in structural steelwork
0341p GALVSPAN steel purlins and girts in structural steel
0341p LYSAGHT purlins and girts in structural steel
0345p DULUX steel protective paint coatings
0345p PPG COATINGS steel protective paint coatings
0345p WATTYL steel protective paint coatings

04 Enclosure

0411p DUROTECH waterproofing - external and tanking
0411p MAPEI in waterproofing - external and tanking
0411p PARCHEM waterproofing - external and tanking
0423p COLORBOND steel and ZINCALUME steel in roofing
0423p FIELDSERS roofing - profiled sheet metal
0423p KINGSPAN in insulated panel roofing systems
0423p LYSAGHT roofing - profiled sheet metal
0423p REVOLUTION ROOFING in profiled sheet metal
0424p FIELDSERS roofing - specialised sheet metal
0428p ASKIN XFLAM performance panel roofing
0428p DANPALON roof glazing
0434p DANPALON translucent façade cladding
0436p COLORBOND steel and ZINCALUME steel in cladding
0436p FIELDSERS cladding - profiled sheet metal
0436p LYSAGHT cladding - profiled sheet metal
0436p REVOLUTION ROOFING wall cladding
0437p ASKIN XFLAM performance panel cladding
0437p ASKIN XFLAM VOLCORE performance cladding
0437p KINGSPAN insulated panel cladding systems
0437p FIELDSERS cladding - specialised panels

0451p ALSPEC aluminium windows and doors
0451p AWS aluminium windows and doors
0451p CAPRAL ALUMINIUM windows and doors
0453p CS Cavity Sliders in doors and access panels
0453p RONDO in doors and access panels
0454p B&D GROUP in overhead doors
0454p EZI ROLL DOORS AUSTRALIA overhead doors
0455p ASSA ABLOY door hardware
0456p SAFETYLINE JALOUSIE louvre windows
0458p TORMAX automatic doors
0471p KINGSPAN in thermal insulation and pliable membranes
0473p DAMTEC acoustic floor underlays
0473p REGUPOL acoustic floor underlays

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0522p RONDO in partitions - framed and lined
0531p CSR HIMMEL in suspended ceilings - combined
0531p RONDO in suspended ceilings - combined
0541p TATE ConCore access floors
0552p CON-FORM in metalwork and platforms - fabricated
0554p MODDEX steel handrails, guardrails, balustrades and other barriers

06 Finish

0612p MAPEI in cementitious toppings
0612p POLYFLOR KIESEL self-leveling cementitious toppings
0621p DUROTECH waterproofing - wet areas
0621p MAPEI in waterproofing - wet areas
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0651p GERFLOR in resilient finishes
0651p KARNDEAN in resilient finishes
0651p AQUORON CONCRETE SUBSTRATE TREATMENT in resilient finishes
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0671p DULUX painting
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Branded Worksections can be downloaded for free from
www.natspec.com.au

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RESILIENCE BY DESIGN

Resilience: a design attribute which when applied to buildings, infrastructure and communities, defines their ability to absorb and minimise damage without suffering complete failure.

Resilient design is a multi-faceted issue for designers to grapple with, complicated by the increasing frequency of natural and human-made disasters. Though there are many variables which contribute to resilience, the overarching lesson is simple: buildings need to be resilient in order to be truly sustainable and able to stand the test of time. Architect Carl Elefante said, “The greenest building is the one that’s already built.” The designers need to create buildings that are not only sustainable, durable and resilient, but will last longer than we do.

Much existing infrastructure was originally designed, built, and maintained on the assumption that future climate conditions would remain relatively unchanged. Smart adaptive measures are now required to minimise impacts of climate change on human life, structures, habitats and the economy.

What do buildings have to be resilient against?

The Property Council of Australia’s publication *Climate Change Risk – What should we do to make our buildings more resilient?* and Australian Standard AS 5334 identify three main categories of events which designers should address, as a minimum, when designing resilient structures:

- Storm and coastal inundation;
- Heat and bushfires; and
- Rainfall and flooding.

News of such major events is becoming more frequent, and it is now incumbent on the engineering and construction industry to take these extremes into account when designing buildings. Don’t just design for today and meet current standards, but look to the future and expect that

environmental extremes will occur. For example, designing to and allowing for 1 in 100 year flood levels may not be an adequate reference point today.

Economics of resilience

Acknowledgement, preparedness and investment in resilience has been shown to be more cost-effective than spending on post-disaster recovery. Current estimates state are that every \$1 spent on building in resilience results in approximately \$10 savings on post-disaster recovery and the rebuilding of housing and infrastructure.

What can be done?

Designing resilience into buildings can primarily be achieved through passive strategies, including simple and cost effective designs that provide:

- Effective insulation, natural ventilation with operable windows, and solar shading devices to reduce the heat load on exposed parts of the building façade.
- Ample elevation of the structure above flood or tidal surge levels.
- Fire-proof blackout shutters to prevent heat and burning material entering in a bushfire event.
- Water through storage facilities for emergency supplies during drought and water rationing periods, and to combat fires and protect properties.
- Landscaping to reduce the need for irrigation (xeriscaping) and the build-up of fuel for fire.

In addition, active strategies include backup power generation from generators or solar batteries storage cells in the event of power failure.



Quality documentation is one of the most important aspects for ensuring a project finishes on time, on budget, and meets the client's expectations of quality.

Without the guidance of NATSPEC and the inclusion of quality project specifications, there is an increased risk that projects will not achieve positive outcomes in terms of cost, quality, effectiveness, and timeliness of construction.

The NATSPEC Object Standards for Building Information Modelling represents another key contribution to the construction industry that will be highly sought after upon release.

Grant Warner, Chief Executive Officer, AIQS

For over 20 years, AFS' innovative propriety wall systems, afs logicwall® and afs rediwall®, have facilitated the speedy and cost-efficient installation of load-bearing walls in multi-residential and commercial projects throughout Australia, New Zealand, the US, UK, and Canada.



As part of CSR Limited's stable of leading building products that include Bradford, Gyprock, Hebel, Monier, PGH Bricks, and Viridian, AFS is committed to conducting ongoing research and development to create new, innovative, and superior construction solutions that bring time and cost-saving efficiencies whilst maintaining construction quality and sustainability standards. www.afswall.com.au



For over 90 years, AIROCLE has provided the building industry with effective and environmentally friendly solutions for natural building ventilation and smoke hazard management. AIROCLE has substantial expertise, experience, and an absolute dedication to satisfying ventilation and smoke hazard management needs and expectations to deliver a comprehensive range of natural air, smoke, heat, and pressure ventilation, and smoke hazard management. The result is some of the most reliable, effective, and energy efficient solutions available for commercial, industrial, and community projects. www.airocle.com.au



Established in 1974, ALSPEC is the market leader in the design and distribution of innovative, high performance aluminium systems to the architectural, industrial, and home improvement markets. Our extensive range of window and door systems is suitable for all commercial applications and is complemented by our Carinya residential range and our Invisi-Gard Stainless Steel Mesh Security System. ALSPEC is synonymous with excellence in design and superior performance. www.alspec.com.au



Ancon Building Products designs and manufactures high integrity steel products for use in masonry and concrete construction, and has earned a reputation for quality and technical expertise. The company operates from advanced manufacturing facilities and supplies projects worldwide ranging from small-scale residential developments to major infrastructure projects. www.ancon.com.au



Bupa Aged Care St Ives, NSW



Australia's aged care sector, specifically the 5.5 million baby boomers born between 1946 and 1964, is fuelling one of the country's fastest-growing housing segments: retirement accommodation. It is this rapid maturing of the country's demographic profile that is influencing the nature of how seniors live, spearheading a boom in the retirement living sector.

With the number of citizens in aged care expected to grow exponentially in coming decades, increasing investment in residential-care projects means large commercial operators are building new facilities "as quickly as they can secure appropriate space and funds." CoreLogic reported that March 2017 alone saw \$340 million in aged-care building approvals.

Given the increasing competitiveness between aged-care operators, architects, engineers and builders are under greater pressure to provide cost-effective construction solutions that offer fast floor cycles and maximum floor space. That's where AFS fits in.

The afs rediwall® pvc and logicwall® fibre cement based permanent formwork walling solutions are building better aged-care facilities thanks to faster completion times and significant cost efficiencies.

"Aged-care providers want cost-effective construction, premium finishes and strict adherence to completion times," said AFS Senior Sales Consultant, Andrew Horsfall. "So, it's no wonder industry professionals turn

to AFS walling systems to help meet all of those demands."

Load-bearing to 30 floors, afs logicwall® is a fibre cement permanent formwork system that has been specified in numerous aged-care projects for its reduced footprint, robustness and reliably uniform surfaces.

Logicwall® is delivered with shop-drawn accuracy, with corresponding labels for easy installation. Panels are load bearing but lightweight enough to enable manual installation, eliminating the need for a crane.

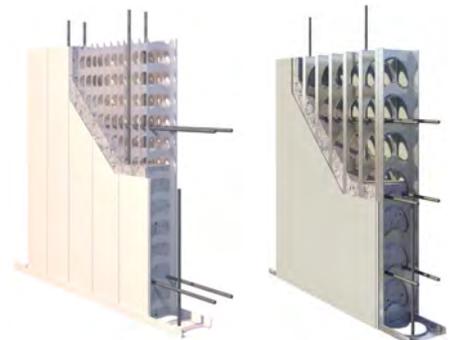
While the afs rediwall® pvc formwork system is easily handled, it features innovative panels that readily snap or slide into place, making for rapid installation and core filling in almost endless applications. The resulting semi-gloss finish provides a low maintenance surface, with the option for further finishing as specified.

Bupa's aged-care facility, situated in the leafy suburb of St Ives on Sydney's Upper North Shore provides 98 single, streamlined ensuite rooms architecturally designed over four levels to provide residents with individual care.

"Due to this project's repetitive room setout, AFS walling provided a simple structural solution – saving both time in design and construction," explained Michael Grogan, director of Birzulis Associates architectural firm.

Installed by HD Projects, 3,725m² of afs logicwall® and 1,033m² of afs rediwall® were used for internal and external walls and lift cores.

With an increasing number of retirees preferring to 'age in place,' and more taking control of decision-making relating to their care, the construction sector is going to rely heavily on reputable and reliable building solutions like AFS to satisfy the 5.5 million baby boomers.



Left: afs rediwall®
Right: afs logicwall®



Australia's premier aged-care facilities are constructing with AFS

Amari Bondi, NSW



Located in the heart of iconic beachside suburb Bondi, the recently completed Amari development has maximised views, natural ventilation and safety by utilising a combination of Alspec's KidScreen window products, Air-Flo frames and Breezway Louvres. The development's incorporation of these window solutions ensures the location's northerly aspects and ocean views are optimised for each of the 32 apartments across the building's nine levels.

KidScreen provides all the advantages of traditional window screens, with the added protection of fall-prevention features. Specifically designed by Alspec to prevent falls from windows, KidScreen may look similar to a fly screen, but has been proven to protect children by withstanding pressure and outward force tests, as prescribed in Australian Standards and in line with the National Construction Code. KidScreen also addresses the recent amendments to Strata Laws which require restrictions or protection on openable windows where the floor below the window is more than two metres above the surface beneath.

In a location such as Amari Bondi, a screening option, rather than a window opening restriction device, is the ideal solution as it allows windows to be fully opened as required, capturing the prevailing sea breezes in the warm summer months. To further enhance natural ventilation, the KidScreen products have been paired with Air-Flo Frames and Breezway Louvre windows.

Louvre systems maximise natural cooling and ventilation while maintaining light and views. Modern louvres also feature specifically-designed seals which protect from the elements, reduce noise, and are easy to operate and clean from inside the building. Although Breezway louvres satisfy the Building Code of Australia's window restriction requirements, pairing them with KidScreen products provides additional safety assurance in the multi-level building environment.

As well as Alspec's window solutions, the Amari development features ProGlide High Performance sliding doors to provide resident access to ocean view balconies and entertainment courtyards. Designed and developed in the commercial environment, ProGlide doors offer noise-reducing benefits and include drop-in tracks, which provide exceptional all-weather performance; both desirable features in a busy beachside suburb such as Bondi.

The selection of Alspec's premium window and door solutions will ensure the new occupants of this premium development can enjoy their ocean views and benefit from natural ventilation, relaxed in the knowledge that all windows are fully protected and safe for their families and visitors.

Architect: Architects Nicholas and Associates (AN+A)
Photographer: Tyrone Branigan Productions



Top: ProGlide High Performance Commercial Sliding Doors

Bottom: Breezway Louvre Windows with KidScreen Fall Protection Screens

Rail Operations Centre Alexandria, NSW

Ancon®

Ancon worked closely with the project design team and specialist masonry contractor, Favetti, on the delivery of the new Rail Operations Centre in Alexandria, Sydney. The scale and complexity of this stunning project presented a number of unique challenges, demanding Ancon's expertise and innovative thinking.

A key feature of this striking new building is brick-clad arches spanning the full length of two elevations. With the design requiring bricks on both the soffit and the face of these gigantic arches, it was identified that traditional masonry hanging systems, typically used over shorter brick runs, were not going to be practical here and a different solution was needed.

It was agreed that the bricks would be cast into the structural concrete beams on site.

The brickwork was positioned within the formwork of the huge concrete beams and Helifix stainless steel helical pins were used to mechanically bond the masonry and concrete together.

Helifix, a division of Ancon Building Products, invented the one-piece stainless steel helical tie over thirty years ago. Together with their associated concealed, non-disruptive, installation techniques, Helifix products provide many benefits, from the simplicity of their design to their ease of installation and long-term performance. They combine the required strength with flexibility, durability and great holding power in all commonly-used building materials to produce secure and lasting connections.

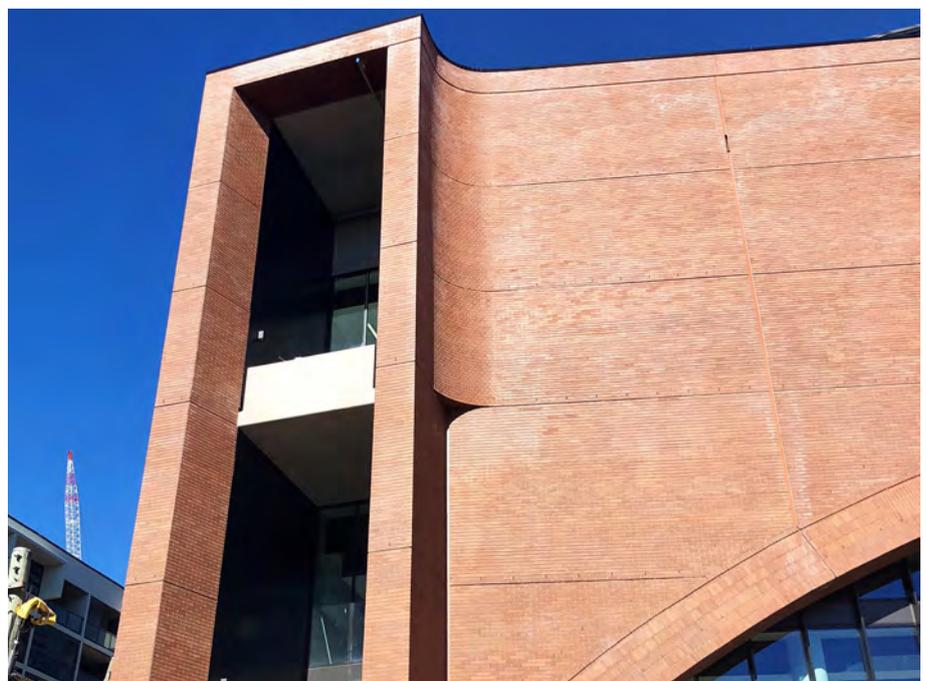
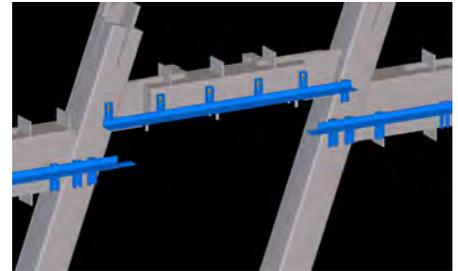
One end of the pin was driven into the bricks with the other end left exposed in the beam's reinforcement cage to form the bond with the concrete when cast.

After curing, the formwork was stripped to reveal the brick facing and the joints were pointed with mortar to look like traditionally laid brickwork.

This system proved to be so successful it was also adopted for the soffits on the deep reveal openings further up the elevation.

Another challenge on the project was the coordination of the complex secondary steelwork frame with Ancon's masonry support system. These systems were designed for the building's special features, such as sloping window reveals and splayed feature joints.

To overcome the issues, Ancon used Tekla BIM software to model its support angles around the 3D model provided by the structural steelwork contractor. This collaborative tool enabled support angles to be designed accurately, and all parties were able to visualise the complex arrangements ahead of fabrication and assembly on site.



Top: BIM software used to model Ancon brick support angles
Middle: Bricks with Helifix pin anchors laid in the formwork
Bottom: The finished facade at the rail operations centre



Armacell is a global innovator in foam technologies and the world leader in the market for flexible technical insulation solutions. Our market coverage is second to none, with 3,000 employees and 27 manufacturing plants in 17 countries.

Half a century ago, Armacell was the first to develop an elastomeric insulation product. Armacell since then has had a focus on continuous innovation, supported by research and development teams across the globe, ensuring the ARMAFLEX range continues to deliver excellence in performance and quality.

Armacell provides insulation solutions for mechanical piping, and tanks in both commercial and industrial applications including solar, ducting, refrigeration, and hot or cold water. www.armacell.com.au



ASKIN® is a leading manufacturer and installer of insulated architectural facade systems, roofing systems, and temperature controlled facilities in Australasia. We embrace a customer first approach in delivering sustainable lifetime value. With a network of 12 sites throughout Australia and New Zealand, ASKIN®'s vast experience has been built upon a strong foundation dating back to 1964. ASKIN®'s culture of customer first, constant improvement, quality, and safety assurance is supported with our technical expertise and ISO 9001 accreditation. www.askin.net.au



ASSA ABLOY is the global leader in door opening solutions, dedicated to satisfying end-user needs for security, safety and convenience. Under the iconic brands such as Interlock, Lockwood, Witco and Yale, ASSA ABLOY Australia has long been developing innovative products. In the growing electromechanical security sector, the Group has a leading position in access control, identification technology, automatic doors and security. www.assaabloy.com.au



Architectural Window Systems (AWS) is one of Australia's leading suppliers of aluminium window and door systems. AWS offers an extensive range of Australian designed aluminium window and door suites for residential and commercial applications. AWS designs, tests, finishes and supplies aluminium window and door systems under the Vantage®, Elevate™ and ThermalHEART™ brands to more than 200 licensed manufactures throughout Australia. www.specifyaws.com.au



B&D Group is a leading manufacturer and supplier of doors and secure access systems serving the architectural, residential and commercial markets in Australia and New Zealand. With over 60 years of experience and part of ASX listed DuluxGroup the B&D brand is synonymous with quality, security, reliability and sets the industry standard. With manufacturing facilities across Australia, New Zealand and China, we are home to the largest range of garage door and secure access systems. www.bnd.com.au



CSL Behring Manufacturing Facility Broadmeadows, VIC



Lifesaving blood plasma products are not something you would normally associate with ASKIN Performance Panels, but when CSL Behring gave the green light to construct a \$64 million facility in Broadmeadows, ASKIN Performance Panels was honoured to be involved.

The CSL Behring manufacturing site required an expansion to its existing premises to help meet growing demand for its global critical-care therapy.

A5 Architects was the architect of choice, and the building contract awarded to Cockram Construction Pty Ltd, who engaged ASKIN for the installation. A5 Architects specified ASKIN's XFLAM fire performance panel to be used for external façades, internal walls, ceilings and pharmaceutical clean rooms.

A5 Architects Director, Raymond Kenyon, said ASKIN has a proven record with pharmaceutical clean rooms and sterile environments, its experience made it a logical choice for specification.

"One of the deciding factors in working with ASKIN products was the XFLAM panel. Its great insulating and strength properties, but most importantly its

accreditations and fire performance, mean our clients are easily approved for insurance, making life easier for everyone," said Kenyon.

ASKIN worked closely with Cockram Construction to install 23,900m² of XFLAM insulated panel.

The size and detail of this project resulted in many challenges. Continuous design changes meant responsive drafting, product manufacturing and flexibility of site resources were the keys to success.

With more than 150 various tradespeople on site at any one time, all with their milestones and objectives, communication was imperative regarding on-site access and product movement.

Furthermore, the design itself was complicated due to the heavily detailed brief. ASKIN's engineering resource was used throughout the build to ensure the structural integrity of connections.

ASKIN provided complex airtight clean rooms, with high-performance joints and connections to ensure a complete clean facility. All lighting and mechanical services were concealed, recessed and sealed off to meet client specifications of no visible mechanical fixings.

In addition to this, custom-made door frames, stainless steel framed rapid clean doors, sliding doors, and ultra clean single and double-glazed windows were specially manufactured to suit the pharmaceutical environment.

All ASKIN door and window products featured concealed fixing and flush finishes for ease of cleaning and sanitisation in a highly sensitive clean room space.

Cockram Construction Project Manager, Ronald Schack said a quality outcome focus, backed by support for design and delivery, was what they wanted in a partner, and that's what the ASKIN team delivered.

"It's great working with a group of people with a common goal and working with the ASKIN team was no exception on our CSL Behring project," says Schack.

"It was a pleasure to work with a company whose values, performance and approach align with our own."

The newly completed expansion of CSL Behring world-class manufacturing facility allows them to double the output of an in-demand blood plasma product for patients facing major surgery, trauma or serious infections and burns.



Left: The external cladding design created depth and shadow throughout the horizontal and vertical elevations



Right: ASKIN provided airtight clean rooms and ensured a complete clean facility



Beaumaris Secondary College Beaumaris, VIC

ASSA ABLOY

Beaumaris Secondary College opened its doors for the first time in early 2018 to Year 7-12 students for Beaumaris and the surrounding area. As part of the design for their brand new facilities, the school was dedicated to environmental awareness, including development of a wetland area to provide educational opportunities and environmental benefits.

ASSA ABLOY considers environmental awareness and sustainability as an important part of design decision making in the built environment, and customers are increasingly demanding transparency on environmental impacts. Key decision makers are showing a strong desire to partner with organisations that are proactive with respect to sustainable practice and operational efficiency to minimise energy usage, water usage and waste generation.

The ideal education building for students and administrators is one that offers easy access, while maintaining security and accountability. This delicate balance, coupled with more complex demands to improve sustainability and energy efficiency, calls for careful selection of doors and hardware.

ASSA ABLOY is committed to providing products and services that are environmentally sound throughout the entire production process and the product life cycle:

- Sustainability is viewed as an essential driver and important element in product and employee development, sourcing, cost savings and waste reduction. ASSA ABLOY globally has set a range of ambitious sustainability targets for 2020, including a 20% reduction in energy consumption and a 50% reduction in the use of organic solvents.
- Environmental Product Declarations (EPDs) are independently verified documents that indicate the life-cycle environmental impact of a product – from production, through its working life and ultimately to

disposal at end of life. ASSA ABLOY continues to expand its range of hardware products certified with EPDs, striving to reduce the impact its products have on the environment while ensuring they can remain cost relevant.

In an environment where the use of non-conforming building products in the Australian built environment is a contentious issue, customers and end users can rest assured that ASSA ABLOY's Australian made and designed products satisfy necessary requirements of the National Construction Code (NCC) and exceed expectations for safety, physical security, durability, and corrosion resistance.

In partnership with Clarke Hopkins Clarke Architects, ASSA ABLOY also utilised its Openings Studio software program to help reduce costs and the environmental impact of construction documentation.

Openings Studio:

- Offers a suite of BIM software tools for creating and visualising 3D doors, frames, and hardware objects for use in design, construction, and facility management.
- Integrates directly with BIM design software, such as Autodesk Revit, to seamlessly transfer project data for complete door hardware schedules and specifications.
- Eliminates the need for traditional 'hard copy' information (reducing waste), while creating work-flow efficiencies and time savings (reducing costs).

With ASSA ABLOY hardware products installed throughout the Beaumaris Secondary College, the school can rest assured that the portions of the building used perhaps more than any other (door openings) are helping to improve sustainability and reduce environmental impact throughout the life cycle of the building.



ASSA ABLOY offered door opening solutions that address both the code requirements and student needs that drive facility design in schools



0455 LOCKWOOD door hardware

www.assaabloy.com.au

Macarthur Clinical School Campbelltown, NSW



Resurrected from its previous location in a stuffy hospital basement, Western Sydney University's Clinical School now stands proudly at the gateway of the university precinct. The new multi-storey space combines a striking façade with glorious expanses of glass to connect students, staff and visitors with the great outdoors, while providing a state-of-the-art educational environment.

The façade is effectively made up of two stunning 'skins' – bronze/aluminium and white parametrically-designed cladding, which was fitted into AWS ThermalHEART™ commercial framing, supplied and installed by Evolution Windows.

"We did something quite unique with this window system," said architect, Chris Aucott of Architectus. "We actually reversed it so that we had more depth in the mullion on the outside to help us create a bit more light and shadow on the façade." Sun fins have also been attached to the AWS Series 826 mullions.

Thermally broken 150mm Series 826 framing has been used to house both wall panelling and glazing throughout the building, while the interior walls

consist of insulation and pin board that can be utilised by teachers in their classrooms.

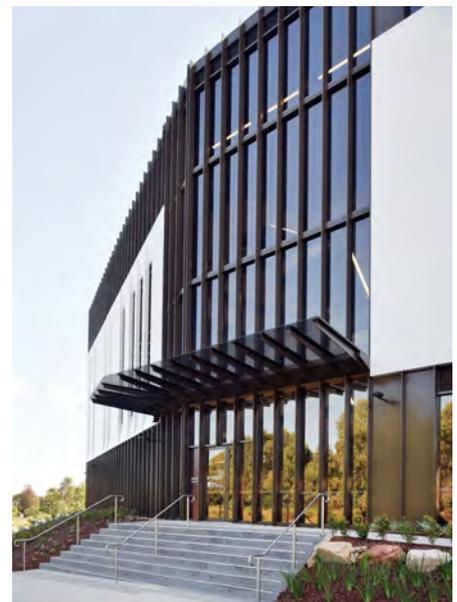
"I'm really proud that we've created a building for the users so it's not only just a great piece of architecture delivered on time, within budget, but it's a space for people, and a space where people can grow and interact and learn...we've created spaces where people can engage with each other, and hopefully it benefits their education," said Aucott.

The Commercial ThermalHEART™ FrontGLAZE™ Framing Series 826:

- Incorporates ThermalHEART® technology to deliver excellent thermal performance, and is ideal for tall commercial frames.
- Has a 28mm deep glazing pocket caters for glass installation and 12mm bite as required by IGU manufacturers.
- Is available as internally glazed or externally glazed.
- Allows re-glazing from inside with true captive glazing wedge – ideal in elevated applications. The captive wedge also offers increased security.
- Has glazing wedges that are recessed into the framing for a clean aesthetic appearance.

- Uses a wide range of thermally broken sub-frames to cover, including sub-sills with integrated nailing fin ideal for residential installations.
- Has internal and external swing hinged door thresholds.
- Has 50mm thick doors designed to accept wide back-set locks.
- Delivers up to 33% more efficiency than standard double-glazed windows when used in conjunction with double glazing.
- Is designed to fit multiple glass thicknesses, allowing easy and always compliant installation by your local supplier.
- Has sub-sills designed to support heavy double glazed frames and maintain the thermal break; dual colour options are available.
- Sub-jamb with pressure bead on the inner face available to make installation easier.
- Offers both snap-together and expansion mullions. AWS recommends expansion mullions on long runs of framing (over 6m).

Architect: Architectus
AWS Fabricator: Evolution Window Systems
Photographer: Marcus Clinton



Evolution Windows provided totally bespoke solutions, fully designed and tested to meet the architect's specific design intent



Kennards Self Storage Murarrie, QLD



The recently completed Kennards Self Storage (KSS) centre in Murrarie is an example of where B&D was able to provide not only a solution but was able to align with the customers key centre KPIs.

The Kennards brand now proudly boasts being the largest self storage operator in Australia. It is founded on values of quality, value, convenience and innovation. The entire KSS team strives to provide customers with an exceptional storage experience.

The KSS brand and corporate profile colours can be seen proudly displayed in every corner of every complex. This profile extends to the individual storage units, with the storage lockup door having a high gloss corporate finish.

Provision of a high-gloss finish on a rolling door product presents an issue for many suppliers, as the process of rollforming sheets leave the door with a curve in each sheet. The view of this belly in the vertical sheet is then enhanced by the consumer position of looking across the door down a walkway.

B&D overcame this issue with unique 'brake press' technology, stamping a rigid structural pattern onto each Roll-A-Door®. The door curtain remains flat, providing a clean vertical line on even the glossiest of finishes.

Beyond superior clean lines, the B&D Roll-A-Door also aligns to the high operation standards Kennards sets for its consumer experience. B&D ensures this standard is maintained with the following product engineering tested standards:

- Helical spring operation tailored to every door size.
- Low Maintenance Nylofelt running strips.
- Double run bottom rail roller blocks.
- Bottom rail guides stops tests to stringent Australian standards.

These provide Kennards with the peace of mind in knowing that the ongoing maintenance of the complex is reduced to a measurable standard that is set in place from day one.

In addition to the individual storage unit security, B&D was also able to provide a large access shutter door solution with automation to the loading area of the Murarrie project.

Working with its parent partner Dulux Powders, B&D was able to precisely match the corporate colour profile. Utilising its one group automation solution, B&D was also able to intelligently integrate into the centre's advanced access control system with ATA superior logistics.

B&D is proud to be aligned with the Kennards Self Storage team and looks forward to working with them on future projects.



B&D doors provide clean lines using its 'brake press' stamping technology, aligning with Kennards' operational standards





NATSPEC fulfils a critical role in the building and construction industry in the provision and dissemination of information, which not only assists those in the supply chain to conduct their day to day activities, but also assists in the standardisation of practices across the industry that produce better building quality outcomes, as well as outcomes in value for money delivery, health and safety, and innovation. I congratulate NATSPEC on the quality provision of service it has delivered for over 40 years, and look forward to working collaboratively with NATSPEC to continue to provide value driven services for our combined membership for many years to come. Consult Australia takes great pride in our founding membership of NATSPEC, and highly recommends NATSPEC documents to our industry.

Megan Motto, Chief Executive Officer, Consult Australia



BlueScope is a leader in the provision of high quality metallic coated and painted steel products for the building and construction sector in Australia. Our most notable brands are COLORBOND® steel and ZINCALUME® steel.

BlueScope products are now an integral part of both new and retrofit housing, commercial, and industrial projects. www.bluescopesteel.com.au



Bostik Australia is supported by a worldwide research and development resource, keeping it at the forefront with new and innovative technologies. The company is committed to providing sustainable and innovative solutions that combine technological performances, ease of use, cost effectiveness, and respect for the environment.

Bostik actively integrates green building initiatives through developing products that have minimal impact on the built and natural environment. Bostik Australia has over 100 products that meet Green Building Council Australia low VOC criteria. www.bostik.com.au



Capral Aluminium was established in 1936 and is Australia's largest manufacturer and distributor of aluminium profiles. Our comprehensive range of Commercial Residential Security and Industrial products has an enviable reputation for quality, style, and high performance. As a local systems designer and NATA approved tested authority with innovative R&D capabilities, we are well positioned to take advantage of changing building regulations in Australia and technically support our brands including ARTISAN, Urban, Futureline, Amplimesh, Intrudaguard, and AGS. www.capral.com.au



Con-form Group is an energetic team dedicated to providing Australian designed and value engineered products that are quick to assemble, lightweight, and affordable platform systems with a 20 year warranty standard. Con-form's growing series of structurally unique aluminium products are creating a new dimension in the approach to surface mounted platforms, and are designed to eliminate the need for any cutting or welding, providing excellent flexibility and error free assembly, unlike traditional engineering methods. www.con-formgroup.com.au

Pullman Ibis Hotel and Conference Centre Brisbane, QLD



Located at the Domestic Terminal precinct of the Brisbane International Airport, the Pullman and Ibis Hotel complex was completed in October 2017. The development is being boasted as a new benchmark in Brisbane's executive travel industry, with an all-inclusive offer that will cater for the emerging needs of corporate travellers.

The project required specific joint designs for internal passive fire protection and external facade sealing. Bostik presented a full, warranted system with monthly technical inspections during the construction to ensure correct application and adherence to joint design.

For external facade applications, Bostik specified its Seal N' Flex 1 Polyurethane Sealant. This product demonstrates market-leading performance for flexibility and weatherability and is Bostik's premium recommendation for expansion joints in precast concrete and aluminium façades. Bostik technical support was present during the design and build to ensure compliance to best practice application and advise where necessary.

Bostik Fireban One was recommended for the internal and external fire-rated expansion joints. Fireban One is the most highly-specified polyurethane fire-rated sealant in the Australian market



and was specifically requested by the contractor during the build. Bostik also recommended Bostik Firecaulk, a fire-rated acrylic sealant, as an economical alternative for the internal applications.

During construction, inspections revealed that several of the expansion joints were below the minimum required dimensions. In general, it is recommended to have a 20mm width and 10mm sealant depth for expansion joints in precast panels. However, of the joints assessed, some were as thin as 4mm in width. Once put into service, this would have seriously compromised the expansion capabilities and could have lead to cracking in the precast panel.

This would have also have compromised the passive fire protection of the sealant which would have been too thin to stop the transfer of heat and would have degraded much faster than that which was specified. In this instance Bostik recommended the joints be completely resealed. Unfortunately, this resulted in repeated labour and the panels needed to be abraded back to the correct dimensions. The reparations at this stage of construction saved what could have been difficult and expensive repairs later.

Architect: Noel Robinson Architects
Builder: Watpac Ltd
Developer: Flynn Property Group



The complex is comprised of the 5-star Pullman Hotel, 3.5-star Ibis Hotel and the Brisbane Airport Conference and Meeting Centre, covering almost 8,000m²



Peppermint Grove Residence Perth, WA



The recent extension and renovation of a home in Perth demonstrates the power of high-quality aluminium glazing to unify different architectural styles and themes. For this project, the entire home's expansive windows and glass doors have been aesthetically linked using anodised bronze aluminium glazing. Commercial-grade Capral products were used in the project, including large Capral AGS 900 Series sliding doors and Breezway louvres.

"Our starting point was an early limestone-façade residence, which had an addition put onto it in the 1960s," said Don Taylor from DTDA Pty Ltd. The addition, which served as a rear-property carport with a granny flat above it, was incorporated into the new works. "We ended up transforming the original garage into a family room, and above it we created a new master bedroom with ensuite and robe, overlooking the swimming pool," said Taylor. A separate stand-alone garage, topped by an expansive spare bedroom, was built to replace the converted carport.

To create confident and strong additions without segregating the residence into 'old and new' precincts, Capral products were used consistently throughout the home, starting with the original limestone façade. Original timber French doors were removed and the cavities heightened to accommodate new fixed-glass aluminium windows and louvred panels. The extra height of the frames conferred a contemporary styling on the old façade without undermining the heritage of the limestone.

Complementary aluminium louvre windows also work well as aesthetic anchors, thanks to their practicality and security. The dark bronze anodised finish, used throughout the residence, underscores the solidity of the glazing while embracing the timelessness of a burnished surface.

The modern additions at the rear of the residence harmonise effectively with spacious rooms and expansive glass panels. Commercial-grade Capral

AGS 900 series sliding doors were chosen due to their high load capacities and rugged rollers, allowing for the installation of extra high glass panels without difficulty. The sliding doors can bear loads up to 250kg and individual glass panels up to 3,000x2,500mm.

"We chose Capral because I really like those big sections; they look really terrific, particularly with the older type house with high ceilings. We always like a lot of glass, and those frames really suit big expanses of glass," said Taylor.

Unobtrusive door furniture, also finished in anodised bronze, was supplied by

Halliday + Baillie. "Everything is quite neutral but soothing and calming. The floors are a dark brown colour, which assisted with the colour of the windows," Taylor added, concluding that he and the clients are delighted with the end result of the project.

Builder: MAEK
Designer: DTDA Pty Ltd
Glass: Viridian
Glass/Glazing Installation: Jason Windows
Photo: Joel Barbitta, D-MAX Photography
Window/Door Furnishings: Halliday + Baillie



Disparate architectural styles, commonly found when an older building is extended with modern additions, often call for a thematic 'thread' to unite mixed visual elements

Sydney Light Rail Sydney, NSW



The CBD and South East Light Rail is a new light rail network for Sydney, currently under construction. The 12km route will feature 19 stops, extending from Circular Quay along George Street to Central Station, through Surry Hills to Moore Park, then to Kensington and Kingsford via Anzac Parade and Randwick, via Alison Road and High

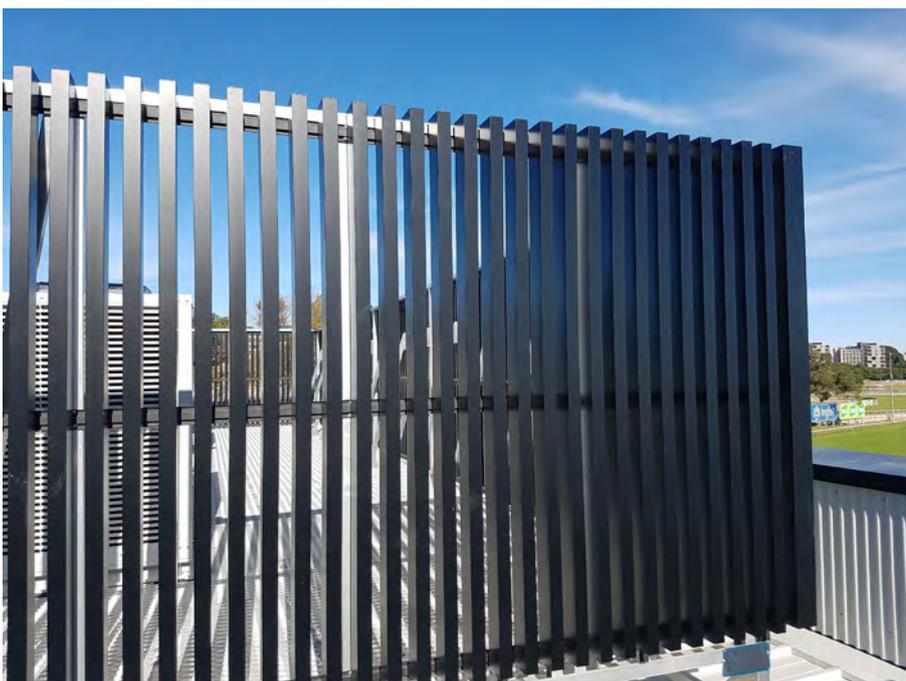
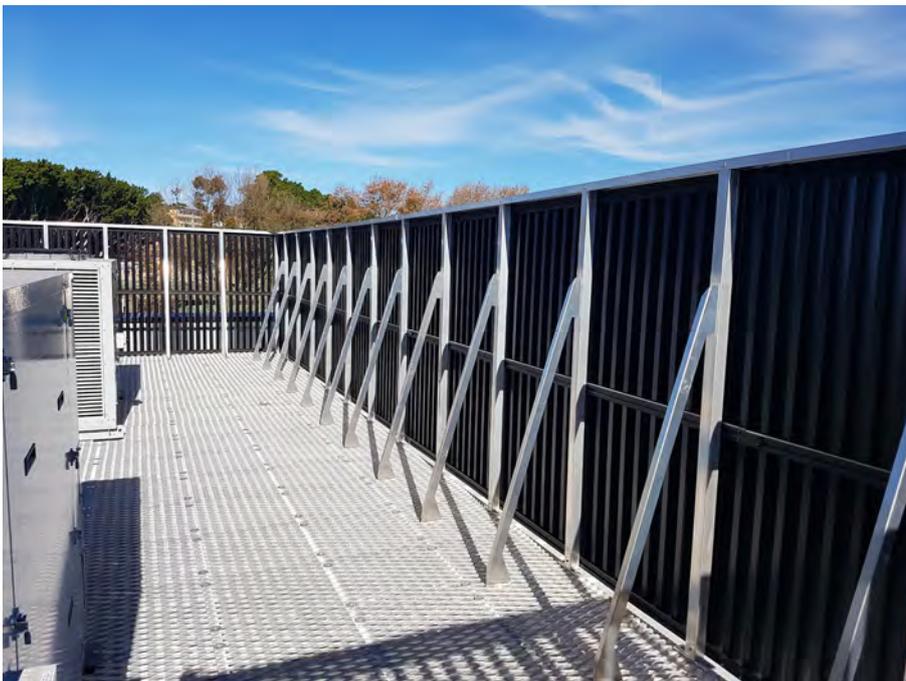
Street. Con-form Group was chosen to provide surface-mounted plant platform systems atop each substation in the project.

One of ACCIONA's challenges was to enclose a large array of mechanical plant equipment across several sites, while providing architectural screens

to conceal unsightly plant machinery from nearby residents and travellers in a suitably aesthetic manner.

Con-form's Series 3 raised platform system was chosen over traditional methods for several key benefits:

- Pre-engineered and certified system with ratings of 2.5kPa, 5.0kPa, and greater if required.
- Less structural steel required in the build, as the innovative design of the platform spreads loads evenly.
- Speed of build – only two to three days required to construct each platform.
- Surface-mounted design means zero roof penetrations and zero building leaks.
- Lightweight system reduces crane lifts and allows flexible positioning on the roof.
- Adjustable start height flexibility, ranging from 300-1000mm, allows greater airflow to machines.
- All aluminium construction with stainless steel fixings boast a 20-year warranty standard.
- Industry-leading acoustic treatments that are part of proprietary systems.
- Cost effective when compared with traditional structural steel solutions.
- Design flexibility, including custom solutions and screen treatments.



The decision was simple in the end and the clean and contemporary feel of the Con-form platform blends seamlessly into the surroundings, while providing important functionality at the same time. Con-form Group provided architecturally-suitable screens to integrate into surrounding architecture.

The minimum start height of 500mm was required on all platforms, allowing for additional airflow. This ensures optimum performance and longevity of machinery, while providing adequate access for installation of pipework, and further access for future maintenance.

Architect: Grimshaw Architects
Builder: ACCIONA Construction
Project: Sydney Light Rail Project

The Series 3 raised platform system installed across various sites on the rail network





CS Group started out in 1986 manufacturing CS Cavity Sliders. Our mission is to engineer and manufacture the best and most innovative door solutions. Over the years we have continued to rapidly develop new products, including track systems, wardrobe sliders, aluminium door leaves, and most recently, automated cavity sliders. www.cavitysliders.com.au



DAMTEC is part of the KRAIBURG Group (Est. 1947), an organisation rich in tradition with over 2000 employees worldwide and an annual sales volume of approximately \$500 million. It is an internationally acknowledged and recognised manufacturer of ready-to-install products for impact sound reduction. www.damtec.com.au



Danpalon is a patented glazing snap-connection system with concealed fasteners that provides for 100% watertightness; free structural and thermal movement within a flexible system; structural properties that allow for a significantly reduced substructure; quick and easy installation; the elimination of gaskets and sealants; the elimination of fixing penetrations through the sheet; and 99.9% UV protection with the protection coating co-extruded with the sheeting, eliminating any chance of delamination. www.danpal.com.au



In Melbourne, Deflecta Crete Seals develops and manufactures protection products for concrete. Designed specifically to kill bacteria on and within the concrete matrix is DEFLECTA ANTIMICROBIAL®, Australia's only Government Certified and Registered product for bacteria control. Deflecta's product range also targets moisture control, hydrostatic pressure, mould, mildew, fungi, dust, and slip resistance for Industry Sectors such as Health, Food Processing, Warehousing and Manufacturing, Freezer and Chillers, Car Parks, Schools and Sports Centres, Animal Husbandry, Equine, and Kennel facilities. www.deflecta.com.au



Dintel Construction Systems is a lightweight, 'snap together' modular formwork that is suitable for constructing virtually any type of load bearing structural wall. Architects and building designers can enjoy complete creative freedom by specifying Dintel to build straight, curved, slanted, and cantilevered concrete structures. Dintel walls are also complete waterproof, fire resistant, and can be finished in a range of external wall finishes. www.dintel.com.au



DTAC is an Australian company with over twelve years' experience in design and manufacturing excellence, all backed by industry leading support. DTAC comprises a specialist team of professionals that prides itself on offering beautiful, BCA compliant, architectural tactile ground surface indicators and stair and joinery edging products. DTAC's range also includes urban landscape edge protection and more. DTAC's unequalled attention to detail enables architects, designers, and builders to make the right choice for aesthetic and functional conformance in every project. www.dtac.com.au

Double Bay Residence

Double Bay, NSW



Overlooking a sheltered bay within Sydney's world-famous natural harbour, this family home by SAOTA Architects (in association with TKD Architects) efficiently creates private, sheltered spaces for family living, whilst maximising wide outlooks towards the water and beyond.

The design features Kaynemaile-Armour mesh screens positioned to provide solar shading and privacy in Sydney's harbourside suburb of Double Bay.

The screens were conceived as floating planes. This made it essential to find a solution with a seamless appearance and a discrete framing system. Kaynemaile-Armour has the unique ability to be manufactured seamlessly to any dimensions. This creates a completely unprecedented clean visual appearance.

The standard framing system for Kaynemaile-Armour is minimal and can be easily installed onto basic steel. The

top and bottom of each screen are framed with small stainless steel tubes held by hooks. A low-profile aluminium track secures the vertical edges.

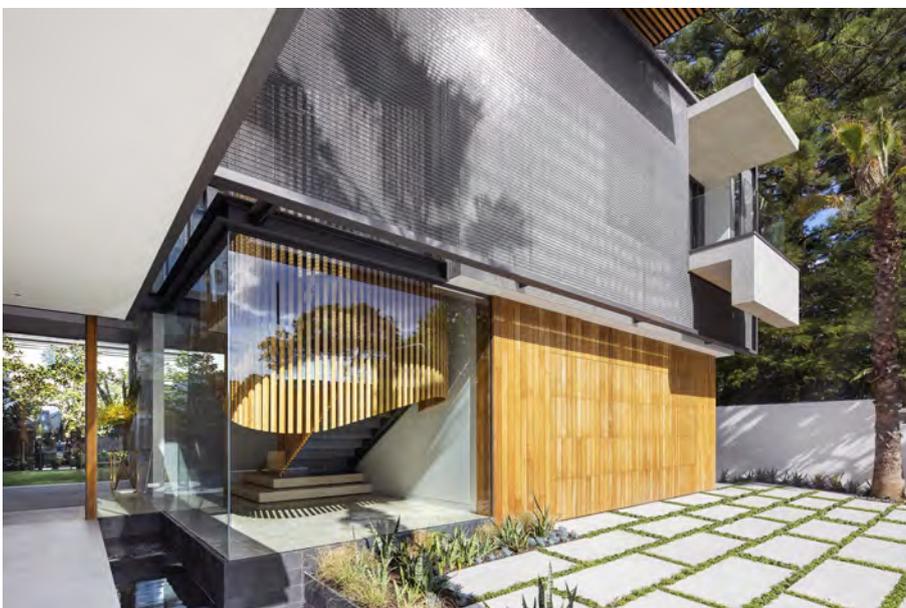
Offsetting the screens from the facade created significant depth and shadow. It also allowed for concealment of well-placed architectural lighting, which was used to highlight the range of textures and materials used on the facade.

In addition to the fixed screens, the house incorporates automated Kaynemaile-Armour solar screens. These are operated by a solar management system that detects the sun and moves the screen positions automatically, creating an innovative façade solution.

The screens can easily withstand the demanding coastal environment and extreme Southern Hemisphere sun without compromising their significant tensile strength. Since Kaynemaile-Armour is not made from metal, there is no risk of façade staining due to oxidation or corrosion.

The engineering grade polycarbonate, from which Kaynemaile-Armour is manufactured, is extremely resilient and inherently insulating, with low thermal conductivity. Kaynemaile-Armour does not store heat like metal products do; it remains at near-ambient temperature to protect the building from conductive heat gains. The three-dimensional mesh structure means more of the mesh surface area is in shade and a higher level of ventilation is possible, when compared to conventional steel mesh products. Kaynemaile-Armour allows approximately 80% free air movement, so the cooling effect of afternoon breezes can be maximised.

These unique physical and design properties reduce solar heat gain into the building envelope by up to 75% without losing visual transparency – a key requirement in this beautiful location.



Kaynemaile-Armour mesh screens provide this Double Bay residence solar shading and privacy, combining functionality and aesthetics



ALDI Stores VIC, NSW, QLD, SA and WA



DEFLECTA ANTIMICROBIAL® and DEFLECTA SURFACE BINDER® are approved by HACCP Australia/International. HACCP endorses these floor surfacing products as being suitable in food processing and food handling/storage environments in facilities that operate in accordance with the HACCP based Food Safety Programme, specialising in Food Safety methodology and its applications.

With a working relationship of over 12 years, investing on research and development and sampling trials, DEFLECTA® carries out works for new and upcoming stores for ALDI, as well as refurbishments of existing stores. Regular on and off-site meetings are also held with ALDI and its architects/specifiers, designers and base builders. DEFLECTA® will continue to propose and develop innovative, specific products and/or applications to ALDI and its partners for flooring solutions to its facilities for finishes it requires.

History

DEFLECTA® manufactures specialised products that seal and protect concrete floors, including its signature product DEFLECTA ANTIMICROBIAL®, which kills pathogens on the surface and within the matrix of the concrete.

After discussions between DEFLECTA®, ALDI and its designers in 2005, a prototype area was created to assist ALDI in protecting their high-traffic floor areas. Upon assessments and trials, ALDI approved the system and in 2006, DEFLECTA® commenced its first job in the Back of House, Loading Dock and Switch Room areas at 'The Pines, Victoria.' DEFLECTA® then expanded throughout the ALDI stores in NSW, QLD, SA and WA. Over time, this led to the same application being carried out in ALDI's freezer and chiller rooms.

The Solution

DEFLECTA ANTIMICROBIAL® acts as a preventative measure to kill bacteria within the concrete matrix and concrete surface areas. The application process is finished with DEFLECTA SURFACE BINDER® to seal the concrete floors.

For bacteria control, a curing agent and moisture suppressant, DEFLECTA ANTIMICROBIAL®, is applied at the time of concrete pour, followed by an application of DEFLECTA SURFACE BINDER® to prevent surface dusting, as well as increasing strength and abrasive surface resistance and elimination of efflorescence.

Progress

For a hydrophobic and densifying surface sealer, DEFLECTA TOPEL® has been applied to ALDI car parks to densify and dust proof the concrete, increasing wear and slip resistance and decrease permeability to liquids. More recently ALDI applications of DEFLECTA STABILIZER® have been carried out to ALDI front of house/retail floor areas for moisture control to prevent vinyl floor coverings lifting, due to excessive moisture within the concrete matrix.



DEFLECTA® products being applied to ALDI store floors, preparing the surfaces for use

Eclipse Apartments Bruce, ACT



Dincel partnered with leading Canberra builders and architects, delivering well-located, functional and flexible housing options

CHC (Creating Homes and Communities) Affordable Housing is a not-for-profit development company delivering affordable properties for sale and rent, for Canberrans on low to moderate incomes. Partnering with leading Canberra builders and architects, the organisation is focused on delivering well-located, functional and flexible housing options that are redefining the concept of being 'affordable.'

In constructing its Eclipse Apartments project in Bruce, ACT, architects and builders were briefed to create a complex build that would deliver both economic outcomes and adhere to the environmentally-sustainable principles desired by the client. Dincel Structural Walling was used extensively throughout the project to assist in achieving these goals, according to Project Manager, Michael Owen.

"The project consisted of 200 apartments in a configuration of six buildings," Owen said. "My sole purpose as a Project Manager is to deliver projects on time and on budget. After considering all options, Dincel Structural Walling was selected for the vertical building elements, consisting of

façades, lift-stair shafts, party and shear walls. The basement walls and columns in both basement and superstructure were also integrated with the 150mm thick slabs above the post tensioned podium level."

It was not surprising the Dincel Structural Walling was chosen for the project, being a simple to install, cost-effective and environmentally sound solution offering an array of benefits.

Dincel Structural Walling is a concrete wall encapsulated by permanent polymer formwork. Dincel has been assessed and issued with a CodeMark Certificate of Conformity for Type A, B and C construction for use in all internal/external wall applications, openings and penetrations, fire rated for 90-240 minutes and suitable for bushfire prone areas (BAL Low to BAL FZ).

The Dincel system is also capable of producing zero waste as customers can order profiles to any specified length, completely eliminating site wastages during construction, and the system is designed so the product can be totally recycled at the end of its life cycle.

With the use of 110mm Dincel party walls and the system's load-bearing qualities and acoustic certification, the developer was able to achieve 150mm thick floor slabs with only top and bottom mesh with stock length bars over the walls reducing costs considerably. Owen said the time and cost savings achieved using Dincel were substantial.

"As Project Manager, I managed to reduce the construction program by 26 weeks, from 77 weeks of the planned construction program involving detail excavation and all structural items consisting of vertical elements and floor slabs," Owen said. "I am confident that after this first major project with Dincel, I will further improve the cost and time savings for any future project adopting the Dincel Structural Walling principles."

"Dincel should be treated as a building system, rather than comparing it with other wall systems. I highly recommend developers who wish to save significant time and money to view the Dincel Resource Centre on the Dincel website."

"The product is well supported by professional engineers and I have found the Dincel team to be highly experienced and very accommodating in working with our construction team." Indeed, Dincel's qualified engineers and certified installers offer the convenience and surety of a single source for design, supply, install and technical support, backed by a full waterproof warranty currently otherwise unavailable in the market," concluded Owen.



Dincel 110mm Profile was specified on this project



VCA Police Stables Melbourne, VIC



DTAC was the chosen supplier for the recent Victorian College of Arts (VCA) Police Stables redevelopment, completed in early 2018 for the University of Melbourne. The project involved the restoration of the existing Victoria Police horse stables, to provide new accommodation for the VCA. The building integrates the VCA with the University of Melbourne's Southbank Campus and provides studio space for arts such as painting and drawing. The building also delivers a range of exhibition, performance, meeting and staff office spaces for the university.

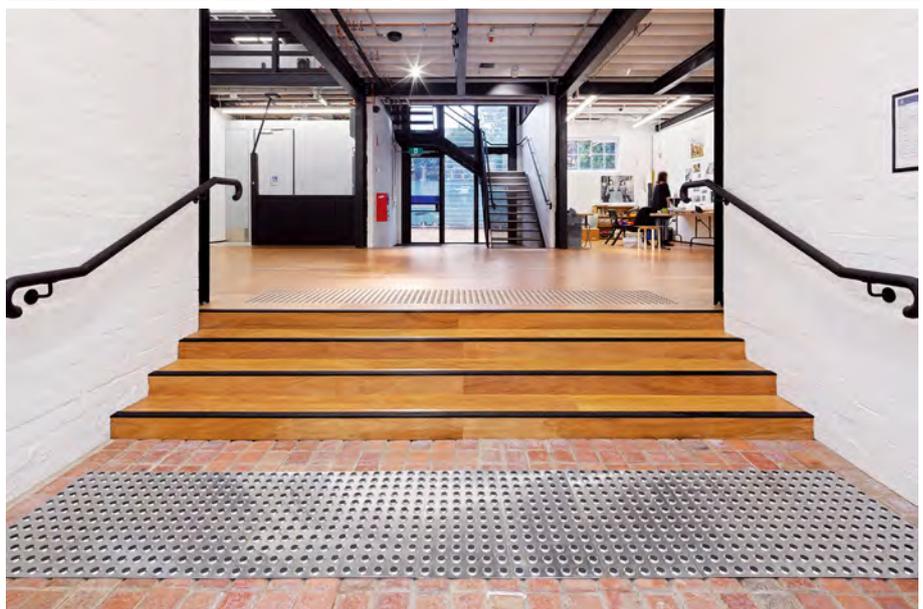
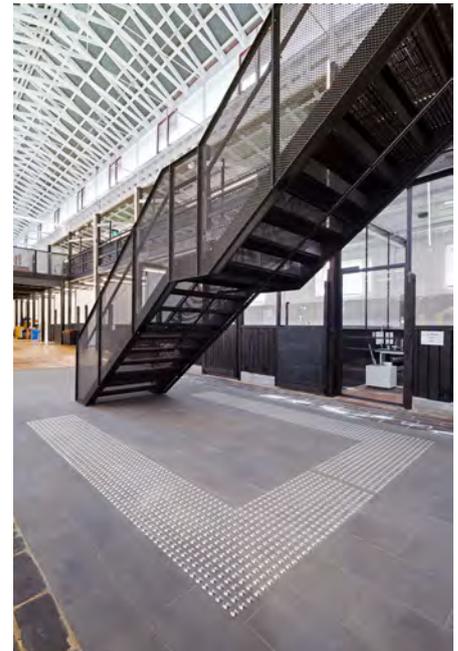
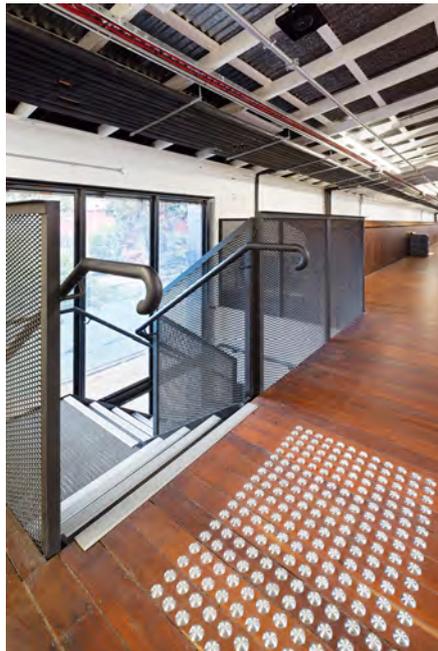
DTAC installed a combination of its Black Top TGSIs and its unique DTAC stainless steel Ecotac™ TGSIs to stair landings and many other locations throughout the site. More than 80 lineal metres of natural and black anodised DTAC urban edging was installed to the existing stairs, providing a compliant solution with a high slip resistance of R13 in accordance with AS 1428.1.

One of the critical challenges for DTAC was to provide a compliant solution without interfering with the existing heritage-listed stone substrate. DTAC achieved this by installing the direct-stick DIT0040 Black Top Integrated Tile Plate, thereby eliminating the need to drill the substrate, while preserving the building's cultural and heritage listing.

DTAC designs Australia's leading range of superior quality products that meet all requirements of Australia's tactile, stair tread and edging compliance regulations. All products are designed, manufactured and installed in line with the latest Australian NCC standards. DTAC products also conform to the Disability Discrimination Act (DDA), including slip and luminance requirements with test certification data available.

In addition to the Police Stables redevelopment at the University of Melbourne, DTAC's work can be seen throughout Australia in many iconic projects, including but not limited to the Glen Street Library in Sydney, and

in Melbourne: RMIT University, the NAB building on Bourke Street, Hawthorn Town Hall and the Yarra Valley Water headquarters.



Top left: DT0120 Ecotac™ Warning Tactiles and DE0700C Urban Edging installed to a staircase inside VCA Police Stables
Top right: DT0120 Ecotac™ Warning Tactiles installed underneath the central staircase inside VCA Police Stables
Bottom: DIT0040 Direct Stick Black Top Integrated Tile Plates installed to heritage-listed stone substrate



As one of the earlier members of NATSPEC, the Air Conditioning and Mechanical Contractors' Association (AMCA) have long recognised and supported NATSPEC's vision to improve the construction quality and productivity of the built environment, through leadership of information. Whether you are a home builder, local government, commercial contractor, or consultant, the range of products, training, and other resources available through this not-for-profit organisation is extensive and up to date.

We congratulate NATSPEC the organisation and all of its staff and industry supporters for its work and ongoing success.

Sumit Oberoi, National Executive Officer, AMCA



DuluxGroup is an Australian publicly listed company. The company has been involved with the manufacture and marketing of paint and related systems in Australia since 1918, and is the largest manufacturer of decorative paint products in Australia. DuluxGroup is the manufacturer of iconic Australian brands which consists of Dulux, Selley's, Yates and Cabot's, Feast Watson, Intergrain, and Toby. DuluxGroup is also Australia's largest manufacturer and marketer of surface coatings with well-known brands such as Dulux Decorative, Dulux Protective Coatings, Dulux Powder Coatings, Dulux Acratex Texture Coatings, Berger, British Paints, Levene, and Walpamur brands. www.dulux.com.au



Durotech Industries is a leading manufacturer and supplier of waterproofing, sealants and adhesive technologies. Durotech Systems products have been widely used in the construction industry for the sealing and coating of both residential, commercial and industrial buildings for over 40 years.

At Durotech we don't believe that one product can do it all but we do believe a Durotech System can. www.durotechindustries.com.au



Ensystemex is a global research-based company with the vision to be *'the first choice for environmentally responsible, effective, long-term termite management solutions.'* The company's key brands for protecting new buildings are the NOVITHOR™ Pesticide-Free Termite Protection System and TRITHOR™ Termite Protection. Both Systems hold ABCB Codemark Accreditation. Ensystemex has the largest technical sales support team of any innovation based termite protection company in Australia, and we are present in all States to assist you. www.ensystemex.com.au



Ezi-roll Doors have been manufactured in Australia since 1974. The company's beginnings go back to 1954 when A.R. Steel Structural started its operations in Brisbane. In 1969, A.R. Steel Structural decided to diversify its business to meet the increasing demands of Queensland's growing economy. At this time, a gap in the market presented itself and an opportunity to expand into industrial steel roller shutters was identified. A four year research and development program was embarked upon - the result, a unique and innovative roller shutter design, which was patented and suitably named the ezi-roll roller shutter door. www.eziroll.com.au



Macarthur Shopping Centre Macarthur, NSW

The Project

Macarthur Square cemented its position as the South West Sydney's premier shopping centre with a \$240 Million retail development.

The redevelopment of the Lendlease managed centre includes a new format David Jones store across two levels, international retailer H&M, a western extension with a new look Coles, fresh food market hall, more than 40 new speciality stores, and an alfresco and casual dining precinct, along with 500 more car spaces.

Commencing in 2015, the redevelopment transforms the centre from 94,300m² to approximately 107,000m² of gross lettable area.

Having worked with Dulux on similar projects, Lendlease was confident of getting good support and coatings that would provide excellent durability.

The requirements for this project were:

- Corrosion protection to internal and external steel structure.
- Weatherable coating for external steel structure.
- Aesthetically-friendly coating for internal structures.
- Intumescent coating for passive fire protection.
- Steel columns with a 2-hour fire rating for steel and corrosion protection system for the entire steel.

Dulux worked closely with the project team from Lendlease in developing a suitable coating system for both internal and external structures.

Solution

Dulux offered a coating system, including water-based intumescent system that could be applied onsite. Dulux provided the solutions that the Lendlease design team required to get the desired results.

This project faced a number of design challenges. The intumescent coating could not get wet and was exposed until

the roof was installed. An experienced fire coating applicator was used and protected the coating with plastic sheeting.

Dulux products Zincanode 402, Duremax GPE, Weathermax HBR and CAFCO WB3 coatings were applied. The benefits of using CAFCO WB3 include low VOC and ease of application, being a water-based

coating. Weathermax HBR is a durable weatherable topcoat providing long-term corrosion protection. This coating was compatible with Dulux conventional coating systems used on the project.

Outcome

The Lendlease design team is extremely pleased with the outcome and have chosen this system on other retail projects around the country.



The facility is akin to a world-class shopping centre without having to travel to the city

Commercial Trafficable Rooftop Sydney, NSW

The Project

The building manager requested a superior performing waterproofing system to be applied onto the rooftop of a commercial building. The requirement was for a strong UV stable and highly resistant to foot traffic waterproofing system. Furthermore, the system itself needed to be fast-curing as time was of the essence.

System Recommended

After consultation with the Durotech team the following system was recommended:

1. WB Epoxy primer and moisture barrier: two component water-based epoxy coating used to prime/seal and coat concrete or masonry surfaces.
2. Duroseal 25 FC polyurethane sealant: a single component moisture-curing polyurethane construction sealant which is a tough, durable PU sealant with good chemical resistance.

3. Duroproof PPM/SL polyurethane: a high quality superior performing self-levelling membrane that cures rapidly to form a polyurea/polyurethane hybrid membrane.
4. Duroproof ATC UV trafficable topcoat: a single pack aliphatic polyurethane topcoat providing greater UV protection, colour fastness and anti-chalking properties.

Application

The system was applied by brush and squeegee. Due to the self-levelling abilities of the membrane, a squeegee was efficiently used to cover larger areas quickly while providing a mirror image.

Outcome

The self-levelling trafficable UV-stable polyurethane waterproofing system produced over and beyond the outcome which was required by the manager. They were impressed not only by the qualities of the membrane such

as durability and UV stability, but also by the overall image of the rooftop. A smooth mirror-like image was achieved, giving it a superior look.

Unique qualities of the system

- Smooth and quality finish
- Long-term durability
- Highly traffic resistant
- Fast Installation
- Low VOC and Low odour
- UV stable
- Self-levelling qualities
- Easy to use
- Australian-made and tested



A fast, high-performance waterproofing system, which is also UV stable and highly-resistant to foot traffic, was applied to the rooftop

Rocks Riverside Industry Park Brisbane, QLD



Ezi-roll Doors Australia has played a sizeable role in one of Brisbane's newest purpose-built industry parks. The 1.57 acre project at Seventeen Mile Rocks was formulated on the grounds of providing 32 functional warehousing tenancies for small businesses in the commercial and industrial district. The tenancies range from 50m² to 120m² in size. The development comprised of three buildings across two stages, with 65 carparks throughout the site.

The Rocks Riverside Industry Park, commissioned by Scattini Constructions, required Ezi-roll's expertise in industrial shutters and automatic access to execute efficient tenancy access and safe operation.

Stage 1 comprised of 17 Ezi115 steel roller shutter doors across two buildings and Stage 2 constituted another 15 Ezi115 steel roller shutter doors to the third building. Each shutter was installed and connected with Grifco three-phase motors. Powder coating was applied to every door to meet the colour specifications provided by the client.

The profile of the Ezi115 Steel Shutter appealed to the client for the Rocks Riverside Industry Park due to its flat profile and inherent wind locks in every slat, rather than every second or fourth like other branded doors. This allowed Ezi-roll to exceed the wind ratings required for the area. An additional advantage of wind locking is that it offers extra security for the occupier, preventing intruders from entering the warehouses via the industrial shutter.

Project Manager, Brendan Gallagher, who has worked closely with Scattini Constructions for almost 10 years, said "Scattini continues to choose Ezi-roll Doors for projects like Rocks

Riverside Industry Park because we provide first-class manufacturing and installation expertise that they can always depend on. What makes Ezi-roll Doors superior is that we offer the best range of products in the industry for all commercial applications."

Safety prerequisites included the submission of comprehensive Safe Work Method Statements to demonstrate that the Ezi-roll team conducts regular internal training to maintain safe onsite work practices. Ezi-roll's strong safety culture ensured that the manufacture and installation of the product were performed safely and efficiently.

Scattini Constructions was pleased that Ezi-roll Doors was compliant with all requirements of the project from tender specification to manufacturing and on-time installation.



Right: Ezi-roll Doors manufactured and supplied a total of 32 industrial steel shutters for the project. All 32 steel shutters were installed at a height of 5.1m, with varying widths up to 4.5m to suit the assorted tenancy size applications.





The quality and productivity of the building and construction industry is enhanced by the work of the National Building Specification (NATSPEC). For more than 40 years NATSPEC has provided professional and specialty packages for all sectors of the industry and all building structures. NATSPEC is highly regarded by industry stakeholders in both the private and public sectors and is strongly supported by Master Builders Australia (MBA).

Denita Wawn, Chief Executive Officer, MBA



Fantech has been at the forefront of fan and acoustics technology by developing and implementing new and innovative products of virtually every air movement and ventilation need, as well as noise attenuation. With AS/NZS ISO 9002 accreditation since 1992 and more recently, AS/NZS ISO 9001 accreditation, Fantech maintains high standards of manufacturing and a continuous improvement culture. With modern manufacturing plants in Melbourne, Sydney, and Brisbane, and warehouses throughout Australia and New Zealand, Fantech provides unmatched delivery performance and customer service. www.fantech.com.au



Fielders has been synonymous with quality and strength for over 100 years in an industry where success is reliant on satisfaction. Initially providing roofing materials, the company has now extended its product range and reach across Australia to include purlins, door frames, carports, verandahs, fencing, sheds, and composite steel formwork. This ensures comprehensive product offerings and support for all aspects of building construction. Utilising their progressive culture, specialised resources, and market leadership position, Fielders has won a reputation for its innovative approach to manufacturing and installation.

Being at the forefront of international cold formed steel products, Fielders has attracted the loyalty of many architects, engineers, roofers, formworkers, and builders who have experienced the benefits of reduced logistical, labour, and time expenditures. With these and many other new developments, Fielders will continuously strive for growth through superior products, convenience, quality, and service. With Fielders, you will always 'Finish On Top.' www.fielders.com.au



FMC Australasia has been successfully providing quality pest and crop management products to both residential and industry markets in Australia since 1975. In 1994, FMC developed Biflex, which became Australia's most widely used and successful termite product. Well over one million Australian properties have now been successfully protected with Biflex. www.fmcaustralasia.com.au



Sunshine Coast University Hospital Sunshine Coast, QLD



Sunshine Coast University Hospital is a tertiary teaching hospital servicing the growing healthcare needs of the Sunshine Coast community. The facility opened with 450 beds, but will grow to become a 738-bed hospital following the completion of further development stages by 2021. This will mean about 10,000 patients each year will avoid having to travel to Brisbane for complex treatment.

The hospital was designed and built under a Private Public Partnership (PPP) contract with Exemplar Health, a consortium comprising Lendlease, Siemens and Capella Capital, with partners Spotless Facilities Services. Leading mechanical services contractor AE Smith was appointed by Lendlease to install and commission the hospital's HVAC systems based on a design by consulting engineers Aurecon.

The main hospital building features six levels totalling 164,000m² of space, while a helipad and plant rooms are located on the roof. A centralised plant arrangement accommodates chillers, cooling towers and all major HVAC plant and pumping equipment.

Designed to deliver best practice in sustainable design principles, construction and operation, the hospital targeted 4-star Green Star 'Design' and 'As Built' ratings under the Green Building Council of Australia's sustainability rating system.

Contributing to this sustainable performance is an energy efficient HVAC system incorporating a predominantly variable air volume (VAV) design. This design includes the installation of over 4,100 Rickard electronic VAV diffusers. These enabled the VAV operation to change from a traditional large zone design to a system with smaller thermal zones that provide greater thermal comfort control.

Each VAV diffuser was also fitted with air-flow sensors that allowed precise air flow control and measurement during setup and commissioning. All diffusers were air balanced electronically from the central BMS so no air flow hood readings were required with this building.

Rickard VAV diffusers automatically adjust to ensure the correct air flow is

always supplied into the zones. This enables the prescribed number of air changes required by Queensland Health to be delivered (particularly in critical areas), leading to a well-ventilated indoor environment.

Energy efficiency is also achieved by the units' ability to allow only the required volume of warm or cold air to enter the conditioned space. If the required volume reduces, the diffuser's aperture size also reduces. The increase in duct pressure is picked up by a sensor which signals the system's fans to slow down.

As well as providing energy-efficient comfort control, the Rickard diffusers were selected to provide easy, non-disruptive maintenance. If required, the thermal settings for each zone within the building can be adjusted remotely without affecting the patients.

Fantech also supplied approximately 800 fans and 570 attenuators.

"Fantech is a company that stands by its product and offers equipment that can deliver what it promises," said AE Smith Project Manager, Kevin Kent.



The Queensland Government's new \$1.8 billion Sunshine Coast University Hospital officially opened to the public in April 2017



SA Water Tank Hope Valley, SA



The Project

Fielders worked with York Civil to complete a \$21.6 million upgrade of SA Water's water storage tank in Hope Valley. The project is part of a wider \$89 million program to refurbish 111 water storage tanks in South Australia between 2016 and 2020.

The tank itself is mostly underground and holds 136 million litres of water. The new tank roof installation marked the end of one of the final construction stages of the project and ensures ongoing water supply from Hope Valley terminal storage.

The Solution

The water tank was previously open, with a basic roof structure that had partially collapsed in January 2010. Fielders was engaged alongside York Civil to install a new roof over the tank. The roof is supported by 117 concrete columns and is larger than a soccer field. ARAMAX FreeSpan was the solution of choice to accommodate such a large roofing instalment, which required 22,100m² of product. The end result is an immense roofing solution seven times lighter than a contemporary roof.

Due to the highly corrosive environment that the roof would be exposed to, aluminium was required to ensure optimum product performance for the lifespan of the roof. Fielders was able to offer the ideal product for redevelopment of the water tank fit for marine grade purposes and was also able to offer a warranty exceeding the project requirements.

The Process

The site-manufacturing capabilities of ARAMAX FreeSpan allow it to be rolled onsite anywhere in the world, reducing construction time and improving project efficiency. This made ARAMAX FreeSpan the perfect choice to support such a big structure. It took 35 working

days to roll out the product using a pulley system across the roof; that was the first time ever that this rolling system has been utilised for an ARAMAX project.

Efficient project management was vital to the success of this project because the tank provides the drinkable water storage for the north-eastern suburbs of Adelaide, and had to be filled again for the peak water season. The new tank roof installation was completed in November 2017, just in time for the summer season.

Fielders ARAMAX FreeSpan

Fielders ARAMAX FreeSpan is a unique V-shaped roofing profile that is bigger, bolder and deeper than conventional steel-cladding profiles available on the market. Project applications include commercial buildings, residential

houses, shade structures and commercial shelters. The ARAMAX FreeSpan serves as a visually stunning and structural component of a project, reducing cost without compromising performance.

Fielders ARAMAX FreeSpan is part of Fielders' Platinum Portfolio Architectural Range. The product is manufactured in standard 800mm cover width, with 700mm to 900mm cover widths available upon request. The product's unique ability to be rolled onsite anywhere in the world reduces construction time and improves project efficiencies.

Architect: GHD Architects
Profile: Fielders ARAMAX FreeSpan
Builder: York Civil



22,100m² of ARAMAX FreeSpan Aluminium Coil sourced from Garmco Bahrain and 1.6mm BMT Aluminium can be found on the SA Water Tank project



Ronald McDonald House Perth, WA



Since 1883, FMC Australasia has provided pest management solutions for the pest control industry. It has provided quality pest and crop control management products in Australia since 1975. Through its trademark HomeGuard Termite Management System, FMC is responsible for precision termite management in many of Western Australia's major commercial buildings and homes. FMC strives to be an innovative organisation and has always been committed to improving the way pest control products interact with the living and built environment.

Ronald McDonald House is an international charity that helps the families of sick children with support and accommodation during times of treatment. The Perth facility is one of the newest in Australia and it was essential that the building be an exemplar of design and construction for this type of project and purpose. The building achieved a Leadership in Energy and Environmental Design (LEED) Silver rating, which is a global recognition and certification for environmental sustainable buildings. Ronald McDonald House Perth is the

first LEED-rated building of its kind in Australia. At the time of completion, there were only five buildings in Australia that had achieved this rating, and this is the first in Western Australia.

FMC Australasia assisted the HomeGuard Accredited Installer, Termico Pest Management Services, to install a HomeGuard Termite Management System at Perth's recently completed Ronald McDonald House by Perth Architect Gerry Kho, built by Doric Construction.

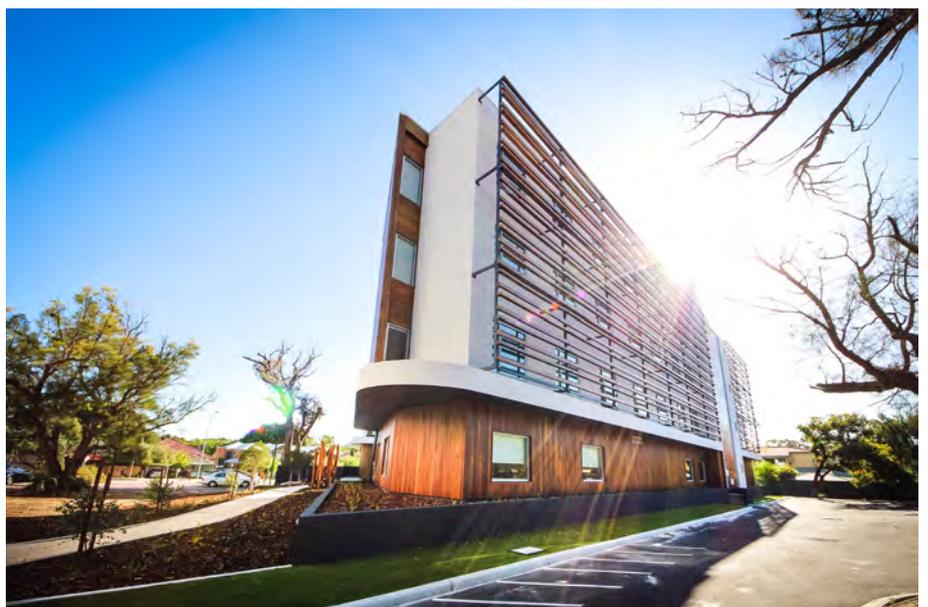
A number of significant challenges presented themselves at Ronald McDonald House. In particular the new method of construction that affected the supporting basement retaining walls by creating gaps in the structure large enough for a small child to squeeze through. As with every unique project, this required innovation by FMC.

The solution was the HomeGuard termite protection 'sheeting' – great flexibility coupled with chemical repellence that could wrap the retaining walls and cover all entry points from

subterranean termite infestation with no worries about residents showing sensitivity to the product as it is fully contained in the sheeting's matrix.

FMC designed HomeGuard to last for the design life of buildings in Australia, usually 50 years, so Ronald McDonald house can rest assured that in the future their limited funds can be spent on the young patients and their families, not on endless termite treatments.

The manufacturing process for the HomeGuard product range means that the residents and their families are not exposed to the active ingredient because it is contained in a patent protected polymer that is extruded as one sheet.



Ronald McDonald House in Perth, WA



For over 50 years, the FRANK Group has been developing, manufacturing, and distributing spacers, formwork, reinforcement, sealing, and acoustic products. This diversity of products makes Max Frank Australia the partner of choice for planners, architects, and construction companies.

Comprehensive technical service and assistance are of paramount importance to us. This includes providing application instructions, expert advice on detailed layouts and workshop drawings, technical documentation, and software programmes to provide solutions.

FRANK is ISO 9001:2008 approved. www.maxfrank.com/au



Gerflor Australasia Pty Ltd is a world leading manufacturer of door and wall protection systems, handrails, and accessories. Gerflor is an Australian company with more than 30 years' experience in diverse market sectors including health and aged care, education, indoor sports facilities, and assorted commercial projects. Colour, design, and innovation are hallmarks of the brand that offers sustainable products that complement current design trends. www.gerflor.com.au



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Australian made and owned since 1935, the fourth generation of Haymes family proudly manufacture innovative coatings that continue a tradition of never taking short cuts on quality. The Haymes range includes an Artisan Collection, Woodcare, Protective Coatings, Render on top of their nationally accredited Ultra-Premium paints. Their extensive project experience, diverse colour palettes, and dedicated commercial team work with specifiers, builders and developers across Australia as a unique family owned and operated coatings manufacturer. www.haymespaint.com.au



CSR Himmel brings together Australia's widest range of ceiling tiles and accessories. The product portfolio includes high-quality products to make sure the design and functionality needs of any project are always met. Himmel distributes a range of ceiling tiles, including mineral fibre, timber, metal pan, and high acoustic tiles, along with ceiling accessories such as steel and aluminium grid, and lighting solutions. Himmel also offers a range of timber and high acoustic wall panelling options. www.himmel.com.au



Interpon Powder Coatings, part of the AkzoNobel group, is the largest global manufacturer of powder coatings and a world leader in powder coatings technology.

Headquartered in Sassenheim, The Netherlands, Interpon Powder Coatings has 29 manufacturing and Research & Development facilities worldwide and 25 sales office, employing over 4,000 people globally.

Our global reach allows us to offer a wide range of stock and custom made powder coating colors, finishes and technologies. www.specifyinterpon.com



Karndean Designflooring was founded back in 1973 and is a global supplier of commercial and residential luxury vinyl flooring.

Karndean International, Inc. is a UK based company, with operations in Australia, and has a reputation for creating unique vinyl floor designs that are inspired by natural materials such as ceramic, glass, slate, limestone, wood, and marble. www.karndean.com



Monash Children's Hospital Clayton, VIC



to the clean and inviting aesthetic designed by Silver Thomas Hanley.

Traditionally, hospitals choose dark flooring to minimise the visual effects of heavy foot traffic and movement of trolleys, beds and other equipment. Monash Children's has taken a different track.

An extensive range of colours adds to the appealing Gerflor Mipolam Symbioz range. Elsewhere in the hospital, other colours and designs were selected from the Taralay Impression range, featured in the Specialist Consulting Suites. Tarasafe H2O provided a solution in ensuites.

Monash Children's Hospital is one of the latest additions to Gerflor's growing portfolio of hospital installations. New generation Gerflor Mipolam Symbioz has been used extensively throughout the 32,000m² facility owned by Victorian Government/Monash Health and built by Lendlease.

"One of the things that came to light when we were talking to other children's hospitals was the desire for floors to be light enough so you can actually see if they need cleaning. Little ones – both patients and siblings – crawl, and 0-3 year olds spend time on the floor once mobile so you want to be able to clearly see if a floor is dirty," Forrest said.

General Manager of Monash Children's Hospital, Kym Forrest, is delighted with the light, bright 230-bed paediatric facility, now delivering specialist care to newborns, infants and children. Gerflor Symbioz flooring is a major contributor

Real-life testing and a robust review of cleaning methodologies and schedules are important precursors to installing a light-coloured floor, according to Forrest and Gerflor.



Top: Mipolam Symbioz Calico and Sea Blue combine in this Operating Theatre
Middle: Taralay Impression Trinidad Habana installed in the Specialist Consulting Suites
Bottom: Stairwell featuring Mipolam Symbioz Breeze



0191p GERFLOR sundry items; 0651p GERFLOR in resilient finishes
0654p GERFLOR engineered timber flooring

www.gerflor.com.au

Royal Como South Yarra, VIC



The project, consisting of 21 floors with 112 apartments, used the unique and Australian-made and owned product that Haymes offers. DEC Group was the appointed paint contractor, with Managing Director, John DeCesare, selecting a range of Haymes Ultra-Premium exterior and interior coatings to bring this high-end Chapel Street development to life.

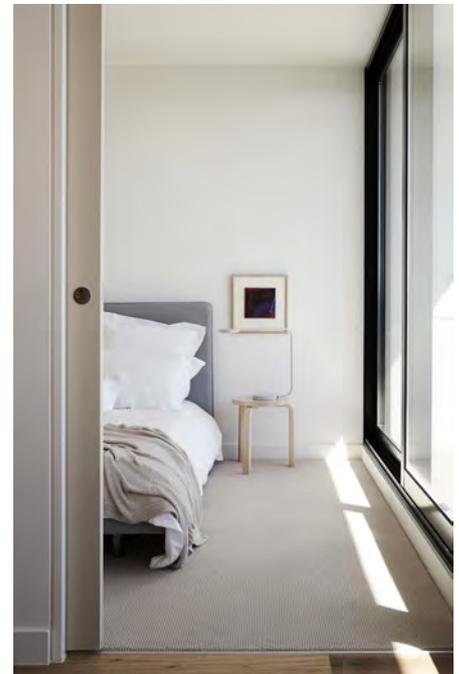
Applicator: DEC Group
Architect: Bruce Henderson Architects
Artwork Commission: Dr Andrea Eckersley
Builder: Hacer
Coatings: Haymes Paint
Developer: C&L Holdings
Interior Design: Nexus Designs
Product: Haymes Ultra-Premium Solashield and Premium ranges

The Nexus design team drew upon their intimate and local knowledge of the South Yarra and Melbourne lifestyle to deliver the interior design and palette used throughout the Royal Como building in South Yarra, Victoria. The interiors are smart, sophisticated and simple. Naturally, they utilised additional support from Haymes Paint for its extensive colour palette and Ultra-Premium coating solutions to complete the project.

Nexus drew inspiration from nature, with the colours, textures and materials referencing the richness of the Australian landscape. Key features, such as the colour palette used in foyer areas, explore the contrast between the natural and urban environment. Nexus worked with and commissioned local artist Dr Andrea Eckersley and the Haymes colour palette to create distinctive features in foyer and common areas. The broadwall areas feature classic neutral schemes that are complemented by unique accents of colour.

Tim Haymes, Commercial Director at Haymes, stated, "as a local family business, it's been great to work with Nexus and DEC to see our colour palette and product on such an iconic development like the Royal Como. Our commercial and colour teams are continuing to deliver projects that holistically showcase our products. With a speciality Artisan range, Woodcare, Protective Coatings and Render as part of our commercial and architectural offer, I love seeing our colour palette and products being used by fellow innovative and creative businesses on local multi-residential developments."

Right and below: Haymes Paint's colour palette, with Nexus Design and artist Dr Andrea Eckersley's classic neutral colour scheme, can be seen throughout the Royal Como in South Yarra, Victoria



Gold Coast Sports and Leisure Centre Carrara, QLD



The Gold Coast Sports and Leisure Centre is the centrepiece of the Carrara Sports Precinct

For the Gold Coast 2018 Commonwealth Games, the Gold Coast Sports and Leisure Centre emerged as the centrepiece of the newly revitalised Carrara Sports Precinct. The Centre rises from the bank of Clear Island Lake in Carrara, Queensland, resplendent in an eye-catching, sub-tropical palette of yellow and ultramarine blue. Its sprawling 16,500m² footprint is home to over 5,300 spectator seats and 15 multi-use sports courts, and hosted a number of Commonwealth Games events including badminton, weightlifting and wrestling.

Designed by BVN Architecture and taking just under four years to complete, the \$101 million Centre represents the best and the brightest that the Gold Coast has to offer in terms of sports training and completion facilities. Throughout the design process, BVN had to comply with standards set by the Commonwealth Games and International Sports Federations, as well as those of the local council. The resulting project embodies – and triumphs over – the challenges faced by high-profile projects to meet high standards, and is evidence of how rewarding such projects can be when done right. It's rare that a project so closely captures the spirit of the program for which it was designed; the Centre does this and more with flair, the bold, colourful design clearly communicating the vibrancy and high energy of the Australian sporting spirit.

To realise the soon-to-be iconic design of the Centre, BVN turned to Interpon Powder Coatings, the largest manufacturer of powder coatings worldwide. Drawing from its unbeatable experience as the trusted frontrunners in powder coatings technology, Interpon's team of experts closely colour-matched the architects' palette to bring their drawings to life. "We were able to work collaboratively with our liquid Metal Coatings team and Bluescope® Steel to match the corresponding powder coat colour to complement the exterior

durability required for the project," said Gareth Connell, Interpon Specifications Manager.

Warranty-grade Interpon D2015 Ultriva™ products in Carrara Gold Matt and Copper Penny Matt met the long-term legacy requirements of the Council, and will hold their sunny colours for years to come. The Interpon D2015 Ultriva product range offers outstanding performance with a 20 year film integrity and 15 year colour and gloss retention guarantee.

The warmth of the project also reflects the human element that organisers of the 2018 Games were championing in the lead up to the event. "This is a special event; it stands for everything good about humanity," Gold Coast 2018 Chief Executive, Mark Peters, told *Inside the Games*. "We want to make sure the Gold Coast and Australia continues that."

The gold-tinged façade is fitting in more ways than one – when the Commonwealth Games ended in mid-April 2018, the Centre became the new home of the Gold Coast AFL Club, aptly named the SUNS.

"We are absolutely delighted," said Andrew Travis, CEO of the Gold Coast SUNS, about the impending move, "I can't wipe the smiles off people's faces."



The newly revitalised Gold Coast Sports and Leisure Centre was host to the 2018 Commonwealth Games, and is the new home of the Gold Coast Suns

SIDRA Solutions Balwyn, VIC



Designed by Beaumont Architects, SIDRA Solutions' newly restored Melbourne headquarters offers a fresh take on the SOHO (small office home office) concept.

The combination of generously-spaced work stations, white finishes and a custom-designed communal meeting area creates an inviting and comfortable work space for the team at this multi-award winning software company.

A converted warehouse guise on top of the SOHO concept encompasses the SIDRA brand, reflecting the ambition and culture of the company.

"To create the warehouse feel, we had to start with an impressive timber look floor," commented Beaumont Architect's director, Ben Beaumont.

"We selected LooseLay Stamford LLP109 and almost everyone that comes into the office doesn't think for a moment that the floor isn't real timber. The visual richness of the floor enabled the rest of the fitout to be relatively restrained," said Beaumont.

With the challenges of working in a space with limited surface depth (because of an existing staircase) and a first floor with suspended autoclaved concrete, Karndean vinyl flooring proved to be the ideal flooring option.

"We found that Karndean not only offered an incredible replication of real timber, but as a vinyl product, it gave us the flexibility we need to install flooring in more difficult spaces, such as the staircase," concluded Beaumont.

When it came to the suspended concrete floor, the sound properties of Karndean LooseLay offered the acoustic benefits, helping to reduce noise transfer to the space below.



Karndean Designflooring and Beaumont Architects worked together to bring the newly restored SIDRA Solutions' Melbourne headquarters back to life





For more than 40 years, Keystone Acoustics, an Australian owned and operated company, has been redefining its processes and machinery to create patterned, perforated, and slotted panelling solutions, engineered for optimum performance.

Showcased in many of Australia's iconic buildings, Keystone Acoustics' solutions combine the widest range of quality substrates with the latest in innovative finishes to deliver acoustic performance, durability, and design versatility. Panels are engineered to suit diverse applications - from contemporary office fitouts to exemplary facades. www.keystoneacoustics.com.au



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Kingspan Insulation manufactures AIR-CELL® thermo reflective insulation, and Kooltherm®, a CFC/HCFC-free rigid thermoset insulation with zero Ozone Depletion Potential (ODP). The Kingspan Insulation range delivers innovative, high performance solutions in roof, wall, and underfloor applications for both residential and commercial buildings. Kingspan Insulation's technical experts can provide thermal solutions for Section J, Green Star, and 6 Stars. www.kingspaninsulation.com.au



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Lawn Solutions Australia is setting a new benchmark for best practice in the turf industry with our industry-leading accreditation system. All our growers are AusGAP certified and adhere to the same stringent, nationally endorsed standards. www.lawnsolutionsaustralia.com.au



Lysaght's diverse product range now includes roofing and walling, gutters and downpipes, purlins, fences, structural formwork, and home improvement products. As a division of BlueScope, we can rely on the backing and support of Australia's largest steelmaker. Made from 100% Aussie steel, the products are extensively performance-tested, come with a BlueScope warranty, and offer customers confidence and peace of mind. For 150 years, customers have relied on Lysaght as the trusted experience in steel. Lysaght: the Australian steel people. www.lysaght.com



MAPEI is a world leader in the manufacture of innovative products for the construction industry. Products include adhesives, grouts, waterproofing membranes, levelling compounds, repair mortars, and quality related building products.

Numerous projects executed all around the world are testimony to the outstanding quality of Mapei products that are preferred by architects, designers and building contractors.

Mapei products are manufactured in Brisbane and distributed through an extensive network of distributors. www.mapei.com.au

Toowoomba City Hall Toowoomba, QLD

At the Toowoomba City Hall refurbishment, project wall acoustic panel experts Keystone used KEY-ECLIPSE wall panels in black MDF substrate KP1 25/10. Cut in a diamond pattern to meet the architect's requirement, the panels were shaped to suit the ceiling layout.

The finish was completed in natural timber veneer 'Silky Oak' with KEY-TONE clear satin finish. It had 30% gloss level to the face and edge of panels. All Keystone panels are fully sealed and two coats of clear finish applied to the face and edges. K100 black textile backing was factory-applied to the rear of the panels.

Designed by Toowoomba firm Sims White Architects, the auditorium and annex have been refurbished to modernise the building which fronts the civic square between Toowoomba City Hall and the library.

The Toowoomba Regional Council started the project in July 2017 to restore the 1930s features of the space. The project included an extension to provide a new entry to the auditorium and landscaping works which overlooked the Civic Square and Village Green. The redevelopment works were undertaken by Northbuild Construction.

KEY-ECLIPSE is one of the most eco-friendly fire-rated board available and offers flexibility in aesthetic options and sizes. Strong, durable and inherently fire retardant, KEY-ECLIPSE is an excellent product for commercial applications that require acoustic systems. KEY-ECLIPSE also offers a wide range of decorative pre-finished options for a range of installation types. In addition to the practical properties of these durable wall acoustic panels, KEY-ECLIPSE decorative panels come in a range of finishes and the availability of optional decorative features can make it a beautiful and unique addition to any commercial space

Keystone products can be used as internal wall acoustic panels, decorative panels for walls in hallways, hotels, club and offices, conservatories, libraries, auditoriums and other public spaces. The panels combine beauty and practicality. With their inherent fire resistance, high-acoustic system performance and wide range of finishes, KEY-ECLIPSE decorative panels offer aesthetic and practical solutions for commercial applications.

Keystone offers custom-designed panels that fit every requirement. Fixing apertures, slotting and radius corners are undertaken directly at their production facility, thus ensuring accuracy when a panel is fitted to be a part of a larger fabrication or structure.

Its extensive list of eco-friendly and fully customisable fire-rated options are excellent for construction of beautiful, functional and totally unique spaces.



Keystone panels featured in the Toowoomba City Hall

SPECIFYING QUALITY

INTRODUCTION

Communicating the requirements for quality is the main technical function of the specification. This TECHnote outlines how the NATSPEC specification system may be used to promote quality in construction projects.

DEFINING QUALITY

Quality must be defined; it cannot be managed if it is not defined. Quality can have different meanings for different people in different situations. In construction this problem is amplified as the responsibility for a project is divided between many different people, within many organisations. Therefore, agreement on a defined quality level between all parties, and how it is to be measured, is key to achieving the desired quality and the satisfaction of the principal.

QUALITY LEVEL

Several factors drive the desired quality level of a project and its components; the main factor being anticipated life. It would be a false economy to poorly construct something which must last for many years or over design something which may only be required to last a number of weeks.

Other factors that influence the desired quality level include:

- The purpose of the building - Prestige or utility, flexibility or permanence.
- Required functional performance - Design repetition or one-offs, environmental.
- User perception - Convenience, comfort, ease of maintenance and repair.

WHEN CAN QUALITY BE ACHIEVED?

There is a common misconception that the quality of a project can be completely controlled during the construction stage. However, the level of quality that can be demanded during construction cannot be higher than that which is specified in the contract documentation, without additional cost.

The quality of a project is therefore dependent on documentation and supervision. The contract documentation includes the conditions of contract, the specification, the drawings and the schedules.

To achieve quality, care must be taken in material selection, documentation, workmanship and supervision. This does not necessarily increase time and cost, however these factors must be considered and balanced when defining the quality level required. Failure to take care may lead to poor quality and increased costs with greater rework, repair and maintenance required.

ROLE OF THE SPECIFICATION

Whilst the specification is a multi-purpose document, its primary role is to define precisely and succinctly the quality required and the processes necessary for achieving it. This also includes, but is not limited to, defining clear acceptance criteria for any item of work.

If specified acceptance criteria match the agreed defined quality level, then ultimately, conformance with the specification will achieve quality.

USING NATSPEC TO ACHIEVE QUALITY

The NATSPEC worksection *Templates* include the construction processes required for each particular item of work and also define clear industry standard acceptance criteria in the form of tolerances, performance requirements and testing requirements. All can be modified if necessary to suit the defined quality levels agreed for each individual project and its components.

NATSPEC promotes the achievement of quality through coordination of the contract documents. Guidance text discourages duplication of information included on the drawings within the specification, to avoid potential discrepancies and ambiguity. Duplication of information within the specification is minimised by reference to relevant worksections.

NATSPEC references and monitors updates to relevant Australian and International standards, including those cited within the BCA. Where standards define alternative levels of service, NATSPEC provides prompts to be completed by the specifier. It is essential that the specification defines the requirement, as blanket references to standards may not achieve the desired quality.

NATSPEC and AUS-SPEC also cover the requirements of project Quality Management Systems based on AS/NZS ISO 9001 and the provision of project Quality Plans in the **Relevant worksections** listed in the sidebar.



Poor quality timber construction – Split base-plate used.



“...If the building contract documents permit a sow’s ear then all the quality control in the world cannot demand a silk purse.....”



Inspection to confirm quality level achieved.



Poor quality concrete – Honeycombing and timber.

Relevant worksections

- 0010 *Quality requirements for design (AUS-SPEC).*
- 0121 *Tendering*
- 0160 *Quality.*
- 0161 *Quality management (Construction) (AUS-SPEC).*
- 0162 *Quality (Supply) (AUS-SPEC).*
- 0163 *Quality (Delivery) (AUS-SPEC).*

PRODUCT SPECIFYING AND SUBSTITUTION

PROPRIETARY SPECIFYING

In NATSPEC *Proprietary* means identifiable by naming the manufacturer, supplier, installer, trade name, brand name, catalogue or reference number.

GENERIC SPECIFYING

The aim of the specification writer in customising NATSPEC for a project is to describe performance as follows:

- Measurable outcomes in terms of:
 - Conformance to a standard.
 - Product tolerance.
 - Construction tolerance.
 - Delivery and energy use.
 - Durability.
 - Compatibility with existing systems.
- Comparable outcomes in terms of:
 - Colour and texture.
 - A benchmark description.

Evaluation criteria include:

- Type tests.
- Evidence of conformance to a recognised certifying body such as JAS-ANZ.

SUBMISSIONS

NATSPEC has provisions for specifying particular requirements for submissions. Provision is also made for specifying time and program constraints for submissions. The clause relating to information submissions for building products (under the 0171 *General requirements* worksection **SUBMISSIONS** heading) is:

Requirement

Products: Products and materials data, including manufacturer's technical specifications and drawing, evidence of conformance to product certification schemes, type test reports, performance and rating tables and installation and maintenance recommendations.

NATSPEC POLICY ON SUBSTITUTIONS

In order to maintain the contractor's contractual responsibility in regard to supply, NATSPEC allows for substitution within the 0171 *General requirements* worksection. The following italicised text is taken from the **PRODUCTS** clause:

Substitutions

Identified proprietary items: Identification of a proprietary item does not necessarily imply exclusive preference for the item so identified, but indicates the necessary properties of the item.

Alternatives: If alternatives to the documented products, methods or systems are proposed, submit sufficient information to permit evaluation of the proposed alternatives including the following:

- Evidence that the performance is equal to or greater than that specified.
- Evidence of conformity to a cited standard.

- Samples.
- Essential technical information, in English.
- Reasons for the proposed substitutions.
- Statement of the extent of revisions to the contract documents.
- Statement of the extent of revisions to the construction program.
- Statement of cost implications including costs outside the contract.
- Statement of consequent alterations to other parts of the works.

Availability: If the documented products or systems are unavailable within the time constraints of the construction program, submit evidence.

Criteria: If the substitution is for any reason other than unavailability, submit evidence that the substitution:

- Is of net enhanced value to the principal.
- Is consistent with the contract documents and is as effective as the identified item, detail or method.

Optional text (from *Guidance*):

Costs: Pay the cost of submissions and of evaluations and tests of proposed alternatives, whether subsequently accepted as a variation or not. The costs will be calculated at the current charge-out rates of the relevant consultant(s).

(Italicised text is from the NATSPEC *General requirements* worksection.)

ACUMEN ADVICE ON SUBSTITUTIONS AND VARIATIONS

An architect administering the contract should be aware that:

- *If the contractor proposes a substitution for materials specified in the contract documents, the architect should request approval from the owner for the substitution. If a substitution is made, the procedures set out in the contract for a variation of the works should be followed.*

(Italicised text is an extract from **Substitutions** in acumen.architecture.com.au, the Australian Institute of Architects' practice advisory subscription service.)

NATSPEC PRODUCT PARTNERS



A NATSPEC Product Partner is a building product manufacturer with an agreement with NATSPEC to include a purpose edited worksection in NATSPEC. See branded worksection.

A NATSPEC branded worksection is a technical worksection produced in NATSPEC format in conjunction with a Product Partner. Branded worksections provide specifiers with an alternative to the generic worksection where a particular product has been selected at the design stage.

The research prior to the selection of a product or system is filtered, both formally and informally, to eliminate inappropriate choices. The requirements of the client, regulators, standards, and the designer all affect whether the selection is presented as a generic or a proprietary item. The NATSPEC worksections facilitate the recording of both types.

All manufacturers are acutely aware of the problem of substitution by the contractor. It is being exacerbated by the lure of cheap and sometimes fake imports. Consultants are also affected as they spend considerable time and effort selecting a product, finish or electrical/mechanical system as part of their design responsibilities.

(Italicised text on the left is from the NATSPEC *General requirements* worksection.)

Relevant worksection

0171 *General requirements*

Related TECHnotes

GEN 014 *Submissions and testing*

DO YOUR PRODUCTS COMPLY?

Check the authenticity of testing and conformance certificates using the National Construction Product Register (NCPR).

“ In the current environment of product alternatives and substitutions, I welcome the presence of an independent body to authenticate certificates of performance and/or compliance. I congratulate NATSPEC on introducing a valuable service to the construction industry.

Catherine Townsend, Director, Townsend+Associates Architects
Adjunct Professor, Faculty of Arts and Design, University of Canberra
President, Architects Accreditation Council of Australia



The tragedy of the Grenfell Towers fire in the UK, resulting in over 70 deaths, has thrust product conformity and compliance into the global spotlight. Locally we have not been immune. Since 2006, there have been increasing reports of non-conforming products entering Australia, including structural steel bolts, structural plywood products, copper pipe tubing, fire collars and glass sheets. More recently, there have been significant issues with electrical cables, combustible cladding, products with asbestos and glass failures.

Many construction products have been used in the local market with inadequate or falsified conformity evidence. Equally, a significant portion of products and materials have been used inappropriately. Product non-conformance and non-compliance affects the construction quality and safety of Australian buildings.

Amidst the wake of various tragedies, different levels of government have collaborated to improve build quality by reducing product-related risk. The recently released Shergold and Weir report, commissioned by the Building Ministers' Forum, has highlighted compliance enforcement by each jurisdiction and various regulatory bodies.

Designers should clearly specify the minimum required technical properties and product standards, and the required evidence of conformity in their construction specification in order to protect their clients and the end users of the built environment. If not, they may become complicit, and will be embroiled in legal action. Product standards should refer to relevant Australian Standards. Where there are no relevant Australian Standards, relevant international standards or authoritative industry sources should be utilised.

<https://www.industry.gov.au/regulation-and-standards/building-ministers-forum>



Grenfell Tower in the UK on fire, 14 July, 2017. Image: Natalie Oxford

'Non-conforming' vs. 'non-complying' building products

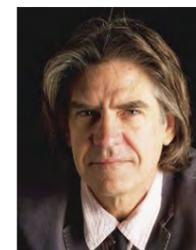
Non-conforming building products (NCBPs) and materials are those that: purport to be something they are not; do not meet required standards for their intended use; or are marketed or supplied with the intent to deceive those who use them.

Non-compliant products (NCPs) and materials are those that are used in situations where they do not comply with the requirements of the National Construction Code (NCC) and other relevant laws and Australian Standards.

2018, Senior Officers' Group, Australian Governments

The aim of the National Construction Product Register (NCPR) is to help the industry mitigate risk in a cost-effective way. It is intended to provide:

- Readily available verified conformity information on construction products.
- An increased awareness and understanding of the importance of conformity evidence authenticity by designers, specifiers, contractors and manufacturers.
- Improved safety for the Australian public.
- A freely accessible system for the industry to determine if a proposed substitute product has evidence, checked by NATSPEC, of conformity to Australian and international Standards.



“ The NCPR will help designers specify products with increased confidence, particularly for products not previously used, and is a platform for manufacturers to demonstrate their credibility and build trust within the industry by disclosing claimed conformity and compliance to the relevant standards.

Geoff Warn, Founding Partner, With_Architecture Studio



BRANDED vs GENERIC WORKSECTIONS

BRANDED OR GENERIC?

The foundation unit of the NATSPEC specification system is the worksection. NATSPEC worksections are selected and customised by the specifier to produce a project specification. In some instances, the specifier can choose between a generic worksection and a branded worksection when compiling the specification. This TECHnote defines the alternatives and outlines their advantages.

BRANDED WORKSECTION	GENERIC WORKSECTION
<p>Definition A NATSPEC branded worksection is developed by NATSPEC in conjunction with the manufacturer, known as a NATSPEC Product Partner. It is a MS Word document <i>Template</i> which follows NATSPEC style and format and can be customised by the specifier.</p>	<p>Definition A NATSPEC generic worksection is a MS Word document. It is a comprehensive <i>Template</i> which the specifier must customise by completing prompts, adding relevant material and deleting material which is not applicable to the particular project.</p>
<p>Classification Each branded worksection is based on the associated NATSPEC generic worksection and shares the same classification number.</p>	<p>Classification NATSPEC worksections are classified and sequenced in a logical order corresponding to common Australian construction industry sequence.</p>
<p>Advantages</p> <ul style="list-style-type: none"> • Provides an alternative to a generic worksection where a particular product has been selected at the design stage. Associated generic material not manufactured by the Product Partner is still provided. • Minimal customising required as the <i>Template</i> has been approximately 90% pre-edited in conjunction with the Product Partner. • Current product information is readily available and accessible via hyperlinks between the <i>Template</i> and the Product Partner's website reducing research time and facilitating early decision making. • The possibility of product substitution by the contractor may be reduced as the unique performance characteristics of the product are clearly specified. 	<p>Advantages</p> <ul style="list-style-type: none"> • Provides comprehensive coverage of a particular work area. • Adaptable for open proprietary specification where more than one brand or model number is acceptable. • Adaptable for closed proprietary specification where a branded worksection is unavailable. • Useful where the inclusion of brand names is not permitted. • The <i>Template</i> can be modified to create a new worksection where a NATSPEC worksection is not available.

Regulations, standards, client and designer requirements will all have some influence on whether a generic or branded worksection is appropriate.

SUBSTITUTION

Manufacturers are aware of the problem of substitution by the contractor. To maintain the contractor's contractual responsibility in regard to supply, NATSPEC allows for substitution. However, text in the *0171 General Requirements* worksection requires the contractor to provide the designer with the appropriate technical information to make an informed decision regarding the proposed substitution. See related TECHnote *Gen 006 Product specifying and substitution*.

Worksection Structure

Each worksection is divided into:

GENERAL - applies to the worksection as a whole and includes cross referencing, standards, interpretation, tolerances, submissions and inspections.

PRODUCTS - describes the basic materials, components and fabricated items.

EXECUTION - sets out the construction performance criteria to prepare the substrate, assemble materials to produce an installation and carry out the works.

SELECTIONS - contains schedules that refer to the selection of proprietary products or to generic products by their properties.



Open specifications, such as descriptive, performance or reference specifications, can be satisfied by more than one product. An open proprietary specification is where there is more than one acceptable brand or model number.

Closed specifications can be satisfied by only one product. A single brand or model number may be nominated. However, some specifications which seem open are actually closed as only one product on the market will satisfy the criteria specified.

Related TECHnotes

NATSPEC TECHnote *GEN 006 Product specifying and substitution* sets out the difference between proprietary and generic specifying, and explains the policy and means of managing contract variations related to requests for substitution.

Related Worksection

0171 General Requirements

SPECIFYING NCC REQUIREMENTS

INTRODUCTION

This TECHnote explains how the requirements of the National Construction Code Series (NCC) are incorporated in NATSPEC worksection specification *Templates*.

THE NCC

The NCC includes Volume One - Building Code of Australia (BCA) Class 2 to Class 9 Buildings, Volume Two - Building Code of Australia Class 1 and Class 10 Buildings, and Volume Three - Plumbing Code of Australia (PCA).

The goal of the NCC (BCA and PCA) is to enable the achievement of nationally consistent, minimum necessary standards of relevant safety (including structural safety and safety from fire), health, amenity and sustainability objectives efficiently.

The NCC is a performance-based code. To meet NCC Performance Requirements, designers may use Deemed-to-Satisfy Solutions and/or Performance Solutions (formerly known as Alternative Solutions). NCC conformance using Performance Solutions is set out in BCA clauses A0.3, 1.0.3 and PCA A0.4.

NCC DOCUMENTS ADOPTED BY REFERENCE

The referenced documents (listed in Volume One Specification A1.3, Volume Two Table 1.4.1 and Volume Three Table A3.1) support the technical provisions of the NCC and provide a detailed means of complying with its requirements. A document that is referenced by the NCC becomes part of the building regulatory framework.

SUPERSEDED EDITIONS REFERENCED BY THE NCC

As it can take years for the updated edition of a document to be adopted in the NCC and the documents referenced within the NCC are continually updated independently, the NCC may cite superseded documents.

HOW NATSPEC MAKES REFERENCE TO THE NCC

NATSPEC includes:

- Mandatory NCC specifications and referenced standards.
- Updates to the revised NCC requirements.

NATSPEC does not include:

- Administrative requirements of local government authorities.
- NCC state or territory variations or additions.

NATSPEC references the relevant NCC requirements within the appropriate technical worksection by the following methods:

- Direct reference: e.g. Service penetration fire-stopping systems: To BCA C3.15.
- Deemed-to-Satisfy document reference: Tactile indicators: To AS 1428.4.1.

NATSPEC is based on the Deemed-to-Satisfy Provisions of the NCC. If a *Performance (Alternative) Solution* is used, amend the NATSPEC generic text to align with the alternative performance solution.

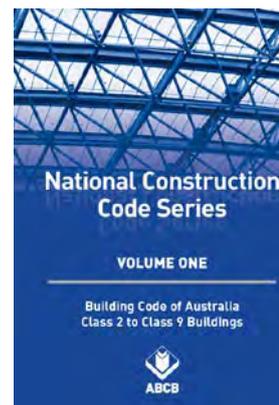
If the NCC references a superseded document, NATSPEC considers both the NCC referenced edition and the latest edition of the document. NATSPEC gives *Guidance* where a conflict exists between the NCC cited and current editions. The specifier may choose the Deemed-to-Satisfy superseded standard or the current standard as a Performance Solution.

NATSPEC REFERENCED DOCUMENTS

In *Guidance*, at the end of each worksection *Template*, NATSPEC lists all documents cited, including their number, date and title. These are grouped by their location either in the *Template* or *Guidance* text. If an NCC clause is cited within the worksection *Template* it will be included in this list.

Relevant NCC edition

The NCC takes effect on the 1st May and will be updated every 3 years. The specifier needs to comply with the relevant NCC edition at the time. Development Applications and Building Applications or Construction Certificates may rely on different NCC editions.



NCC on relevant references

A reference in a *Deemed-to-Satisfy Provision* to a document under A1.2 refers to the edition or issue, together with any amendment, listed in *Specification A1.3* and only so much as is relevant in the context in which the document is quoted.

BCA A1.3(a)

Similar in BCA 1.1.3(a) and

PCA A1.3(a)

NCC on superseded editions

Where the BCA references a document under A1.2 which is subject to publication of a new edition or amendment not listed under *Specification A1.3*, the new edition or amendment need not be complied with in order to comply with the *Deemed-to-Satisfy Provisions*.

BCA A1.3(d)

Similar in BCA 1.1.3(d) and

PCA A1.3(d)

Relevant websites

www.abcb.gov.au

Relevant documents

NCC - Volumes One, Two and Three

Relevant worksection

0171 *General requirements*

Eagle Stadium Werribee, VIC



Kingspan Insulated Panels' roofing and walling systems have been used to construct a landmark sporting venue in Werribee, Victoria.

A multi-coloured façade has been created as part of the \$47 million re-development of the 15,000m² Eagle Stadium in Werribee, which is the largest indoor sporting court facility in Melbourne's West.

"The Kingspan façade has enabled the council to create a local icon, which was a key design deliverable for the project," said Gray Barton, Director of Williams Ross Architects, which specialises in the design of leisure, sport and aquatic centres.

"The clean lines and distinct colours are visually strong enough to let the Stadium be a landmark in its own right, without the need for signage," said Barton.

Using more than 15,000m of trapezoidal roof panels and almost 7,000m from the Kingspan range of architectural wall panels, ten different colours were used to construct a roofing and walling system that maximised interior and street appeal across the site's new and existing buildings.

"The initial concept was to wrap a façade around the building to provide material continuity, and the use of several colours on the primary external corners to provide visual emphasis.

"The palette continued indoors with the use of Kingspan's insulated roof panels. This has greatly contributed to the internal aesthetic, allowing us to use a warmer Dune colour rather than standard off-white," said Barton.

The facility houses 12 indoor multi-sport courts, 1,000 square meters of community gym facilities, and seating for 1,500 spectators at the show court.

The panels were also a key factor in achieving a thermally-efficient and comfortable indoor environment.

"The council supported the development of a sustainable design brief, allowing us to ultimately deliver an integrated solution with the building envelope at the core, rather than implementing a series of plug-in solutions," said Barton.

"A building the size of Eagle Stadium has several thermal zones with varying mechanical and ventilation strategies – from fully air-conditioned spaces, to indirect evaporative cooled spaces, to space with natural cross ventilation.

"The Kingspan wall and roof panels provided a fully-integrated solution that enclosed all areas with a thermal inertia, suitable for each of the different ventilated spaces. This was critical to building a facility that is able to hold an internal temperature for longer and to maintain a suitable indoor sports environment," said Barton.

"The Kingspan team demonstrated a strong understanding of the product's physical properties and detailed material junctions, helping us to make the most of the panels' application – from the overall façade scale across 200 metres to the smallest of junctions to seal the building enclosure," concluded Barton.

The Kingspan team attended regular site inspections to ensure the panels were being installed to specification, delivering on the sustainable design principles laid out by Williams Ross.

As the panels are a single component, they could be installed quickly to reduce the building's critical path, allowing other trades and materials to continue work inside the structure.

The panels are made up of Kingspan's unique FIREsafe and FIBREfree Insurer Approved PIR (Polyisocyanurate) insulation core, which is sandwiched between two layers of metal – one on the external weather side, the other a pre-finished internal liner. The result is a single component solution that replaces multi-part construction.

Kingspan insulated roof and wall systems offer significant advantages, including fast, single-fix installation with high thermal performance, insulation continuity, minimal air leakage and the elimination of interstitial cavity condensation and cold bridging.



The Kingspan wall and roof panels provide clean lines and warm colours to create a welcoming environment for facility users and spectators

Optus Stadium Burswood, WA



Subiaco Oval is as much a part of Western Australian sporting folklore as Dennis Lillee's chin music, the centimetre-perfect AFL calls of favourite son Dennis Cometti, or the gloriously dangerous surf breaks of Margaret River. Built in 1908, the stadium has not only played host to AFL games but also to music icons such as AC/DC, Paul McCartney, U2 and Pearl Jam – despite its famously poor acoustics.

As the state has come of age, the race has been on to ensure its capital city's infrastructure keeps pace. The highly anticipated Optus Stadium (originally named Perth Stadium) has long been considered a major part of the regeneration program.

Optus Stadium opened in January 2018 as the third largest stadium in Australia, seating up to 70,000 people. Construction was initially planned for Subiaco but the location was later moved to Burswood. This allowed for a build that was unconstrained by surrounding developments, integrated well with the expansion of Perth's public transport system, providing easier access to the CBD.

The round stadium consists of tiered seating located above bars and restaurants in the levels below. The unique design by Hassell Architects called for a slim profile, thermal solution

to meet the limited space allocation while still delivering on the high energy-efficiency requirements of the project. With this in mind, the Kingspan technical team, along with the project's contractors at Cubic Group, designed a customised installation solution that could be applied to the underside of the seating plats.

"We wanted to design an alternate installation system that would be aesthetically pleasing and not detract from the beauty of the design, retaining the thermal performance requirements of the project," explained Technical Services Manager, Killian Smith.

Kingspan's Kooltherm® K10 Soffit Board was the perfect choice. Its slim profile and high thermal performance allowed it to fit into the enclosed soffit areas, but still deliver compliance with the high thermal requirements of the building. Where the insulation was exposed, Kingspan's Kooltherm® K10 White Soffit Board was used to offer a more aesthetically-pleasing result.

The two boards offer similar thermal properties and performance was not compromised as a result. "We presented a number of installation options for the build. In the end, Kingspan and the contractors at Cubic Group settled on a unique bracket system for the application," added Smith.

The 42,000m² of Kingspan's Kooltherm® K10 Soffit Board and Kooltherm® K10 White Soffit Board were specified for their faster installation, third-party compliance certification and ability to meet the insulation requirements needed for the high-profile project.

Over 2,000m² of Kingspan KoolDuct® was used to create lightweight cushion heads and plenum boxes for the stadium's HVAC system. The versatile product also lines the ice troughs in the facility's bars and restaurants.

The facility's bronze façade is made of anodised aluminium and reflects the state's unique geology. LED lighting to show the home-team colours is woven through the structure and is a testament to the "fan first" approach.

"Wherever you find marquee projects, you are sure to find our high efficiency products. Optus Stadium has given the city of Perth a truly world class venue and we are proud to be such a major part of it," concluded Smith.



While Optus Stadium's prime use is to host the AFL, it will also provide an additional venue for other sporting events and music concerts



Inglis Riverside Stables Complex Warwick Farm, NSW



The Inglis Riverside Stables complex at Warwick Farm in Western Sydney is the latest world-class thoroughbred auction facility, featuring more than 800 stables, accompanied by the 5-star William Inglis Hotel and extensive landscaped grounds.

The new Inglis facility will stage a busy schedule of activities during the year, covering all aspects of the thoroughbred breeding and racing industry while also hosting both corporate and private functions.

Fresh Landscapes, James Pfeiffer Landscapes Architects and FDC construction worked together to produce the outstanding 5-star hotel grounds, show stables and horse arenas for the William Inglis Family, making this facility the world's leading horse stable facility.

Fresh Landscapes secured supply through Lawn Solutions Australia (LSA)'s Sydney-based grower Greenlife Turf Supplies after running into stock issues due to major turf shortages across NSW.

Fresh Landscapes was extremely happy with LSA producer Greenlife being able to provide a consistent level of service, quality and the quantity of stock needed within the very limited timeframe.

All Lawn Solutions Australia producers are fully certified under Australia's only national turf accreditation program, AusGAP. AusGAP certification not only enforces turf quality and purity standards, but also requires compliance

in all business operations including turf transport and installation, environmental policies, work health and safety and customer service. AusGAP certification ensures customers that they will receive the highest quality products and service available in the Australian turf and landscape industry.

Sir Walter DNA Certified Soft Leaf Buffalo was chosen because of its superior characteristics, providing specific benefits for this particular project's needs including:

- Drought tolerance – Sir Walter DNA Certified has an extensive sub surface root system that grows deep into the subsoil, increasing drought tolerance, which is an important characteristic in any environmentally sustainable landscape.
- Shade and wear tolerance – Sir Walter DNA Certified performs in as little as three hours of sunlight per day and boasts a high wear tolerance and ability for quick self-repair. These traits made Sir Walter the clear choice with shaded areas around the new complex requiring a resilient and aesthetically pleasing grass.

Turf supply and installation works commenced in November 2017 and the project was completed in several stages over a three-month period ending in January 2018.

Turf was supplied in 1000m² increments, with a total of 25,000m² used in the project, making up the major portion of this impressive 30,000m² landscaping feat.

Simon Pitkethley of Pitkethley Landscape Management has been working in the maintenance team for Inglis for the past 20 years and heads the Inglis facility grounds. "The grass is looking good and performing exceptionally well," Pitkethley was pleased to report.

Facilities Manager at the Inglis complex Paul Bandy also added that "everyone is very happy with the final result."

Images: Fresh Landscapes and Gardens

Landscape Designer: Alex Longley, Fresh Landscapes

Turf supplier: LSA Sydney base grower Greenlife Turf

Turf variety: Sir Walter DNA Certified Soft Leaf Buffalo



Sir Walter DNA Certified Soft Leaf Buffalo was chosen for Inglis Riverside Stables Complex's landscaping program

The Calyx Sydney, NSW



Located on the site of the existing Sydney Tropical Centre within the Royal Botanic Garden, Sydney, The Calyx is a new world-class attraction which features the largest living green wall in the Southern Hemisphere.

Designed as an extension of the Garden's Arc Glasshouse, the \$17 million exhibition centre replaced the former Tropical Centre pyramid and foyer and provides an integrated mix of indoor and outdoor areas to accommodate a variety of horticultural displays, regular hospitality events and cultural exhibitions.

The Solution

With its circular form and strong, rib-like steel frame, the very nature of The Calyx made tapered LYSAGHT LONGLINE 305® cladding a natural choice for roofing the enclosed sections of the new exhibition centre.

With its own bold ribs rising dramatically from wide, flat pans and creating a strong visual where the tapered ends came together at the inner edge of the roof, tapered LYSAGHT LONGLINE 305® cladding perfectly complemented the striking circular structure.

The Process

The early engagement of Lysaght in the project, liaising closely with the architect to make certain their desired specification of tapered LYSAGHT LONGLINE 305® cladding would work in the design, was invaluable in ensuring their vision for The Calyx was fully brought to life.

This included carefully calculating the tapers required for each sheet of LYSAGHT LONGLINE 305® cladding and then scheduling the required manufacturing accordingly to ensure the sheets accurately followed the curvature of the roof.

Fixed in place with a specially designed, concealed-fix system, the tapered LYSAGHT LONGLINE 305® cladding delivered the flawless fanned deck envisaged by the architects.

LONGLINE 305® Steel Cladding

Popular among architects, this distinctive profile adds visual interest to large areas by casting evolving shadows which change the look of the roof throughout daylight hours.

The product is manufactured from 0.7mm ZINCALUME® steel or COLORBOND® steel and has a standard cover width of 305mm. Strong and durable, the water carrying

properties of concealed-fixed LYSAGHT LONGLINE 305® cladding makes it suitable for roofing applications with a pitch as low as one degree. LYSAGHT LONGLINE 305® cladding can also be fluted and tapered.

The specially-designed concealed-fix system allows for thermal expansion and the absence of screw penetrations eliminates the potential for water ingress over time.



LYSAGHT LONGLINE 305® cladding is featured in the new installation in the Royal Botanic Gardens in Sydney



Sunshine Coast University Hospital Birtinya, QLD



The \$1.8 billion Sunshine Coast University Hospital (SCUH) project is a Queensland Government initiative to address the growing health service needs of the Sunshine Coast community. The hospital opened with approximately 450 beds in 2017 and will grow to 738 beds by 2021. The new public tertiary facility is being delivered through a Public Private Partnership (PPP) contract with Exemplar Health, a consortium comprising Lendlease, Siemens and Capella Capital, with partner Spotless Facilities Services. Exemplar Health has designed, built and partially financed the public hospital, and will continue to maintain it for 25 years.

The SCUH is the second largest building construction site in Australia. Key features of the design include a large integrated central courtyard and outdoor room, designed to take advantage of the local climate, coastal lifestyle, and the healing properties of natural light and air. These major spaces use the natural environment and landscape to create a hospital that blends buildings with landscape, seamlessly linking inside to out.

Creating freely accessible social spaces that take full advantage of the seaside climate, the SCUH will offer high levels of public and natural amenity, and through connection to the local community, will enhance the experience of patients and staff and contribute to their wellbeing.

Mapei was invited to be involved in this project to provide a full product installation system for over 71,000m² of flooring and over 20,000m² of wall coverings.

PK Flooring was awarded the contract to repair, level, waterproof and install various selections of Tarkett vinyl sheeting on floors and walls throughout the extensive hospital areas and amenities.

With over 80% of the concrete floors needing to be levelled, the substrates were firstly primed using Mapei's

Eco Prim T (solvent-free acrylic primer in water dispersion with very low VOC emissions) followed by the installation of Ultraplan Eco (an ultra-fast hardening levelling compound used for levelling and removing differences in thickness from 1 to 10 mm on new or existing substrates, preparing them to receive any kind of floor covering where an excellent resistance to loads and traffic is required). Concrete substrates that only required small patching repairs were rectified using Planiprep SC (high performance, fibre-reinforced skim coating compound) and Nivorapid (ultra-fast setting, thixotropic, cementitious levelling compound for horizontal and vertical surfaces from 1 to 20mm thick layer). Some parts of the flooring had a lead sheet installed to act as a barrier between X-ray rooms and offices. These areas were levelled using Nivorapid mixed with Latex Plus to improve the deformability and bond strength of the levelling mortar.

The floors and walls in the bathrooms and wet areas were waterproofed using Mapeflex PU45 (a one-component, rapid-hardening, paintable, thixotropic polyurethane sealant and adhesive with a high modulus of elasticity) and Mapegum WPS (fast drying flexible

liquid waterproofing membrane). Once the second coat of Mapegum WPS was dry, these areas were primed with a coat of undiluted Eco Prim T, smoothed with Planiprep SC in preparation to install the vinyl floorcoverings. All wet-area vinyl was installed using Mapei's Adesilex G19 (two-component epoxy-polyurethane all-purpose adhesive to install rubber, PVC and linoleum floorcoverings).

Over 60,000m² of Tarkett floor vinyl was installed in the public areas using Ultrabond VS90 Plus (universal high temperature adhesive in water dispersion to install resilient floorcoverings) and over 27,800m² of wall vinyl was installed using Mapei's Rollcoll adhesive (for interior installations of all types of vinyl coverings).



The SCUH has been designed as a tertiary teaching hospital, servicing the Sunshine Coast region as the hub in an integrated network of accessible healthcare

Markham Global – adding life to concrete.



Markham is not just another product supplier. We offer solutions for asset owners, architects, civil engineers, construction professionals and concrete placement. We specialise in PENETRATING HYDROGEL treatments for new and existing concrete.

Markham's team is continually researching and developing products and systems that are more environmentally friendly, cost-effective, innovative, and of course easier to use. www.markhamglobal.com



MODDEX GROUP is Australia's leading developer and manufacturer of an extensive range of modular steel handrails, guardrails, balustrades, and other barrier solutions that ensure the safety of people and the protection of property. Moddex innovation is specified and sold throughout Australia and New Zealand. Moddex is recognised for its flexible, robust, cost effective and easy to install systems that simplify the installation of handrails and balustrades in all environments and for a broad range of applications within the Defence, Construction, Mining, Transport, and Education industries, as well as the Public Utilities sectors. www.moddex.com.au



Parchem Construction Supplies is a leading manufacturer and supplier of products and equipment to the Australian and New Zealand concrete and construction markets. Through all of its divisions and heritage, Parchem has built over 50 years' experience in servicing the construction, civil, and concrete industries. Parchem brings experience and technical expertise in the supply and manufacture of construction and decorative concrete products, equipment, and tools. www.parchem.com.au



Pasco specialises in waterproofing and sealant products. With 30 years' experience, we can advise on any waterproofing or sealant application. With local and overseas suppliers, we offer a comprehensive product range for every situation. We are Victorian distributors for Latham Architectural Flooring products, including stair nosings, entry mats, and expansion joints. Pasco's range includes the award-winning Buzon Pedestal. Designed and manufactured in Belgium, it allows construction of paved and timber floors on balconies, podiums, and roof gardens. www.pasco.net.au



For over 50 years Polyflor has been providing Australia and New Zealand with resilient vinyl flooring, without comprising on design and functionality. Their floor coverings are suitable for a variety of commercial and domestic installations. Available in an array of colours and designs, Polyflor's ranges are hard wearing, durable, and low maintenance, offering both style and substance. Polyflor's environmentally friendly flooring is GreenTag certified and 100% recyclable. Polyflor really is 'flooring design for a better environment.' www.polyflor.com.au



PPG Industries' vision is to continue to be the world's leading coatings and specialty materials company. Through leadership in innovation, sustainability, and color, PPG helps customers in industrial, transportation, consumer products, and construction markets, and aftermarkets to enhance more surfaces in more ways than any other company. PPG operates in nearly 70 countries around the world. Reported net sales in 2014 were \$15.4 billion. PPG shares are traded on the New York Stock Exchange. www.ppgpmc.com



Distribution Warehouse Port of Brisbane, QLD

In 2002, a New Zealand retail group constructed a 45,000m² distribution warehouse at Port of Brisbane, in preparation for their entrance to the Australian market. This facility was a typical high-demand industrial storage and distribution warehouse, trafficable by transport and loading vehicles.

Aquron 1000 was selected to treat the warehouse floor slabs, to enhance curing quality and provide long-term anti-dusting hardening.

Aquron 1000 provides a well-cured slab, minimising shrinkage cracking, equal or superior to water curing. Aquron 1000 penetrates to a depth of 150mm into the slab, removing the risk of delamination under traffic over time. Slab surface delamination is a very common issue where shallow hardeners are used for high-traffic floors.

For Markham, a key interest in this particular project lay in the fact that treated and untreated slabs happened to be placed side by side, experiencing the same traffic levels and exposure. Opportunity was found to re-visit the project in 2007 and 2012, and compare the aging of each section of slab.

The long-term durability of the Aquron-treated slab, under 5 and 10 years of heavy traffic, was emphasised by comparison between the side-by-side treated and untreated slabs. The difference in the two slabs, and the evident benefit of Aquron 1000 treatment, was unmistakable.

Aquron 1000 is a penetrating hydrogel treatment. When applied at the time of placement, Aquron 1000 maximises the quality of the hydration by immobilising the moisture. This minimises shrinkage cracking, which in turn leads to a high-quality, durable slab. Micro-cracking is a major contributor to premature concrete aging, so the importance of quality curing cannot be overemphasised.

Aquron penetrating hydrogel remains within the concrete for the lifetime of the slab. The immobilisation of the moisture means the reinforcing steel is protected from contaminants, and the whole deterioration cycle of concrete ageing is suspended, leading to an excellent slab service life.



Right and below: Aquron 1000 was the ideal treatment for exposed slabs in the Port of Brisbane distribution warehouse



Superyacht Marina Carpark Rozelle, NSW

moddex



The Project

Moddex worked closely with Richard Crookes Construction to design, supply and install balustrade for one of Australia's premier berthing facilities, the Sydney Superyacht Marina (above).

The \$30 million redevelopment of the Superyacht Marina in Rozelle involved the rearrangement of marina pontoons, an increase in the size of the carpark and the use of outdoor areas for seating associated with the marine uses and supporting restaurants and cafes.

Moddex worked with Richard Crookes Construction on Stage 3 of the project: a four-storey carpark consisting of 217 car spaces, totalling over 7394m², with associated lifts and feature green walls.

Moddex was able to work with the client to ensure a compliant balustrade solution for the multi-level carpark's external stairwells.

Modular Solution

The proprietary Conectabal[®] CB30 commercial balustrade/single inline handrail configuration used on this particular project is engineered and tested to comply with AS1170:2002. Moddex was also able to integrate custom fabrication alongside the proprietary system to deliver a complete solution for the client.

Through selecting Moddex, Richard Crookes was able to limit fabrication costs, while benefiting from the faster lead times across production and installation.

The top rail of the balustrade was powder-coated in blue to match the

other design elements of the carpark exterior for an aesthetically-pleasing look.

In addition to supplying the balustrade, Moddex was able to provide a package for Richard Crookes incorporating 150NB and 200NB bollards and stainless-steel bike racks.

Project Delivery

Moddex was able to bring value to the client by supplying and installing the package through its Project Management service delivery solution. This commenced with the development and submission of a project proposal for Richard Crookes with costings, marked-up plans and specification sheets for all product recommendations.

Once approved, site measurements subsequently informed CAD designs and critical dimensions were reviewed against the relevant standards to produce design intent drawings. Once approved, final production and installation drawings were supplied, including a full parts supply list.

Parts were scheduled for delivery to site in order to meet the client project timelines. Delivered to site via flat pack, components were packaged by

stairwell and arrived on-site in line with project phases and without confusion. Moddex was able to arrange installation on-site care with its nationwide network of accredited installers.

Overall, Moddex was able to provide a competitively priced solution and the client was able to experience the following benefits:

- The no-weld construction reduces corrosion and associated maintenance for long-term return on investment.
- Installers were able to deliver and install as the car park was being constructed, where required.
- As part of Moddex's investment in proprietary systems – clients benefit from CAD design support, load testing and engineering certificates, compliance certificates, installation certificates and product warranty



Moddex proprietary balustrade (Conectabal[®] CB30 Commercial Balustrade in Galv) and handrail system (Single Inline Handrail in Powder Coat Dulux Cooks Bay) for Sydney Superyacht Marina



Turkish Bread Factory Campbellfield, VIC



The Turkish Bread Factory situated in the northern suburbs of Victoria produces freshly handmade Turkish bread rolls, pide and pizza bases. The factory supplies supermarkets, cafes, restaurants and bread shops. After winning a contract to supply a major supermarket chain, the factory needed to triple their hourly production, hence requiring a new facility, including new equipment, to meet this increased demand.

A key requirement for the project was to meet *Food Hygiene - Hazard Analysis and Critical Control Point* certification. This was obligatory for the asset owner, so it was crucial to have flooring that met the strict hygiene, durability and ease of maintenance requirements. Fast reinstatement of the facility was equally important, as the factory could not afford to delay production.

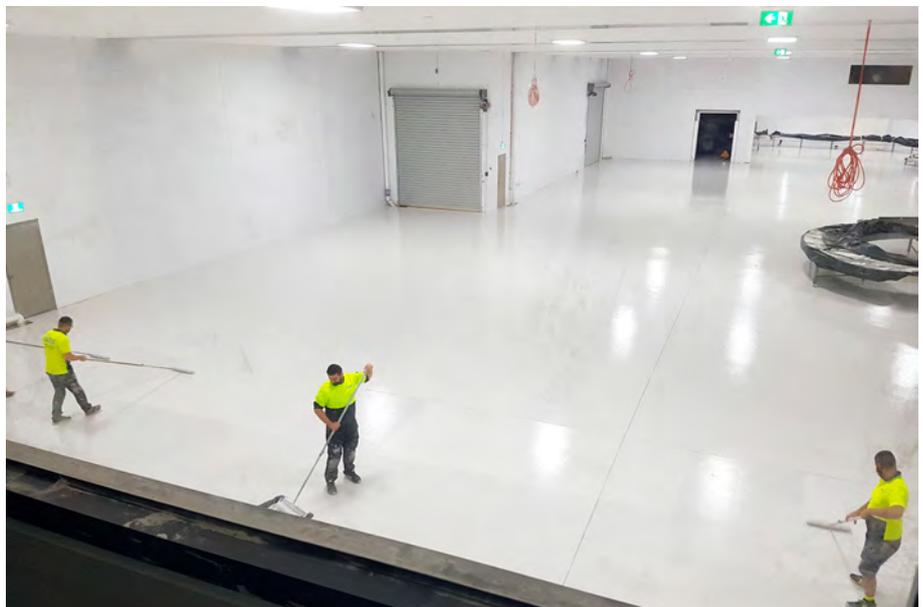
A system comprising Fosroc Nitomortar 903 and Fosroc Nitoflor FC150 HP (previously known as Durafloor HP), was chosen as the best solution for this project.

The contractor prepared the 1800m² of the concrete floor by grinding the surface, followed by applying Nitomortar 903 as a primer, to ensure maximum adhesion of the finish coating. The floor was finished with Nitoflor FC150 HP.

Nitoflor FC150 HP is a 100% solid epoxy coating with high resistance to chemical attack and excellent durability. This coating will withstand industrial chemical spillage, allowing ease of maintenance. Being solvent free, it has low odour and quickly develops initial hardness thereby minimising maintenance disruption; it enabled the contractors to deliver a finished floor within a fast turnaround time. The asset owner did not need an anti-slip surface as there were no forklifts or moving machinery in the dry processing plant, but anti-slip grains could have been added if this was a requirement. Instead, a roller was used to give an

orange peel texture finish. The colour 'Pastel Grey' was chosen for the project – this light reflective colour helped to create a brighter indoor work space.

This product system satisfied all the asset owner's requirements for Food Hygiene certification, durability, ease of maintenance and quick turnaround time.



Top: Crack filling with Nitomortar 903
Middle: Applying Nitoflor FC150 HP
Bottom: Finished new facility

Smith & Co. Collingwood, VIC



The Smith & Co development on Smith Street in Collingwood is a mixed-use commercial venture by developer Banco Group. Known for its edgy bars, cafes, restaurants and vintage shops, Smith Street is one of the hippest up-and-coming urban environments in Melbourne.

A combination of private and communal facilities, Smith & Co, is a “finely crafted residential and retail development, curatorially designed around capacious gardens expressing Collingwood’s sense of community and the sites proud history.”

Built by the Hacer Group, the development incorporates a 7-level apartment building and extensive commercial space, with a 100m frontage on Smith Street that includes the first Coles supermarket in Melbourne. The façade of this historic site was restored to its original glory during the development, keeping the Coles history alive.

As a luxurious celebration of the community, the development was designed around a series of communal spaces, including three themed courtyards – Indigenous influences, European styling and edible gardens. These spaces were created with the assistance of Buzon Screwjack Pedestals from Pasco Construction Solutions.

Suited to the design and construction of raised floors, Pasco’s Buzon pedestals were the perfect solution for creating the many paved courtyards, as well as the spacious private balconies and rooftop entertaining facilities.

Designed for use with pavers, timber or steel grating, Buzon pedestals are used to create raised floors on balconies, terraces, green roofs, temporary floors and water features. They allow builders to conceal services and offer easy access for maintenance of the waterproofing membrane.

Incorporating a patented slope-correcting device to ensure a level floor finish, and interchangeable spaces to accommodate gaps between pavers for positive drainage and air ventilation, the Buzon pedestal supports were a sustainable and easy choice to achieve the high-end finish required by Smith & Co’s builders.

Designed, manufactured and tested in Belgium, Buzon pedestals have been used on projects all over the world, and now includes the Smith & Co. complex as part of its illustrious portfolio.

Architect: Jam Architects
Builder: Hacer Group
Developer: Banco Group
Paving Contractor: Skill Tiling



Pasco’s Buzon pedestals were the perfect solution for creating the many paved courtyards around which Smith & Co. was designed



Pomp Hair Collingwood, VIC



With access to design inspiration being easier than ever via social media, online and in print, it is more important now than ever that spaces be designed with a point of difference. More frequently, small businesses are relying on the aesthetics of their design to provide part of what makes them memorable. Essentially, their space needs to embody their brand representation. Additionally, designers are responsible for balancing function and creativity, by specifying products fit-for-purpose and ensuring this is all achieved within budget.

Setsquare Studio has perfected the idea of refined playfulness, crafting spaces that marry natural palettes with splashes of colour, light and texture. Its latest project, Pomp Hair, is no different and is the perfect representation of a space which carefully balances functional specification with a classic modern style. The minimalistic design concept of Pomp Hair encompasses shades of mint, tan and emerald to truly represent the client's brand identity and allow individual elements/products to simultaneously complement and contrast one another.

The use of a parquetry laying pattern creates an element of sophistication and elegance, without the hefty price tag of purchasing and installing hard wood flooring. These pre-cut smaller planks are perfect for easy installation and feature a durable polyurethane reinforced coating for carefree maintenance.

The use of a safety floor which features a P3 rating with sustainable slip (Polysafe Verona Colour: 5209 Freshmint) to areas where there is a slip hazard is not only practical, but essential to a safe work environment. All Polyflor safety vinyls come with a 10 year guarantee that the slip rating will be just as good at the end of the 10 years as it was at time of installation. This gives designers, specifiers and end users peace of mind, knowing the floor is

just as safe as the day it was installed; it is a truly sustainable slip rating. This flooring is also PUR coated, making maintenance easy and polish free for life.

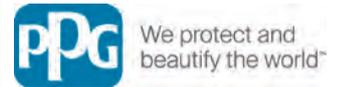
Furthermore, in consideration of sustainability, the specification of Polyflor vinyl ensures that the floor is 100% recyclable should a refit ever take place, while the products themselves contain a minimum of 25% recycled content. Selected Polyflor products come with Best Practice PVC rating from the Australian Vinyl Council and all Polyflor vinyls have either gold plus or silver plus Greentag ratings to maximise the green credits for projects and buildings. Polyflor is one of two founding members of Recofloor, the vinyl takeback scheme. Recofloor is centred around recycling vinyl and reducing the corporate carbon footprint in order to increase global sustainability.

Interior Design: Setsquare Studio
Photography: Daniel Aulsebrook



Vinyl Plank in Camaro Colour: 2251 Cambridge Parquet and Safety Floor in Polysafe Verona Colour: 5209 Freshmint are used in Pomp Hair

ANZ Stadium Sydney Olympic Park, NSW



The PPG PSX® 700 patented engineered polysiloxane offers unique “1+1=3” benefits: the topcoat itself provides the corrosion and chemical resistance of an epoxy, and colour and gloss retention comparable to a fine urethane. When combined with an inorganic zinc primer, the two-coat system can significantly outlast the best three-coat system on the market and meet the most critical ISO 12944 C5I standard. The product’s performance has been proven through 20 years of success on various projects in Australia and globally.

The asset owner of Stage 1 of the ANZ Stadium Roof Refurbishment project chose the PPG PSX 700 coating system to safeguard this important asset in Australia.

The Project

The ANZ Stadium was initially completed in 1999 to host the Summer Olympics and has become the home stadium for the Canterbury Bulldogs, South Sydney Rabbitohs, West Tigers and many others sporting clubs.

The east and west roofs of the stadium were erected just before the Sydney Olympics and coated with a three-coat

polyurethane system. During the 2003 reconfiguration, the north and south roofs were added and coated with the two-coat epoxy polysiloxane system: PPG AMERCOAT® 307 coating at 75µm and PPG PSX 700 coating at 125µm.

The 2017 repaint was part of a roof refurbishment programme for all structural steel exteriors, which also included the replacement of all the clear- and translucent polycarbonate roof panels. The coated areas include the top chords (all steel above the polycarbonate roof) and all perimeter steelwork.

The decision by ANZ Stadium management to specify the PPG PSX 700/PPG AMERLOCK® system for the refurbishment of the roof structure was based on the owners’ assessment of the condition of the existing coatings in mid-2015, which showed that the two-coat PPG PSX 700 system outperformed the three-coat PU system.

The PPG PSX 700 Solution

The PPG PSX 700 coating provides higher gloss and greater colour and gloss retention than acrylic polysiloxanes and traditional polyurethanes. Only

epoxy siloxane offers three times the abrasion resistance of polyurethanes, two times the adhesion of epoxies, and dust and mildew accumulation. Importantly, the coating’s long-lasting, proven performance delivers reduced maintenance frequency. All the product’s benefits make it an ideal coating for an iconic project like the ANZ Stadium to preserve its impressive image and elevate its user experience.

The Application

Programmed Property Services did an excellent job for the structural steel exterior project. Due to the limitation of site space, the surface preparation was done by light hand-sanding thanks to the PPG AMERLOCK high-build, surface-tolerant epoxy primer. The primer coat needs minimal surface preparation and can be applied over intact old paint and tight rust, which makes it a convenient solution where blast cleaning is impractical.

Builder: Laing O’Rourke

Painter: Programmed Property Services



The ANZ Stadium prior to refurbishment





The Australian Institute of Building Surveyors (AIBS) endorses The National Building Specification published by NATSPEC.

Concern with the emerging issues of non-conforming products in the market place gives our professionals and the community assurance that the quality, durability, longevity, and safety of products and systems used in the construction industry are inherited under adoption of minimum standards referenced in national specifications from the design, and into construction specification on site. These national specifications meet the minimum performance requirements in the National Construction Code adopted by the Australian and respective State and Territory legislation.

AIBS fully supports the National Building Specification from NATSPEC.

Tim Tuxford, National President, AIBS



Raven is one of the most trusted brands in the building hardware industry, providing innovative, tested, and certified door and window sealing systems.

Raven's door and window sealing systems have become synonymous with quality, value, and reliability, backed by service excellence, which is why it is the brand that architects, specifiers, and builders can rely on.

Raven's world class testing facility means that we are constantly developing new ways to respond to the rapid advances in the building industry. www.raven.com.au



Regupol (Australia) Pty Ltd is the Australasian office and distribution network for the Regupol® and everroll® sustainable flooring product brands. The company has been operating in the region for over 25 years, offering solution based products and technical services for all kinds of sustainable flooring and soundproofing solution based projects. The company is conveniently located at Smeaton Grange, NSW, and offers nationwide distribution of the Regupol® and everroll® product lines. www.regupol.com.au



For over 60 years, Resene has forged a reputation of excellence and quality in manufacturing products designed to meet the demanding standards of architectural and building industry professionals. The Resene product range includes paint and specialist coatings for residential and commercial buildings. To help building professionals keep abreast of new developments in our product range, Resene has an innovative range of architectural services and reference materials, including technical and specification manuals, the Resene Total Colour System, samples, and online information. Sophisticated tinting technology enables Resene to produce durable colour options that remain true to colour long after they have been applied. Interlinked systems for decorative and high performance coatings allow you to achieve the same spectrum of colours in a wide variety of products. www.resene.com.au



Revolution Roofing provides a range of steel roofing, walling, and building products for the Australian domestic, commercial, and industrial building industry. Using only BlueScope and Colorbond steel, our products are further backed by our extensive range of guarantees.

Since the opening of Revolution Roofing, our range has grown to include all the latest roofing profiles, gutters, fascias, ridge cappings, valleys, flashings, verandahs, and even a customised sheet metal fabrication department.

We are working with building professionals to further develop new and unique roofing and walling products, which is evident in our latest release of the exclusive True Oak series of profiles. www.revolutionroofing.com.au

Adelaide Health and Medical Sciences Adelaide, SA



Situated alongside the South Australian Health and Medical Research Institute in the heart of the Adelaide's BioMed City, is the new Adelaide Health and Medical Sciences (AHMS) building. Featuring the latest state-of-the-art cutting-edge technology, the AHMS was designed to integrate skills-based student learning with The University of Adelaide and a network of industry experts and health researchers.

Standing 12 floors high, the AHMS contains four floors of laboratories, three lecture theatres, 24 simulation suites, a dental hospital and student study spaces, eateries and amenities.

To meet the various mandated regulations and standards as required of the healthcare industry, Raven was specified due to its trusted reputation,

high quality, and extensive range of NCC-compliant NATA-certified and tested sealing systems. Raven is also independently certified to international quality standards ISO9001.

Raven supplied a range of door bottom seals, perimeter seals and threshold plates to the AHMS building, providing integrated door sealing systems designed to meet a variety of complex sealing requirements. Raven sealing systems were required to perform across multiple levels from the exclusion of smoke, fire and weather, to acoustic attenuation and the containment of energy.

In addition to strict testing and certification requirements, the AHMS building project required the seals to be easy to install, made to withstand heavy

duty use, require minimal maintenance and to meet the aesthetic requirements of the Architect. As an Australian family owned and operated business, Raven was able to deliver on all points, as well as provide full technical support to the architects and builders, as well as certifying authorities through to project completion.



Top: Raven door bottom seals used throughout the building

Bottom: The new Adelaide Health and Medical Sciences building will transform the learning experience of University of Adelaide students



Barangaroo Ferry Wharf Barangaroo, NSW



flooring needed to meet a completely green building design brief.

Made from recycled materials, everroll® products meet all sustainability requirements without compromising on function and form. Certified by Good Environmental Choice Australia, the product has also earned a 100 per cent item score in the Green Building Council of Australia (GBCA) Material Calculator.

The multi-functional benefits of everroll® flooring

Infused with fragments of colour, each of the seven distinctive product ranges harmonises effortlessly with surrounding flooring systems, hardware and furnishings.

This gives architects unprecedented scope when seeking suitable flooring for a wide variety of contemporary, futuristic and environmentally friendly design projects.

A consistently tough, quiet, shock-absorbent and eco-friendly flooring option, everroll® will play an increasingly significant role in the transformation of Sydney's cityscape and waterfront. Regupol is proud to have played such a significant role in this globally renowned urban renewal project.

Barangaroo Ferry Wharf, opened in June 2017, is the second largest terminal in the Sydney Ferries network, after Circular Quay. It consists of four platforms on two wharves, with a third wharf in the pipeline. The wharves were built to accommodate up to 11 vessels per hour during weekday peak and 14 vessels per hour during weekends.

As such, the terminal required a flooring product durable enough to withstand large volumes of pedestrians. The flooring also needed to be stylish enough to enhance a major terminal serving the thousands of residents, visitors and workers travelling to and from the Barangaroo commercial and residential precinct.

Superior products for future facing projects

Starting life as a disused container terminal on the western waterfront of Sydney's CBD, the 22-hectare Barangaroo waterfront precinct will be completed by 2024 with the addition of a new metro station.

The ferry wharf component already offers more efficient and sophisticated transport links in this exceptional public space.

During the design phase, Regupol was invited by award-winning Cox Architecture to provide versatile, weather-resistant flooring materials.

everroll® finishes add flexibility, durability and innovation to the high-impact walkways which carry a constant stream of foot traffic to and from the terminals.

Barangaroo is also one of only 19 global projects selected to take part in the C40 Climate Positive Development Program. Because Barangaroo aims to be carbon neutral with zero waste, the



Regupol's everroll® rubber flooring provides Sydney's newest ferry terminal with the durability and security needed to last the distance



Oakhill College Library Castle Hill, NSW



The school library is the heart of a school. Through books and various digital media, it is a place where students can immerse themselves in a new world. It is a place of creativity, connectivity and exploration. With that in mind, Oakhill College commissioned an upgrade to their existing library, to have elements of a traditional library but also be contemporary and excite its young users.

The library is divided into six core zones: Create, Collaborate, Explore, Investigate, Study and Read, which are signposted throughout with graphics complemented by pops of Resene colour. Each zone caters to the unique learning style for the lesson or study session and is determined by the careful selection of lighting and furniture, which includes booth seating, flexible folding tables, height-adjustable tables, modular seating, reading chairs and café furniture.

With so many visual stimulants in a teenager's world, the new library had to engage with them and speak their language. The inspiration for the colour scheme was the students themselves. Their energy, vibrancy and boldness were translated into a colourful palette of red, teal, yellow, purple and orange. Colours were deliberately chosen to be gender neutral and reference the school colours.

The columns were painted in Resene Enamacryl gloss waterborne enamel in three colours: Daredevil, Supernova and Roadster. Graphic lettering signposts the pillars for each zone and offers inspiring quotes in a youthful and contrasting colour. Radiating carpet tiles complement the pillars, further outlining the allocated learning zones.

The construction phase of the project took place over the Christmas break. It was important to have the dust settled and odour removed from the site as much as possible by the time the

school re-opened in January. Resene Zylone Sheen's low odour made it ideal for the base building walls, in hues of Quarter Masala and Alabaster, teamed with low odour Resene Enamacryl for an easy clean finish on trim, joinery and feature areas.

The finished project reveals a dynamic and energetic learning space sure to inspire the growing minds of creative students.

Architectural specifier: Studio CCP
Building contractor: Better Built Group
Colour selection: Sinead Byrne, Studio CCP
Interior designer: Sinead Byrne and Simon Child, Studio CCP
Painting contractor: Sydney Wide Painters
Photographer: Michael Anderson, Paramount Studios Sydney



Oakhill College's students can enjoy a new and inspiring learning environment with the upgrades to their library



Dune Pavilion Uluru-Kata Tjuta, NT



In 2017, Baillie Lodges launched a new era of Australian luxury lodging with the reopening of iconic outback camp Longitude 131° in Uluru-Kata Tjuta following a significant redesign. The materials and finishes chosen were an important part of ensuring the buildings were of the highest quality, while also being sympathetic to the surroundings

Award winning architect firm Max Pritchard Gunner delivered five spectacular buildings.

Revolution Roofing is very proud to have been specified for this project, using its True Oak Deep superior corrugated and Maxline 340 flat pan profile. While these profiles have been used on iconic projects in the past, the choice of finishes is what really sets this apart.

The Spa Treatment Building features curved True Oak Deep roofs using a weathering steel (Corten) finish – the weathering steel has evolved from a bright orange to the rich brown colour seen today. The colour and vibrancy of the weathering steel will continue to evolve with each passing season, ensuring these buildings continue to amaze the Lodge's patrons.

The Dune Pavilion was always destined to be the hero shot, however the design allows the pavilion to leave its own mark on the landscape. The colour choice captures the essence of the Red Dirt the world knows Australia for.

When visiting Longitude 131° it would be hard captivated by the luxurious facilities, as well as the camp's magical surroundings.



True Oak Deep superior corrugated and Maxline 340 flat pan profile are featured on the Dune Pavilion at Longitude 131°



Rondo is a market leading manufacturer and supplier of wall and ceiling systems, and complementary accessories. Rondo is dedicated to providing the systems needed to realise visions effectively and in the most economical way possible, including systems where specific wind pressure, seismic design, or acoustic design is to be accommodated.

Rondo's commitment to providing market leading solutions, customer service, and high quality products has led it to being behind the best buildings throughout the world. www.rondo.com.au



Safetyline Jalousie is a leading louvre window brand with a history of more than 50 years in Europe. Since its arrival in the Australian market in 2009, Safetyline Jalousie has quickly established itself as a high quality option for building specifiers looking for a louvre window system that delivers wide louvre spans (up to 1.4m), impenetrable building security, and weatherproof seals. Safetyline Jalousie is distributed by SMR Designs, who have been involved in the Australian home improvement and commercial building market for more than 20 years with its other external louvre product, Vergola. www.safetylinejalousie.com.au



Tarkett is a worldwide leader in innovative and sustainable flooring and wall covering solutions. Tarkett has a diverse portfolio of products in the global flooring industry, offering integrated, customised solutions for complex spaces and specific usages.

Tarkett sells globally 1.3 million m² of flooring everyday to residential and commercial customers for health care, aged care, education, housing, hospitality, office, retail, and sports projects. www.tarkett.com.au



Tate is an industry leader in the design, manufacture, and installation of Access Floors, Structural Ceiling systems, Aisle Containment solutions, and Airflow Panels for the commercial office and data centre markets. Tate Access Floors has been manufacturing since 1952, employing over 500 people globally, has six manufacturing sites, and has installed over 18 million m² of raised floor globally. Tate is a wholly owned subsidiary of Kingspan PLC Ireland. www.tateaccessfloors.com.au



Taubmans is one of the oldest paint brands in the market. Taubmans has been painting Australian homes for over 110 years. Back in the early 1900s, George Taubman built the company on a foundation of technical superiority. Since its inception, Taubmans has grown to become a major player in the Australian Architectural Coatings Market. It is also responsible for launching well known and innovative consumer paint brands such as Endure with Nanoguard, Living Proof Silk with Teflon, Easycoat with Microban, and All Weather with Dirt Shedding Technology. www.taubmans.com.au



Crown Towers Burswood, WA

RONDO

Not just another hotel revamp, Crown Towers in Burswood, Perth, is a world away from anything else that has been developed in Western Australia until now.

Awarded to Multiplex and designed by Architect, YWS Design & Architecture, the \$570 million 6-star hotel took two years to complete and is an addition to the existing Crown Precinct.

Supplying the wall and ceiling systems, Rondo's support was also split between the towers and the podium areas. The tower corridors to the hotel rooms followed a slight curve and the Rondo Technical Services team was engaged to provide many engineered designs for both internal and external wall framings, as well as internal ceilings and external soffit framings.

This included Stud & Track, MAXIframe® External Wall Framing System, EXANGLE® Finishing Sections and PANTHER® Access Panels, all needed to meet the detail required throughout the tower and podium levels.

Beautifully installed and intricately detailed bulkheads were framed out using Rondo KEY-LOCK® framing members to the luxury spa areas, with domes and arches setting the scene for an elaborate walkway throughout the spa areas.

Nevertheless, a project of this size was not without its challenges and one such example was when Rondo was requested to provide a design solution for the ballroom's nine-metre-high walls. The initial design was for back-to-back studs 150mm x 1.15MT at a maximum 300mm centres. However, due to the back-to-back stud requirement it was decided this solution would not offer the efficiencies for installation and an alternative engineered solution was looked at.

To remedy this, Rondo provided an alternative framing design, using the Rondo hi-tensile G500 1.2BMT MAXIjamb® Stud. This eliminated the requirement for back-to-back studs and meant that Rondo engineers could present a design for the 150mm MAXIjamb® single members at 300mm maximum spacings. This not only offered onsite efficiencies but accommodated all loadings as required.

Clear communication was key in completing this job to such a high standard. The strength of Rondo's Technical Representation, the support of its Technical Services and Supply Chain teams, as well as the large stock holdings and capability to provide custom-sized lengths and products, assisted in less wastage on site and efficiency of installation, producing a truly spectacular result.



Top: Crown Towers Perth exterior
Bottom: Crown Towers Perth lobby

Pacific Fair Shopping Centre Broadbeach, QLD



The brief for louvre windows at Westfield Pacific Fair included several key elements:

- The ability to be fixed open at a particular angle to allow consistent 30% airflow and provide ventilation in the case of fire.
- The flexibility to be custom built to meet the widths specified by pre-fabricated structural steel.
- To be corrosion proof, due to the building's location within 1km of the beach.

In assessing the options, Westfield chose Safetyline Jalousie louvre windows as the best solution to meet their needs.

Safetyline Jalousie was able to tailor-make tamper-proof levers for these windows and fix them open at the required angle.

Louvre spans up to 1400mm, and the ability to manufacture to specified widths meant that Safetyline Jalousie louvre windows fit the bill in terms of flexibility in widths required. Widths ranged from 1000mm to 1200mm depending on what was required between the structural steel posts.

Finally, concerns about corrosion were eliminated with Safetyline Jalousie louvre windows being made out of aluminium, zamac and stainless steel construction, with the use of high performance coatings on the aluminium frame.

Project Specifications

Quantity Supplied: 103
Height: 1279mm (9 blades)
Width: 1000-1200mm
Colour/Finish: Powder coated – Zeus Black Matt
Louvres: 6mm Energytech grey toughened glass
Operation: Motorised
Architect/Builder: Westfield Design & Construction



Safetyline Jalousie louvre windows were selected to fit out Westfield Pacific Fair

Amaroo Village Perth, WA



Seeking a calming yet practical flooring solution for an award-nominated aged care facility, Tarkett liaised with the architects and interior designers of Amaroo Village, a new double-storey 74-bed specialist aged-care facility in Perth, Western Australia.

Amaroo Village is a vibrant and dynamic aged-care facility offering quality care to seniors. The village has two residential aged-care facilities and includes a library, hairdresser and an open barbeque space.

De Fiddes Design was engaged to undertake selections of all interior finishes (including flooring) and worked with Tarkett to create a solution that met the client brief for the environment to be welcoming and relaxing for residents.

Tarkett Australia's National Marketing Manager, Stacey Smith, said the eventual flooring solutions were inspired by organic patterns and colours. "De Fiddes was tasked to create an environment that was welcoming and relaxing for the residents," said Smith. "We know that proximity to nature helps recharge 'personal batteries.' Amaroo Village is set in gentle bushland and we drew on research around that to suggest flooring designs that helps to bring natural qualities indoors and provide a calming environment for the residents."

Subsequently, Tarkett Powerbond, a nylon pile carpet with a closed-cell impervious backing, was chosen. The Powerbond range was selected after consultation with the client to understand the needs of residents and reviewing the latest research on designing for elderly and those living with dementia.

"With the aesthetics and comfort of carpet, Powerbond seams can be cold-welded to create an integrated, impermeable floor covering ideally suited for health and aged care applications," Smith said. "We know that spillage

is one of the main challenges staff and residents may face and, with no leakage, Powerbond is impervious to spills. It also needed to be a sustainable solution which fitted within the client's budget."

Products chosen for the buildings' flooring from the Powerbond range included Meridia – for its soft, tone-on-tone all-over pattern that provides an

eye-catching alternative to solid colour, and Regalia – a soft stipple all-over effect that adds an energising flourish.

Gary Batt Associates Architects was responsible for Amaroo Village's architectural design. Both Gary Batt Associates Architects and De Fiddes Design were Finalists in the 2018 Asia Pacific Eldercare Innovation Awards for the project.



The Amaroo Village includes two residential aged-care facilities, a library, hairdresser and open barbeque spaces



Global Switch Sydney, NSW



Global Switch's Sydney campus is located on the western edge of Sydney's Central Business District, Australia's financial and commercial hub. The campus houses two Data Centres – Sydney East and Sydney West – which together span 73,000m² of dedicated world-class technical space.

Floor to Ceiling Solutions

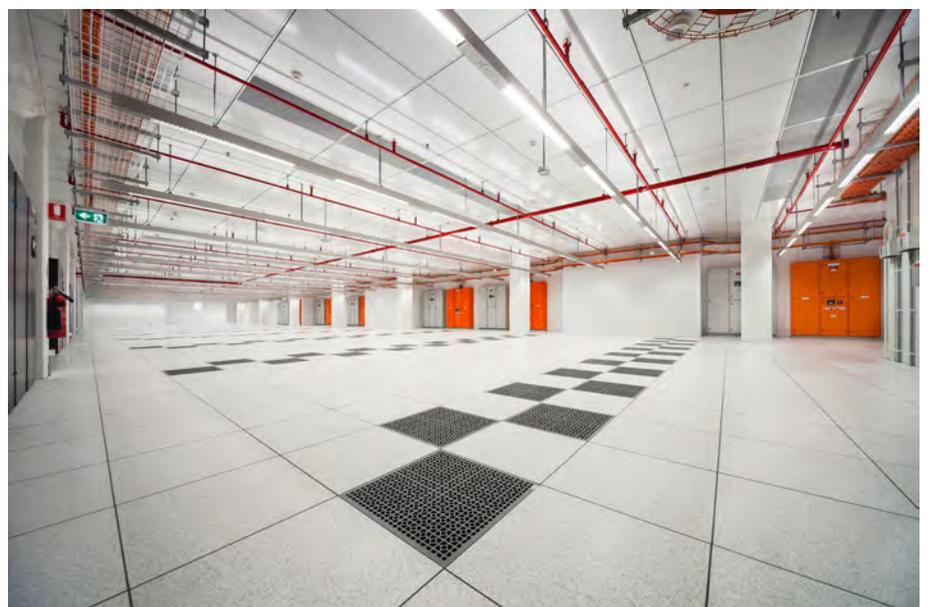
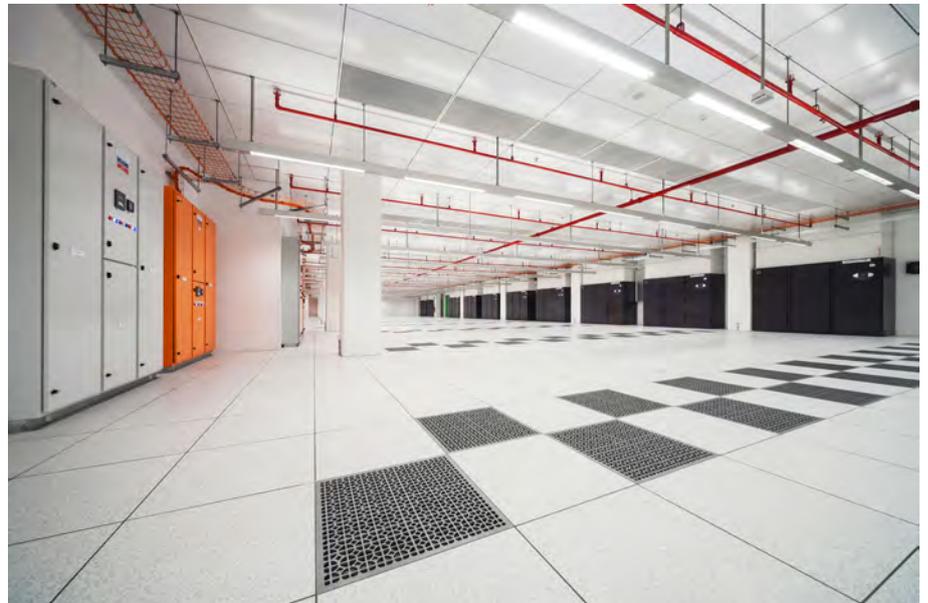
Global Switch chose Tate Access Floors Pty Ltd for its expertise and innovative and proven products to provide floor-to-ceiling solutions for Global Switch's new Sydney East Data Centre. Tate's Data Centre products are designed to maximise the Data Centre's performance, reduce operational costs and continuously reduce energy inefficiencies. Tate installed over 5,000m² of Tate ConCore® 1250/1500 Access Floors manufactured to exacting tolerances, delivering the ultimate in strength and durability to meet the Data Centre's needs.

Tate also installed over 4,000m² of Tate Grid Structural Ceiling System which was the ideal solution to distribute overhead services while providing an airtight return air plenum for the mechanical systems. Tate Grid, Tate's latest innovative Data Centre product, allows applications to combine the structural grid and ceiling into one cohesive system. Combining these systems allows for both initial capital cost savings and infinite flexibility for the immediate and future needs to the Data Centre white space. There is no need to penetrate the ceilings system for tenancy fitout, and the integral M10 continuous thread allows for immediate attachment of services without having to drill and create dust in the operational environment.

Tate's General Manager, Mr Gavin Lee, said, "The success of Tate's innovative Data Centre products has been going from strength to strength. We have gained a lot of traction in our markets in Australia and the surrounding APAC region. We are proud to be part of Global Switch's Data Centre transformation."

Lee continued, "Tate has been in business for over 50 years globally, we are a member of the Kingspan Global entity and widely recognised as a leading provider of innovation solutions for both Commercial Office and Data Centre markets. Tate works closely with every client to find the best possible solution for the lifetime of their building and provides ongoing service to ensure longevity of the product."

Architect: DEM
Engineering Firm: Aurecon
General Contractor: Hutchinson Builders
Installer: Tate Access Floors Pty Ltd



Tate products have been used to transform Global Switch's Data Centre





The AIB is proud to support the work of NATSPEC. The Product Partner Booklet is another useful guide which provides examples of a Product Partner and subscriber's capacity and credibility. It also adequately addresses the necessity of high quality construction specifications. The booklet increases exposure of manufacturers who have achieved high quality projects which add value to the built environment. We congratulate NATSPEC for sharing such a valuable resource with the industry.

Greg Hughes, Chief Executive Officer, AIB



The Termguard Reticulation Systems have been extensively tested and successfully used over the past two decades, and have been specifically designed to offer long-term termite management and damage prevention systems. Together with today's environmentally acceptable termite control agents, Termguard's termite reticulation systems have been the perfect partner to provide an effective replenishable barrier, yet minimise the total impact on the environment. www.termguard.com.au



TermSteel are Australia's Termite specialists with extensive experience installing physical termite management systems for residential, commercial and industrial buildings.

As an Australian owned and operated company, we pride ourselves on providing a friendly, personalised and professional service for all our clients. Our expert team are trained and skilled in Stainless steel physical Termite management systems.

TermSteel is CodeMark certified and backed by TermSteel's Industry first 60 Year \$1,000,000 Diamond Warranty. www.termsteel.com.au



TORMAX is one of the world's leading manufacturers of automatic doors. In 1951, the founders of the company, head-quartered in Bulach Switzerland, installed Europe's first electro-hydraulic swing door in Davos, Switzerland. The drive is still in use today, 60 years later. "Peak performance for life-long contented customers".

TORMAX Australia has Australia's largest range of sliding, swing, folding and revolving doors and have been successfully installing TORMAX drive systems throughout Australia for over 30 years. www.tormax.com.au



Wattyl Industrial Coatings specialises in high performance systems for use across a vast range of market segments. Wattle industrial coatings have been used in a full spectrum of exposure environments, including off shore, buried, coastal, and tropical. Our extensive project history is a testament to the enduring performance of our products. Valspar acquired the Wattle Group in 2010, further strengthening the Wattyl brand by bringing expertise and experience from one of the largest global coatings companies. Regardless of your project size, Wattyl Industrial Coatings can supply a coating system solution for you. www.wattyl.com.au

Termites and the demand for pesticide-free



Termites

Termite colonies can have several million individuals and can travel up to 150 metres from their colony.

The Commonwealth Scientific and Industrial Research Organisation (CSIRO) says the queen can live up to 50 years.

There are about 300 different species of termites in Australia alone. While not all of these species are a threat to structures, the handful that are can be extremely destructive.

Termites do however, have a very important role in the environment and waste cycle. They break down waste such as dead wood and plants. Unfortunately, to termites, wood on the ground and wood in a structure are the same.

The Cost

Studies show an estimated 1 in 3 structures will be attacked by termites in its lifetime, with an estimated cost to the building industry of almost one billion dollars a year.

This damage is not just to timber; termites attack a range of other building materials, including but not limited to plasterboard, MDF, electrical components and even carpet.

The founders of TermSteel have vast experience dealing with situations where major Australian manufacturing plants and petrol stations are shut down due to termites getting into the electrical systems – this is often an oversight as timber is the main focus.

The Future

With sustainable products being the focus of new construction, architects, builders and clients alike are more than ever demanding environmentally friendly pesticide-free termite management.

Major changes to Australian Standard 3660, taking effect in 2017, means the days of saturating the soil underneath and around buildings with pesticides that would break down (in some cases after just three years) is coming to an end.

Stainless steel termite mesh is not new to the market, having successfully been protecting structures in Australia for over 20 years. The stigma that has been attached to this type of system is that it's hard to work with and expensive. TermSteel is breaking down these barriers with top service at an affordable cost.

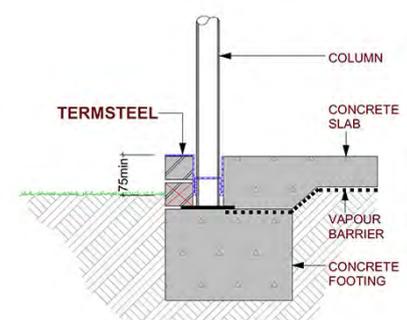
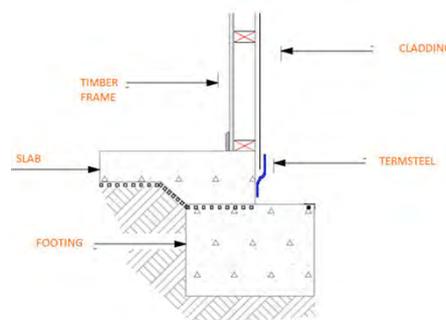
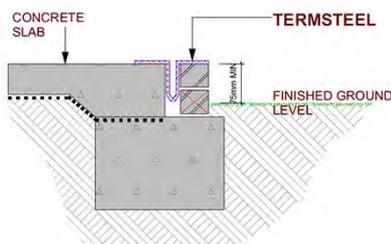
TermSteel is successfully encouraging more builders, architects and homeowners to integrate the CodeMark Certified TermSteel stainless steel mesh into the structure, giving lifetime protection.

This reduces the need to potentially retreat buildings with pesticides in the future. TermSteel also has no work, health and safety issues to other trades or persons on site.

Back Up

With an industry-first 60 year warranty, TermSteel is changing the game by providing a simpler, transparent system.

Manufacturer warranties are in most cases on the product only and this can create issues when there is a need to make a claim. TermSteel identified the need to improve this and has ensured there warranty is on both the system and installation.



Top: Termite hazard map
Bottom: Examples of Termsteel install details



120 Collins Street Melbourne, VIC



The Project

120 Collins Street is a marquee location within Melbourne, with thousands of people entering and leaving the building at all times throughout the day and night. The foyer is on a grand scale with large, open, light-filled spaces for workers to have meetings and enjoy the environment.

Access into the building is from multiple entry points with various automatic solutions. Two of the key entries have revolving doors built within the predominantly glass façade. These doors have offered a great solution for many years, allowing access into the building while maintaining a liveable climate inside. Revolving doors are the best for solution, creating an airlock guarding against the harsh local climate, which provides sustained energy savings.

Due to age and heavy usage, one of the revolving doors on site had a catastrophic failure, coming to a halt and not being able to operate any further.

Tormax's was to provide a solution that not only met traffic flow, climate and aesthetic requirements, but also had no impact upon the existing façade, flooring and footprint.

The Solution

Tormax provided a solution to re build a new revolving door within the existing shell, eliminating costly works to the glass façade and existing footprint.

Some architecturally-inspired upgrades were also provided. Old flaking ceiling panels were replaced with polished stainless panels, including LED downlights. The exterior canopy was re clad in stainless steel, which upgraded the appearance from the old powder coat finish.

Tormax removed the old heavy framed revolving door wings, replacing them with a slimmer design, which eliminated the centre column. The removal of framing and centre column created a modern glass aesthetic.

The new mechanical and electrical components delivered the very latest in technology, enabling the client to enjoy the benefits of the only purpose-built revolving door operator in the Australian market.

The Products

The Tormax 5201 is a European designed and constructed revolving door operator, and the only purpose-built operator in the Australian market.

'Built in Force' limitation allows the self-braking motor to use resistance as a reverse polarity breaking system (the harder the door is pushed, the more braking force is applied). This is a significant benefit in wind-affected areas, preventing the door from going into free spin. The impact of wind loads are also managed through dynamic profiling that adjusts to wind speed.

The 5201 is a chain-driven motor, delivering smooth quiet operation with a superior strength.

This operator not only adheres to the relevant Australian Standards but to the most stringent of standards all over the world. It has also been designed to work in far harsher climates than those within Australia. It is compatible with the industry leading safety sensors and provisions used throughout the world.

The Process

The installation was carried out by qualified Tormax Technicians and was completed over a two-week period. Working outside office hours, the existing door was gutted, stripping it back to the existing shell.

The rebuild of the revolving door then started from the ceiling/canopy down. New bearings and spider, which the door leaves to rotate, were installed. This was then connected to the operator and all electrical components were fixed into the newly fabricated internal frames.

The bottom bearing was installed soon after, allowing for the door wings to be installed and new carpet to be laid. New ceiling panels and the latest in safety technology was installed. Within 12 hours of the hoarding coming down, people were back using the entry as they had done so over the previous years.

The Result

Tormax delivered on its brief resulting in a very satisfied client. Not only was it able to match the existing installation it was able to deliver a superior aesthetic and useability. The client has been able to eliminate the need for call outs and shut downs to the opening, and now has a world-leading solution hidden by the bones of a door that has been in operation for over 20 years.



The Tormax 5201 installed in 120 Collins Street in Melbourne

Charles Perkins Centre Camperdown, NSW

wattyl®

The Charles Perkins Centre is Sydney's latest state-of-the-art research and education hub for Obesity, Diabetes and Cardiovascular Disease. Located on the western edge of the University of Sydney Camperdown campus. The six-storey building was designed to foster collaboration and research in a holistic trans-disciplinary manner. Opened in 2014, the world leading building consists of over 46,700m² of offices, as well as wet and dry laboratory spaces for over 950 clinicians and 1455 undergraduates. The centre is named in honour of Aboriginal activist Charles Perkins, a tribute to the first man of Aboriginal descent to graduate from the University of Sydney.

Design Inspiration

Described as 'poetry in motion', designers FJMT & Building Studio were able to balance research and education needs, supporting diverse disciplines such as biomedical, bioinformatics, computational as well as clinical research and social sciences. The interior design maximises efficiency and flexibility whilst encouraging collaboration and interaction between different research domains and project nodes. The building's interior architecture features a full-height atrium with curved balconies and interconnecting sweeping staircases. The central atrium or 'social heart' of the building was designed as a place for gathering, interaction, sharing and impromptu casual exchanges.

Biology of the human body, DNA sequencing patterns and blood flow inspired the overall architecture and interior design approach for the project. Visually, the bright orange hues in contrast with the sweeping white waves, along with compartmentalised dramatic lighting celebrate the vision of the design in brilliant colour and aesthetics.

Sustainability

Inherent flexibility and versatility, along with a series of integrated sustainability initiatives, ensure that the facility successfully accommodates not only the demands of today, but those of the future. The paint selection played a vital contribution to the building's sustainability. All Wattyl products used on the interior building were selected for their low VOC and low odour properties, and most importantly, their Green Star approvals. Wattyl paints surpassed stringent environmental impact requirements for the facility and delivered on the project's durability and coatings performance needs.

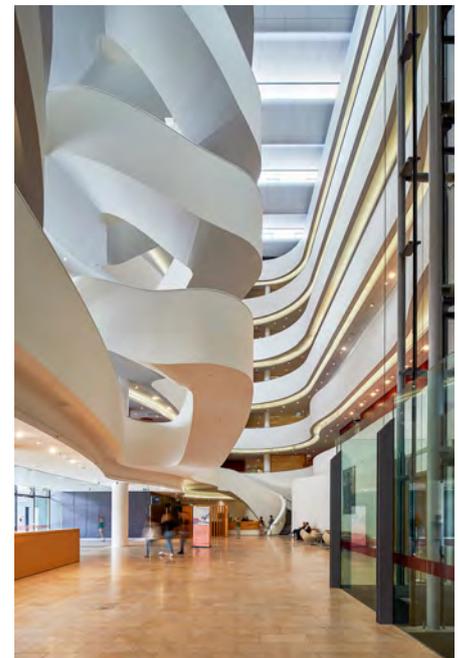
Aesthetics

Wattyl was selected as the preferred coatings supplier for this world class health facility due to the superior product quality and colour reproduction. The interior features intense earth colours and gradually lessens in intensity on the higher levels, creating a very successful balance. The colours "pop" against the white without being garish, providing the warmth in a scheme that otherwise may have been too cool in hue.

Wattyl Products Featured:

Walls: Wattyl Ultra*
Ceilings: Wattyl Ultra*
Feature Walls: Wattyl I.D
Wet Area Ceilings: Wattyl I.D
Doors and Trim: Wattyl Aqua Trim
Research Facility Walls & Ceilings: Wattyl Aqua Trim

*Previously Solver Ultra



Right: Wattyl products can be seen throughout the world class medical research facility in Sydney, NSW



0345p WATTYL in steel protective paint coatings; 0671p WATTYL painting
0672p WATTYL - GRANOSITE textured and membrane coatings

www.wattyl.com.au

Synergy, CSIRO Black Mountain, ACT



The Project

Synergy is CSIRO's newest research and workplace centre in Canberra's Black Mountain research precinct. It redefines scientific workplaces enterprise wide and creates a highly imagamatic architecture. To enable this, a bespoke workplace strategy determined the form and architecture internally, and externally created a solution designed from the inside out, resulting in an integrated bespoke workplace building.

What was unique about the project?

The very different functional performance of two components – workplace and laboratories – required different daylight and sun control solutions: maximising diffuse daylight in the workspace, while ensuring no direct sunlight in the laboratories.

The workplace design approach, after much collaboration with a workforce that was sceptical of 'open plan' solutions for highly-concentrated scientific research was to create partially discrete clusters through placement of meeting rooms and central facilities, while being open to enable a sense of community.

To create this conjunction of laboratory, clusters and circulation, an 'x' plan was developed. The plan was driven by the topography of the workplaces and derived the architectural form of the building.

Advantages of using the NATSPEC specification system

Documentation for tender and construction varied in time and scale, using techniques ranging from annotations on photographs, 2D sketches through to full 3D Revit Models. The one constant was the written specification – the majority of consultant firms used the NATSPEC specification system. With such varied packages of documentation, the consistency of the consultant team's specification systems greatly assisted familiarity with the documents by the managing contractor and their subcontractors.

Certain elements of the project were specified using supplier-specific specifications generated efficiently by using NATSPEC's Product Partners specifications. Minor adjustments are easy as these specification worksections fit easily into the project format. We also had the additional unique project requirement to develop a new specification worksection for a material and system not commonly used in Australia, and again the NATSPEC structure facilitated the creation of this totally new worksection.

The use of the NATSPEC System was a benefit to our documentation process through its consistent format, adoption by nearly all consultant organisations, engagement with product suppliers, flexibility to enable the development of new worksections and most importantly, currency with the Australian Standards.

Lessons learnt from the project

Using the NATSPEC system for the progression of tender packages ensured there was currency in the documents as well as maintaining quality of the built outcome. Although the requirement for quality submissions was clearly established in the NATSPEC specifications, these submissions could be overwhelming and time consuming at peak times during the construction phase, but recognised as necessary to

ensure the quality of the built outcome. Understanding the workload generated by specifying these submissions needs to be clearly understood and accounted for as part of the site phase team responsibilities.

During the development of documentation for the various tenders, specifications were reviewed and amended to align with design intent and quality requirements on site. The various consultant organisations found that using a common specification system like NATSPEC facilitated the understanding and integration of specifications between disciplines.



The project also included refurbishing and repurposing an existing laboratory facility to house a large cohort of office personnel. Across the site many minor buildings were either demolished or refurbished.

TAFE Campus Young, NSW



The Project

Gran Associates Australia was engaged by NSW Public Works as the principal design consultant for this innovative upgrade project. The site has several unique features, including heritage walls, remnant buildings and underground water tanks from an old jail. All of these features were incorporated into the design, while a new 'Translucent Box' extension traces the footprint and height of the demolished jail-house.

A critical requirement for the project was to foster flexible learning. The design included flexibility in general teaching areas, with options for varied spatial arrangements; maximised availability of communication technology with video conferencing facilities for distance learning; and loose interconnected spaces available for individual interpretation and use by single students or small groups.

The project brief required a space that would be available for after-hours use by the general Young community. This space had to be able to be separated from the campus as needed, as well as provide independent food preparation facilities and general amenities. The restricted budget meant that a stand-alone facility could not be built. Instead, a multi-purpose connected learning area was designed, that is also able to meet the requirement for periodic separation as needed.

Advantages of using the NATSPEC system

Using the NATSPEC system gave assurance that Gran Associates had up to date standards and latest industry information at our fingertips. The hidden text prompts and technical advice delivered in real time are comprehensive and very helpful. We've found NATSPEC to be well understood by and accepted within the industry. Its systematic approach to specification writing ensures thorough and rigorous documentation.

Lessons learnt from the project

One important lesson learned from the project is that the availability and accuracy of existing documentation and base drawings is undervalued. This project needed considerable extra time for site re-measuring and production of detailed base drawings.

It is also very important to critically review suppliers' data, to fully research all materials specified, and to clarify and confirm manufacturer-supplied data and specifications. In this project, the brief called for a "light-filled space" and the delivered building exceeded

expectations. However, the lightweight façade cladding material selected and approved required exhaustive research into its fire and smoke developed indices, which culminated in a thoroughly researched and comprehensive fire-engineered solution.

The final lesson learned is that design changes and variations can be minimised by extensive group consultation in the pre-design phases. We found that the fitout of the completed project completely met with user expectations, because they had been consulted so extensively throughout the process.



The project aimed to revitalise and rejuvenate the NSW regional TAFE campus at Young, to create an inspiring destination where students, staff and the general public enjoy meeting and learning.



AVEO Senior Living Development Bella Vista, NSW

JACKSON TEECE

The Project

Aveo Norwest delivers independent living and residential aged care at the very forefront of the sector, while contributing to public amenity and employment opportunities to the area. Integrated into the established infrastructure of the Circa Norwest Business Park, the development reconciles the dense and commercial nature of the precinct to the north and the low density residential area to the south of the site, providing a high quality public domain that acts as a focal point for social interaction between residents, staff, visitors and the wider community.

While the proposed future character of the Business Park has been taken into consideration, design aspects such as the expansive landscape design and slender vertical fins of the main building façades reference Bella Vista's history of agricultural land use, symbolising the wheat fields that once stood there.

Aveo Norwest raises the bar not only in providing superior amenity to the user, but also spearheading sustainable construction technology through the use of Cross Laminated Timber (CLT), a prefabricated timber product. The project represents one of the largest applications of CLT in a multi-residential development in Australia.

What was unique about the project?

A main aspect of the design for this project was the incorporation of sustainable construction technologies and the effective use of CLT. The advantages of using this product are not only seen in the environmental benefits and speed of construction, but also in the upfront design resolution, ultimately resulting in a higher quality end product.

There is a focus on architectural expression and functional planning, over a design purely driven by construction efficiencies. This project has achieved a more even balance between the desired architectural design outcome and construction rationale. Some of the challenges involved complicated floor slab junctions in order to realise

the desired apartment layouts, and sophisticated hybrid steel and timber connections to achieve the curved, seemingly cantilevered balconies.

This project is at the forefront of the application of mass timber construction technologies in Australia and as designers, engineers and builders increase their knowledge and confidence around this evolving construction methodology, we will continue to see more daring hybrid timber buildings developed.

Advantages of using the NATSPEC system

Jackson Teece Architects found NATSPEC, the main construction specification used, to be an excellent resource, assisting us by compiling current industry information in an easy-to-follow format. Project-specific editing adds further clarity and complements the documentation, reducing the risk of variations or disputes.

NATSPEC allowed us to incorporate all specific data and critical design requirements which were easily amended, into one cohesive document.

Lessons learnt from the project

From inception it was clear that an early design resolution was imperative for a building that incorporated CLT, which

involves high levels of prefabrication. This requirement translated to the program and the various aspects of project delivery in a very steep learning curve. Key lessons included:

- The significant R&D investment that was required during the process.
- Execution of a detailed BIM management plan producing documentation split between the architect, structural engineer and the builder, that seamlessly integrates into fabrication of the CLT panels.
- The coordination with supply chain having to get used to an accelerated construction on-site.

As timber engineering and prefabrication in building construction continues to gain market prominence in Australia we are witnessing a technological revolution encouraging faster builds with the potential to realise more sustainable and efficient developments on an ever increasing scale.

Builder: Strongbuild
Client: Aveo
Structural Engineers: TTW



Image credit: Strongbuild (Right)
Photographer: Brett Boardman (Below)



Bunbury Senior High School Bunbury, WA



View of northern façade with heritage buildings behind

The Project

Bunbury Senior High School is well known locally as the school with the best view in Bunbury. Kent Lyon Architect set out to enhance this experience for students, without imposing on the existing status on the State Register of Heritage Places. The most suitable location to build on was within the curtilage.

The site has a 9m level change from the top of the bank down to lower level. We designed a building that connects the front of school via an elevated bridge walkway overlooking the grassed amphitheatre with sound shell. To the west, the new building connects the music/arts area via a curved level walkway. Access was a pivotal issue and a variety of options were tested as standard options wouldn't be appropriate. Circulation was brought back inside the building to create useful spaces during learning periods, between breaks and after hours.

What was unique about the project?

Initially, based on the Standard Classroom Block brief, the Department of Education realised that there would need to be flexibility in the arrangement of the spaces. We set out to create dual-purpose spaces for flexibility in usage and make the most of unique characteristics of the site.

The Activity Area (right) is a functional space for learning for different year groups, and is kept separate on an upper level. The remaining space under the Activity Area is used for musical instruments storage. The Teachers'

Office Area has passive surveillance from the central hub of the building overlooking passages. Four Learning Areas have flexibility including the request for use as green room/music rehearsal. Passage incorporates study nooks outside Learning Areas. Bridges to the east and west entries have pedestrian access with steps and ramps, which look out over the Amphitheatre and Indian Ocean. Overlooking adjacent neighbours was addressed with the design of workbenches near windows facing north. Timber battens direct students from the main entry towards staircase and assist with acoustic dampening.

Materials selected in design creatively consider proximity to the extremes of the ocean and reduce maintenance to a difficult to reach facade. The northern facing classroom façade angle-recessed windows enable shading during summer, but allow winter light back into the building, avoiding any need for awnings.

Advantages of using the NATSPEC system

NATSPEC was used as a vital design and documentation tool in preparing architectural specifications. Kent Lyon Architect was able to access, download and rely on the most up to

date worksections, including Product Partner worksections, ensuring that the products available meet current Australian Standards (AS) and the National Code of Construction (NCC).

Risks were reduced with the product specifications being constantly updated according to the industry standard. Since establishment of our practice in 1996, we have found NATSPEC to be a reliable resource with its specific worksections that are customisable according to the specific project requirements.

Lessons learnt from the project

Through the use of NATSPEC, we have been able to confidently go back to the State Government when questions were raised regarding the types of cladding that were specified, to ensure they were compliant with AS and the NCC. Eliminating the client's anxiety by ensuring that all parties (including the builder, sub-contractors and suppliers) were utilising up to date product specifications has been worth its weight in gold! While we never can be complacent in the building industry, it greatly reduces time trying to backtrack knowing what is specified with NATSPEC worksections has kept pace with all current requirements.



Photographer: Paul Webster

North West Rail Link Sydney, NSW



Artist's render of station entrance, canopy and plaza

The Project

The North West Rail Link is the largest transport infrastructure project to be developed in New South Wales since the Harbour Bridge was opened in 1932. A new 23km track will be constructed between Epping and Tallawong Road, Rouse Hill, extending rail transport to north west Sydney.

The rail link features eight new stations including underground, above ground and elevated stations, with well-planned precincts offering integration with buses, 4,000 parking spaces and easy access routes. The project will boast Australia's longest rail tunnels – up to 63m below ground at its deepest point and 15km long.

SCL formed part of the Hassell design and documentation team to prepare the suite of architectural specifications, a centralised technical reference sheet (T-Sheet), including the full material and finishes palette across all precincts, and the maintenance schedule.

What was unique about the project?

Team

The sheer size of the project necessitated the creation of a specialised team to support this unique and exciting project experience. SCL provided a team of five consultants, at varying stages, to undertake the various roles required to expedite the specification processes.

Process of verification

Requirements set out in over 11,000 pages of scope and performance requirements (SPR's) had to be incorporated into the design documents and specification, all of which had to be tracked and verified within a stipulated time frame to ensure conformance.

Corrosivity

Architecturally exposed structural steel in a C3 corrosive environment required research and testing. Research was undertaken using key criteria outlined in the specification to reach an outcome for long-term durability, rather than short-term cost saving. This methodology offers extensive long-term cost savings.

Palette of materials

A project-wide coding language and material palette was developed through the T-sheet. This methodology enabled a central referencing system to link the specifications to the drawings, and the keynotes to the Revit model. The T-Sheet was then used to compile a full maintenance schedule as a due diligence exercise and to control and assess quality and construction.

Advantages of using the NATSPEC system

NATSPEC, the National Classification System, uses nomenclature which is now recognised and often contractually required throughout the industry in

Australia. This provided a good base of understanding of the structure where information should be detailed and found, which helped with the verification requirements of the project.

A project of this size is measured over many years. There were many industry updates and changes to standards during this time. NATSPEC's half-yearly updated documents made the process easier to track and incorporate these required updates.

Lessons learnt from the project

As the most important design document, the specification stands above the drawings in the standard order of precedence of a contract. Incorporating exemplar product and material selections within the specification ensured it included the quality control, performance, preparation and execution requirements.

The specification must be aligned to the nominated procurement, and it was used as a quality control device to manage and mitigate risk. A nationally recognised specification system can enable seamless integration between the architectural and services specifications.

The T-Sheet enabled the specification to dovetail with the drawings in a cohesive set of documents. This process afforded the following benefits to the project team:

- Reduced time spent on the review process.
- Provided a project-wide common language.
- Provided consistency and control of documents.
- Reduced time spent reinventing the wheel.
- Incorporated 'best of' examples and knowledge into one location.

SCL has now developed the T-Sheet as an online application to facilitate the integration of the model, schedule and specification, and to enable a single point collaboration schedule.

Northshore Christian Grammar School Alkimos, WA

TAYLOR
ROBINSON
CHANEY
BRODERICK

The Project

This project is a new Kindergarten to Year 12 school located in Alkimos; a new coastal housing estate on the northern edge of Perth.

The first stage of buildings provide accommodation for young children and have been designed to provide a flexible, playful and enriching environment. Natural materials such as rammed earth, stained timber, coloured concrete, coloured glass and galvanised steel have been selected for their tactile qualities as much as for their durability and beauty.

What was unique about the project?

The site is on coastal sand dunes approximately 2km from the beach; the ocean can be heard and smelt from the site, but is unseen. The buildings have been designed with the idea of yearning for the water; the flow of rainfall is made visible using oversized spouts and downpipes, to encourage children to interact with the falling rain.

The connection to the coast is further developed by entrances to buildings being reminiscent of lighthouses: vertical elements at the entrance to each building features coloured glass that captures the sun by day and radiates coloured light in the evenings.

Northshore Christian Grammar School is a low-fee school catering to families that desire a Christian education for their children. It was imperative that the new school delivered value while ensuring low maintenance costs into the future.

Construction time was also a key consideration for the project because funding processes only allowed an 11-month window for construction from greenfields site to the completed building including bulk earthworks, site services, roads, car parks and landscaping.

Cost and time considerations led to the decision to build entirely with steel



Northshore CGS primary school entry, featuring yellow-tiled finish
Photographer: Rob Frith, Acorn Photo

framing and lightweight construction panels accentuated with some feature rammed earth walls to provide a sense of permanence and variety to the buildings.

This is an unusual choice in Western Australia where the majority of school buildings are steel framed and clad with cavity brickwork. The steel frame was clad internally with plasterboard, plywood and a wide variety of finishes including vinyl, linoleum, pinboard and ceramic tiles.

Advantages of using the NATSPEC system

Taylor Robinson Chaney Broderick prefers to use the NATSPEC Specification System for all of our projects in order to ensure all standards referenced are up-to-date and preliminaries are in lock step with the building contract.

We have adopted the nomenclature utilised in NATSPEC to use on our working drawings and schedules, to provide a consistent approach for all projects in the office and remove ambiguity from our documentation. Builders and subcontractors are also familiar with the format and the standards of workmanship specified.

In this project, particular attention was paid to corrosion performance and paint specification due to the coastal location and to concrete finishes for coloured insitu paving and floor slabs.

Availability of specialist trade sections such as Monolithic Stabilised Earth Walls (rammed earth) is a helpful feature of NATSPEC particularly when dealing with specialist “boutique” contractors who are not always able (or unwilling) to provide detailed information during the design stage.

Extensive use was made of prototypes and samples for components requiring a high standard of finish, particularly with wet trades such as rammed earth, coloured concrete and paint finishes – all of which were specified prior to tender.

The finished product achieved by De Francesch Building Company was of very high quality, particularly given the overall low cost of the project. The builder engaged proactively with us throughout the project to further refine our detailing and ensure trades met our expectations for the specified quality of finishes and coordination.

HOLD POINTS AND WITNESS POINTS

INTRODUCTION

Hold points and *Witness points* are construction stages which may need additional inspection, verification and documentation to make sure of:

- The safety of the personnel, environment and the public, before proceeding.
- The technical quality and any legal requirements have been satisfied.
- The next stage in the construction process can be completed.

Verification measures will vary with the specification method. For performance specifying, verification involves testing. For specifying by reference, verification is to a standard, or through third-party certification to that standard. Verification procedures are documented in the specification as *Hold points* and *Witness points*.

HOLD POINT

A *Hold point* is a mandatory verification point beyond which a work process cannot proceed without authorisation by the contract administrator. *Hold points* are usually assigned to those critical aspects of the work that cannot be inspected or corrected at a later stage because they will no longer be accessible. The relevant work cannot proceed until the contract administrator is able to verify the quality of the completed work and releases the *Hold point*.

Hold points can be nominated by:

- The principal, in the contract documents.
- The contract administrator, with a Non-conformance or Corrective action report.

Use *Hold points* sparingly as each potentially affects project duration and cost.

WITNESS POINT

A *Witness point* is an identified point in the work process where the contract administrator may review, witness, inspect or undertake tests on any component, method or process of works. The contractor is required to notify the contract administrator who may or may not take the opportunity. The subsequent activity however, may proceed.

CONTRACTOR'S ROLE

The contractor is responsible for satisfying the documented contract requirements and planning, developing and maintaining a system assuring the detection of non-conformances and control of their resolution. The issue of a Non-conformance report or a Notice of non-conformance automatically creates a *Hold point*.

AUS-SPEC APPROACH

AUS-SPEC is a specification system for the life-cycle management of assets. In AUS-SPEC Templates, *Hold points* are part of:

- *0161 Quality Management (Construction)* and *0167 Integrated management* worksections. The Quality plan for the works incorporates checklists, inspections, testing and documentation to make sure that the works comply with the contract documents. *Hold points* and *Witness Points* should be included in the checklists. Examples of submissions include a quality plan or soil compaction test results for a prepared sub-base.
- The summary of *Hold points* and *Witness points* in the annexure of each construction worksection provides a checklist for programming sequential activities and communication obligations.
- A Maintenance management plan combines the requirements of the Technical specifications, Quality manual and the Quality plan, for assuring quality in construction projects. The Maintenance management plan covers policy, organisation, selected procedures, maintenance planning and Activity specifications for maintenance activities. The Activity specifications form the core of the document which includes the nominated *Hold points*. For example, test results confirming compliance of materials like asphalt or requirements of the work order for the proposed maintenance work.

AUS-SPEC TECHguides provide further guidance on the use of *Hold points* and *Witness points* for the AUS-SPEC specifications. For more information on AUS-SPEC visit www.natspec.com.au

NATSPEC APPROACH

NATSPEC Templates do not nominate *Hold points* in *Open* text. The **INSPECTION** clause in individual worksections includes *Guidance* text for nominating *Hold points* where they may be appropriate for inclusion in a project specification, e.g. inspecting formwork and reinforcement prior to placement of concrete, or waterproofing.

NATSPEC Templates use **INSPECTIONS, Notice** in lieu of *Witness points*.

AUS-SPEC definitions:

Hold point: A defined position in the different stages of the contract beyond which work cannot proceed without mandatory verification and acceptance by the Superintendent.

Witness Point: A nominated position in the different stages of the Contract where the option of inspection or review may be exercised by the Superintendent, after notification of the requirement.

Non-conformance report (NCR): A mandatory (standard format) report submitted by the contractor that details the nonconforming work and the contractor's proposed disposition of the non-conformance.

Notice of non-conformance (NNC): Formal instruction from the superintendent regarding product non-conformance to that specified.

Corrective action: Measures, including preventative measures, taken to rectify conditions which have caused or might cause nonconformity.

Corrective action request (CAR): A formal advice/instruction from the superintendent regarding departures from the Quality system or methods as approved in the Quality plan.

Disposition: Action to be taken to resolve non-conformance.

NATSPEC definitions:

Hold point: An activity cannot proceed without the approval of the contract administrator.

NATSPEC defines **Hold points** in *Optional* text in *0171 General requirements* worksection along with *Guidance* text on minimising contractor intervention of this kind to *accord with principles of quality assurance and risk allocation*.

Contract administrator: Has the same meaning as 'architect' or 'superintendent' and is the person appointed by the 'owner' or 'principal' under the contract.

Relevant documents

0134 General requirements (Supply) (AUS-SPEC)

0135 General requirements (Services) (AUS-SPEC)

0136 General requirements (Construction) (AUS-SPEC)

0161 Quality Management (Construction) (AUS-SPEC)

0167 Integrated management (AUS-SPEC)

0171 General requirements

AUS-SPEC TECHguides

Austroroads AGPD03/14 Guide to project delivery – Part 3 Contract Management.

A whole lot of risk – substantial obligations in specifications

CLAYTON UTZ



*Frazer Moss – Partner
Major Projects and Construction*

Written construction contracts regularly consist of many parts that are separately drafted by lawyers and one or more technical consultants. Under the pressure to close a deal, time may not be taken to ensure that, when all of the documents are read as one, the contract accurately reflects the obligations that are intended to be accepted. A failure to do that may result in unexpected outcomes when things do not go quite as planned.

That is what happened to the contractor engaged to design and construct a large offshore wind farm in the UK. A brief clause in the contract's technical requirements had major repercussions: *MT Højgaard A/S v E.ON Climate* [2017] UKSC 59.

The contract document was extensive and was described as being 'of multiple authorship and containing much loose wording.' The general conditions required the work to be carried out with due care and skill and the works to be fit-for-purpose as determined in accordance with the employer's technical requirements (TR), which included a requirement that the foundations be prepared in accordance with an international

standard. Elsewhere in the TR was a requirement that the foundation design should ensure a lifetime of 20 years.

Although designed and constructed in accordance with the specified international standard, the foundations failed within a year of completion due to an inherent error in the standard. The repair bill was in excess of €26 million. The question for the court was whether the contractor was in breach of contract for its failure to ensure a foundation life of 20 years, despite the fact that due care and professional skill had been used, and complied with the standard specified by the employer.

The court concluded that the contractor was in breach of contract for not meeting the required 20 year lifetime. Although that onerous requirement was 'tucked away' in the TR, the court held that, as an identified contractual document, the clause had a contractual effect. The meaning of it was clear and it should be given effect.

The court dismissed the apparent conflict between the lifetime requirement and

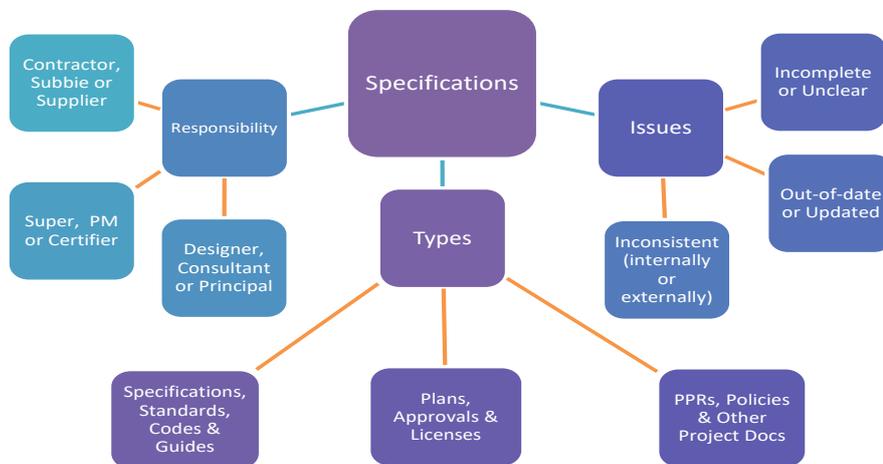
the obligation to design in accordance with the specified standard, which had been met. It concluded that, when the contract was read as a whole, the two could be reconciled on the basis that the specified international standard was the minimum, and the contractor had to do whatever was necessary to achieve the higher standard that it had promised. Relying on a line of earlier decisions, the court said that the contractor took the risk that compliance with the specified standard would not achieve the higher requirement of a 20 year lifetime.

The case highlights that when entering into a contract, a specification that is a contractual document is reviewed carefully and considered with the other parts of the contract as a whole. It should not be assumed that they do not contain potentially significant obligations, or that, because they are 'only technical,' their importance will be discounted when construing a contract. Clauses that provide orders of precedence will have no role to play if, as the court concluded in this instance, there is no inconsistency.



The offshore wind farm project in the UK was subject to much legal scrutiny

How to avoid disputes over specifications



Responsibility for specifications: who is dragged into disputes

Disputes in relation to specifications can put nearly all project participants in the firing line.

Where a specification is incomplete, unclear or inconsistent, claims can potentially be made against:

- Designers and consultants who prepared the specification.
- Contractors and suppliers who warrant the specification is satisfactory.
- Superintendents, project managers and certifiers who misapply the specification (particularly where the principals' primary contractor/supplier target becomes insolvent).
- Principals who provide the specification to contractors and suppliers (particularly claims for contract variations, EOTs, delay costs and other contractual entitlements).

Significance of specifications: project cost and duration

Specifications are key to determining project cost and duration, and ensuring that project outcomes match objectives. Ensure that your contracts properly deal with specifications, and issues with them. Otherwise, a profitable project can turn into a dispute-ridden nightmare for all.

Dispute avoidance techniques (from an upstream perspective)

Key reasons for disputes over specifications, and potential solutions for an upstream perspective (the party that is purchasing the work, services or goods) are discussed below. A certain amount of skill and tradecraft is required when drafting and negotiating these solutions. Otherwise, downstream parties can change their tender allowance to cover the additional risk, not tender at all, or try to recover claim amounts from other means.

If you are the downstream party, you would naturally seek different kinds of solutions.

Incomplete or unclear specifications

Ensure that:

- Contract documents and specification are mutually explanatory so that anything contained in one but not the others will be equally binding as if contained in all of them.
- There are overarching fitness for purpose requirements, and requirements that the works include necessary incidental and related works (so that gaps in the specification are filled to the extent necessary to achieve the intended purpose).

Inconsistencies within or between specifications

Ensure that:

- There is a clearly specified order of precedence between the specification and contract documents.
- The higher or more onerous specification applies in the case of inconsistency.
- There is an appropriate method for resolving disputes for equal.

Standards are updated or revoked

Ensure that changes to standards during project delivery:

- Are adequately addressed in the contract.
- Do not give rise to claims (whether for variations, increased costs, extensions of time or delay costs), except where the changes could not reasonably have been foreseen.

Other problems with specifications

It can be useful to require warranties from the downstream party that:

- It has satisfied itself as to the completeness, correctness, accuracy, appropriateness, suitability and adequacy of the specification.
- It has satisfied itself that there are no omissions, ambiguities, discrepancies or inconsistencies in or between the specification and other contract documents.
- The specification is adequate and fit for its intended purpose.



Julian Mellick
Partner – Construction and
Engineering Group

The contracting trap – why contract specifications are the most likely thing to let you down

CORRS
CHAMBERS
WESTGARTH
lawyers

Parties will typically invest in drafting and negotiating contract 'general conditions' to protect their commercial interests. While this investment is critical, it is only a small part of what is required to mitigate one of the most common sources of construction disputes – the often impenetrable maze of schedules and annexures forming the 'specification.'

To do their job, construction contracts must include specifications describing in clear and sufficiently detailed terms, the scope of works performed, materials used, standard of workmanship required and the performance requirements or overall objectives to be met.

Too many disputes originate from inadequate specifications, usually only manifesting once works are underway. By this time, it is too late to erase drafting problems and parties are left to interpret contracts, when time is money.

Common issues

Specifications often comprise multiple documents drafted by different authors, and assembled quickly under time constraints. Common problems include:

Lack of housekeeping: Parties bundle multiple documents, tender clarifications and correspondence, including long and often superseded emails. While this can be a quick and easy way of assembling the specifications and tender inclusions/exclusions, it often leads to significant problems as inconsistencies and vagaries arising from mismatching documents. This often cannot satisfactorily be resolved with an order of precedence clause.

Failure to identify relevant standards: Increasingly, projects involve both local and overseas participants – the applicability of Australian standards for local supply is not assured; there may be conflict between local and international standards. Careful consideration should be given to the standard expected – ensure it is clearly stated.

Non-specific allocation of responsibilities: Specifications often don't identify who is responsible for particular compliance and associated costs. Too often, documents state "provision shall be made" for a particular input or output, but do not make clear who specifically is responsible. The risk for uncertainty occurs when multiple parties are involved on a project and all have obligations to comply with the same or interrelated specifications.

No clear conflict resolution: There are often inconsistencies between documents forming a specification, and within documents. There is often too little attention paid to reconciling documents and deleting inconsistencies, and the absence of a clear process for resolving conflicts that may arise.

General v specific: An overarching general condition, e.g. the contractor accepts all risks associated with site conditions, will often be at odds with a tender exclusion, e.g. no allowance has been made for certain types of contamination. The issue often lies dormant until contamination is discovered and claims for latent conditions made. One party will want to rely on the general 'risk allocation' clause; the other relies on 'exclusion.'

Lessons learnt: avoiding these pitfalls

Avoid short cuts when assembling specifications: An upfront investment is well spent in comparison to the time and money lost dealing with disputes resulting from poorly prepared specifications.

Set ground rules early for preparing your contract: A project glossary of common terms/requirements can ensure all documents are prepared consistently.

Integrate your specifications: they must be cohesive, unambiguous and consistent. Delete redundant sections or documents. If possible, avoid bundling correspondence and revise your tender specification to include only the necessary negotiated changes.

Include an order of precedence clause: Address conflicts between documents, and within documents. Make clear who resolves conflicts, how, and what cost responsibilities follow.

Consider a responsibilities matrix: Often a simple tabular document that clearly calls out specific inputs and outputs with the balance supplied by a contractor is much clearer than drafted text.

Consider a deadlock breaker: Scope and specification disputes are costly and often need to be resolved to allow projects to move forward. Consider including a fast track deadlock breaker that allows the project to move forward, such as an expert referee or adjudication, rather than arbitration or litigation.

Use your legal team: The impact of deficient specifications is costly but can truly be mitigated with the right upfront investment that is rewarded many times over if you can avoid costly, time consuming and often stressful litigation.



Joseph Barbaro – Partner



Meri Siracusa – Special Counsel

Non-conforming building product laws: how will you be affected?

Calls for the outlawing of non-conforming building products have been prominent in recent years following high-profile flammable building products incidences. In 2014, the façade of the Lacrosse Apartments in Melbourne caught fire. In 2017, the cladding of the London Grenfell Tower caught alight, resulting in 71 deaths. These cases are a sample of the broader issues caused by non-conforming building products, such as flammable cladding, and serve as a reminder of what is at stake should participants in the building chain not take conformance obligations seriously.

Legislative changes

Recently in Australia, Federal and State governments have taken steps to outlaw non-compliant and non-conforming building products.

Queensland

An Audit Taskforce found 71 government buildings were potentially clad with highly-flammable aluminium composite panel (ACP) cladding and approximately 12,000 private buildings would require further review for the presence of ACP.

New laws introduce a new duty to all participants in the building 'chain of responsibility' (including designers, manufacturers, importers, suppliers and builders) to ensure non-conforming building products are not used in the construction of a building. Harsh penalties for using or failing to disclose non-conforming building products have also been introduced.

New South Wales

The Fire Safety and External Wall Cladding Taskforce found slightly more than 1,000 buildings potentially had aluminium and other types of cladding. New laws empower the Commissioner for Fair Trading to ban the use of unsafe building products. Contravention of a ban will result in penalties of up to \$1,100,000 for companies, and \$220,000 and possible imprisonment for individuals. Further laws are expected.

Victoria

Building surveyors cannot issue building permits for class A or B buildings which contain cladding with a content of 30% polyethylene and above, or expanded polystyrene (EPS), unless the Building Appeals Board allows it. Rectification orders can be issued to builders (if the building is not yet completed) or owners (if the building is complete). The Victorian Cladding Taskforce identified 1,369 buildings were likely to have ACP or EPS cladding.

Federal

A 2017 proposal to expressly prohibit importation of polyethylene core ACP was rejected by the Senate.

Separately, the National Construction Code was amended to clarify requirements for fire performance of building panels, fire exits, presence of sprinklers and placement of fire escapes.

What this means for the building chain

As new laws are enforced, the focus will be not only on those who import and install non-conforming building products, but those at the top of the building chain (architects, designers and engineers). The parties specifying non-conforming products for a project could receive harsh penalties, both as companies and as individuals.

Designers, contractors and certifiers should consider whether these laws will affect their professional insurance policies and premiums. Designing, constructing or certifying stages of a project containing non-conforming building products may open parties up to a new wave of liabilities.

If non-conforming products are discovered mid-build, designers, builders or suppliers may be responsible for rectifying non-compliance. This responsibility is likely to transfer to owners once the building is complete. We anticipate an increase in litigation by owners against builders and designers to recoup the cost of rectification. As

nationwide audits of buildings draw to a close, all participants in the building chain for future projects should be aware of the new laws, and consider how those changes will affect costs and decisions made throughout the building process, from design through to occupation.



Ren Niemann
Partner



Matt Bradbury
Partner



Michael Rochester
Partner

Getting it right – the importance of careful specification preparation, review and compliance in minimising legal risk

Specifications and related scoping and design documents are fundamental to every construction project. Too often, these documents are regarded as the less important cousins of the general terms and conditions, and given insufficient attention. Recent experience tells us poorly considered specifications or specification ‘workarounds’ can create significant legal risks. Getting the specifications right at the outset – having contractual terms properly ‘talk’ to the specifications, and monitoring compliance with specifications, are straightforward ways to manage legal risk.

Early ‘red flags’ or warning signs

When parties and their lawyers reflect on what went wrong or gave rise to a particular dispute or claim, they will often recognise there were early ‘red flags’ or warning signs that were missed or overlooked which, had they been addressed earlier, could have prevented bigger problems.

Common red flags include:

- Failure to allow sufficient time or resources to ensure specifications are properly considered before project commencement;
- Conflicts between contract terms and the specifications;
- ‘Clashes’ between specification and product requirements – specifications need to be right for the job and properly considered in context; and
- Failure to properly identify who owns or warrants the specification – owner vs architect vs project manager vs contractor.

In *Bannister & Hunter v Transition Resort Holdings (No. 2)* [2013] NSWSC 1943, the Court found that the Project Manager failed to take reasonable steps to monitor the progress of an earthworks subcontractor and its compliance with the contract specifications and the relevant Australian Standards. The Court awarded damages for the cost of rectification to conform to the specifications.

L U Simon Builders Pty Ltd & Anor v Victorian Building Authority (VBA) [2017] VSC 805 related to potential combustible cladding and a ‘direction to fix’ issued by the VBA to the Builder. The Supreme Court found that the VBA’s power to issue a ‘direction to fix’ under s37B of the Building Act is limited to the time prior to a certificate of final inspection or occupancy permit being issued. This severely limited the powers of the VBA and highlighted that it is primarily the owner’s obligation to ensure compliance of a building. In related proceedings before the Court, the focus was on whether there was a failure to provide a specification ‘suitable for construction purposes.’

Risk mitigation strategies

If risks around specifications are identified, whether during construction, commissioning or upon hand-over, it is critical that red flags are addressed quickly according to contractually agreed procedures and in a systematic and well-documented way. For example, specifications may be ‘underdone’ or particular technical or product specifications are incompatible and may lead to construction or maintenance issues.

Rather than applying multiple specification or contract ‘patches’ or informal ‘workarounds,’ it may be appropriate to consider broad-scale specification and contract reviews and amendments if there are a sufficient number of red flags. This should assist in mitigating the risk of further specification clashes at a later date and facilitate a proper rectification strategy before the problem becomes more expensive to fix.

Make sure any agreement or solution devised to meet a particular specification problem or issue is properly documented. It is not uncommon for parties, particularly on site, to reach an informal agreement about a particular matter, including rectification costs, which is not formally documented. When costs blow out or the rectification solution proves unsatisfactory, disputes

may arise around who is responsible. Capturing agreements in writing as soon as they are formed should help to prevent further disputes. It also helps the parties to focus on whether they are following proper procedures and have appropriately authorised personnel making important decisions.

Take full advantage of the defects phase; don’t abandon or ignore existing rights and make claims early. The ‘saving up’ of claims or a delay in making claims can make them more difficult to resolve.



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Insurance and Risk, Perth



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Construction and Engineering, Perth



Rebecca Eibisch – Associate
Construction and Engineering, Melbourne



Tony Kemeny
Director
Gran Associates Australia

“An architectural practice should have, amongst other things, three fundamental project control documents: its Integrated Management Manual, the National Construction Code and NATSPEC.”

Tony Kemeny
Director
Gran Associates

“...Hence, the courts and others often look to the specification in particular to determine the message conveyed by the contract documents to those who work with them.”

Acumen, Australian Institute of Architects

NATSPEC

the national building specification

Government departments and clients prefer NATSPEC

In the majority of Australian States and Territories, NATSPEC specifications are required for building projects. Government Departments and clients prefer NATSPEC specifications so that they are assured of a baseline level of project quality. Whilst drawings and schedules only provide the form and materials, it is a properly constructed specification that outlines the quality desired. For over 35 years NATSPEC has been trusted to deliver quality results.

Consultants prefer NATSPEC

The number of regulations that change each year continues to increase. Pressures on consultants' fees and the time required to design do not allow for individual organisations to monitor all the regulatory changes. NATSPEC provides the economies of scale to keep consultants up-to-date. Consultants know that NATSPEC is comprehensive and provides a clear outline of the quality of materials and tolerance of construction required. NATSPEC specifications save litigation and support the teams desire for successful projects.

Contractors prefer NATSPEC

It is a competitive world and as the industry continues to consolidate, greater emphasis is being placed on the cost of a project. Contractors want to compete on an even footing and a NATSPEC specification means that the job will not be lost to someone who will cut the quality of construction. NATSPEC is independent and does not favour one party over another.

Project managers prefer NATSPEC

When all parties are clear on the expected outcome, the project progresses quickly and without undue confrontation. NATSPEC's template specifications are written in simple plain English without duplication or contradiction so that Project Managers do not waste time clarifying project requirements.