The WORKS

Image: Scrap Salvaging Works in Singapore, July 2019

Summer Edition 2019 - 2020

McMAHON
SERVICES

CONTENTS

Director's MESSAGE

Above: Managing Director, David McMahon and Director, Andrew McMahon

Please enjoy our summer edition of the 2019 – 2020 The Works magazine.

As a kick off to 2020 we are excited to announce that we are redefining our Safety Focused Performance Program. The enhanced program moves away from concentrating on why things go wrong and focuses on how tasks are successfully achieved. The program provides the framework necessary to see the Company grow and extend the boundaries of performance, and it looks at aspects that help and hinder individuals and team success.

The Safety Focused Performance Program is designed to harness initiatives which enable leadership, learning, effective critical management, planning and managing change to achieve successful outcomes. It is a proactive approach that continuously aims to anticipate developments and events that improve outcomes. Our people are seen as the integral resource necessary for process flexibility and resilience, and they are empowered to provide insight into how work is successfully realised.

This goes hand in hand with another big focus across the business this year, which has seen a step change in the way we approach quality management. Every project receives a specific quality management plan which prescribes the specifications, standards, design requirements, and comprehensive Inspection Test Plans required for the specific delivery. To ensure project success for the Company and our client.

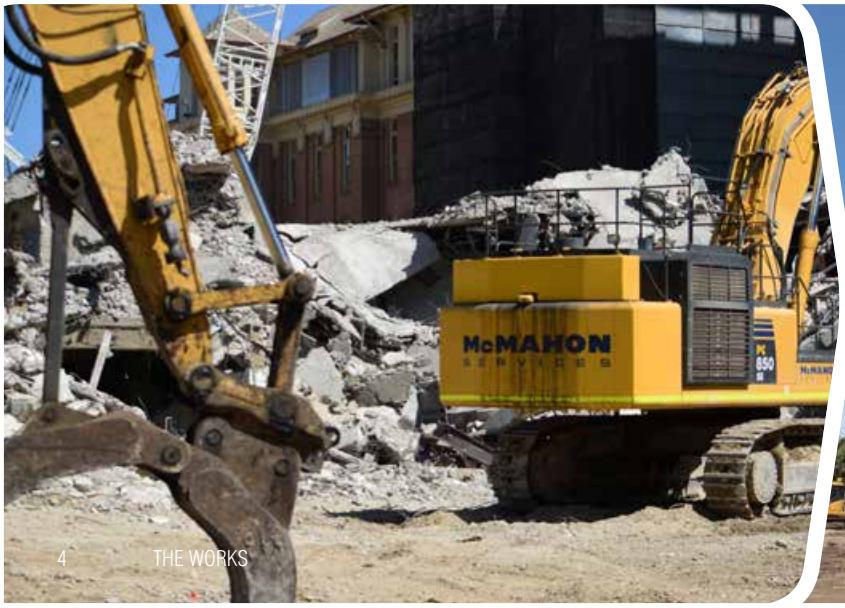
2019 has been another year of milestones for McMahon Services. We made our debut in Singapore, and completed the deconstruction and scrap salvaging of 48 quay and gantry cranes inside one of the world's busiest ports. The project required over 200 major crane lifts and we processed 21,000 tonnes of scrap in a tight eleven-month period.

We established permanent operations in New Zealand opening an office in Auckland while completing asbestos remediation and demolition works for clients across the petrochemical, arts and conservation, health and financial sectors. The New Zealand Demolition and Asbestos Association recognised our contributions to the industry with a win in their annual awards for 'Asbestos or Demolition Best Practice Project under $1 million, for the decontamination of vintage cars contaminated with asbestos dust for the Museum of Transport and Technology (MOTAT) in Auckland.

Our Australian business continued to diversify with further self-delivery of complex demolition, environmental remediation, building services and civil construction projects across all States and Territories.

At Lot Fourteen, site of the former Royal Adelaide Hospital, we are well advanced in asbestos remediation and demolition works for Stage 2b where we have completed multiple high-risk cranage works to dismantle structurally complex and tightly constrained buildings. We also completed internal demolition and refurbishment works in four early 20th Century Heritage buildings including the McEwin and Bice Buildings.

Our expanding civil division showcased our environmental remediation capabilities for Starfish Development's new 400 dwelling residential development, Hamilton Hill, the largest development in the Adelaide foothills in the last 30 years. The site contained significant quantities of contaminated soils and collected waste accumulated



over a century, and required over 500,000 cubic meters of earthworks to repair and make suitable for construction.

On the Osborne South Development Project, which will support Australia's Future Submarine and Future Frigate fleet programs, we completed our most challenging heavy-duty pavement, services and stormwater project to date. The pavements are amongst the sturdiest we have ever constructed, and are able to support wheel loadings of up to 30 tonnes. At the same site we completed our largest ever roofing and cladding project on the Block Outfitting and Ship Erection Hall for the Frigate Surface Ships.

The Osborne South Development Project was delivered in partnership with Intract Australia, who also had another outstanding year. Intract completed several key Department of Defence projects in South Australia and renewed their Repairs, Maintenance and Tenancy Management Services contracts at Maningrida and Gunbalanya with the Northern Territory's Department of Local Government, Housing and Community Development.

McMahon Services further expanded into the water sector delivering concrete remediation works at SA Water's Bolivar Wastewater Treatment Plant, utilising the skills of our concrete specialists, Ballestrin Construction Services. Ballestrin grew significantly in 2019 completing a variety of complex concrete works, including the completion of foundations and conveyor tunnels for T-Port's Lucky Bay Grain Storage Facility.

Building upon our recent expertise in power station deconstruction, in Western Australia we delivered a program of works to demolish and rehabilitate coal transfer conveyors and associated infrastructure at the decommissioned Kwinana Power Station. Some conveyors were over forty-five metres off the ground requiring detailed cranage and deconstruction staging plans.

The building services team showcased their expertise in high-end architectural finished works for Government clients, most notably The Academy fit-out works at the Hindmarsh Education Development Centre, which Hon John Gardner, South Australia's Minister for Education officially opened, and the Roxby Downs Area School STEM Works Upgrade projects.

In New South Wales, we completed multi-disciplinary projects for a variety of clients in various industries, including demolition of process plant infrastructure in a remote gold mine asbestos remediation of high-rise buildings in the heart of Sydney.

Graduate Engineers and other graduate professionals have become significant contributors to our business, and we now employ more graduates than ever before across all disciplines. We are proud at the broad diversity in gender and cultural backgrounds they represent, supporting our diverse and inclusive work culture.

We would also like to take the time to express our appreciation for the hard work our loyal staff of over 700 who have all made a big contribution this year. We challenge what we do every day and collectively work to improve the way we do business and add value to our client's businesses.

We thank our clients for their support and trust in our organisation to deliver their important projects, in partnership with our teams. Many of our projects in 2019 included repeat work for clients with whom we have established long-term relationships, and we look forward to fostering these relationships to achieve great outcomes well into the future.

30 Years of McMAHON SERVICES


Glen McMahon, Ken Henson, Neil O'Daniel and David McMahon in 1967

In February 2020, McMahon Services proudly celebrates 30 years of operations.

Whilst McMahon Services was established in 1990, our journey really began in 1970, when Barb and Glen McMahon decided to move from Port Vincent on the Yorke Peninsula to Adelaide.

Glen started up a waste company called McMahon Waste, and in 1974, Glen decided to expand into demolition and set up G.F. McMahon Demolitions. The business grew rapidly and quickly became regarded as the largest demolition / asbestos removal company in the state.

In 1987, the business listed on the Australian Stock Exchange and by 1988 the public company had grown to over 200 employees with work around Australia.

In 1990, the Public Company Glen McMahon listed was sold which saw Glen's two sons David and Andrew McMahon take up the opportunity to purchase the South Australian business.

From just 12 people in 1990, McMahon Services has grown to over 700 people with 14 offices in most Australian States and Territories, together with an office in New Zealand.

Our plant and equipment fleet has grown in that time today valued at over $80 million and includes high-reach demolition excavators, with numerous impressive shear attachments, heavy-duty mobile crushing and screening plant, GPS grade controlled earthmoving equipment, and a fleet of vac trucks.

Our diversified portfolio of environmental, infrastructure and building projects has delivered over $3 billion in works for clients across Australia, New Zealand, Singapore and the Pacific.

We are proud to be the first multidisciplinary construction services company in Australia to achieve Federal Safety Accreditation.

"We have a family business heritage"

Our values stem from our beginnings as a small family business and have remained the same over the years, irrespective of our growth.

We respect where we have come from and we respect all of the people who have been involved in our ongoing journey, from clients to partners, sub-contractors, suppliers and our staff.

We know our family business heritage sets us apart, enabling consistent, exceptional project delivery.

"Our people are central to what we do"

The key strength of the business and the reason for the success of the company is the quality and dedication of our people, as well as the great culture and attitude fostered in our personnel and teams. We are proud to say that many of our staff are second generation McMahon Services employees.

Our work environment is positive, collaborative and open, and we operate as a team. We are committed to looking after our staff, from safety in the workplace through to professional development, equal opportunities and ongoing training and development. Our focus on people is also further demonstrated by our involvement in local community development support work, sponsorships and pro-bono activities.

Our diversity and our can-do attitude are our core strengths, enabling us to tackle today's increasingly complicated projects. We pride ourselves on strong working partnerships and have an outstanding track record of project delivery, with a focus on innovation, responsiveness and first class outcomes.

We have the best staff, plant and equipment and expertise to undertake projects of any scale, anywhere in Australia, from a myriad of small works over a large geographical area to large scale multidisciplinary projects.

We have our people to thank for our success, and McMahon Services would not be where it is today if it wasn't for the hard work and dedication of our national team.

We look forward to the next 30 years building the strength of our company together with our staff and valued clients.

David McMahon
Managing Director

Andrew McMahon
Director

Andrew and David at the 20th Anniversary Event

Aerial view of 26 Duncan Road in 1996

David, Glen and Andrew at Glen McMahon's 80th Birthday


Early days management meeting at Dry Creek

OVER 4,000KMS FROM HOME

McMAHON SERVICES MAKES THEIR DEBUT IN SINGAPORE

PSA Singapore is one of the world's largest and busiest port operators and operates 67 berths at its city container terminals in Tanjong Pagar, Keppel, Brani, and Pasir Panjang.

PSA Singapore is in the process of consolidating its port operations at Tuas Port. When completed in 2040, Tuas Port will be able to handle up to 65 million standard-sized containers. It will house all of Singapore's container activities, running on emerging technologies, automation and data analytics. This will make Tuas Port the world's single largest fully-automated terminal.

GoIndustry engaged McMahon Services Asia Pacific to undertake deconstruction and scrapping works for the Tanjong Pagar, Keppel and Brani terminals as part of the larger relocation project, to Tuas Port. This was an exciting project to be a part of, not only for the complexity but also for the fact that this was the first ever project for McMahon Services Asia Pacific. The project required stringent deconstruction methodologies, and included the deconstruction and metal salvaging of 19 quay cranes, 26 rubber tyred gantry cranes and three rail mounted gantry cranes.

It achieved a delivery production rate of 21,000t of scrap dismantled and processed in a tight eleven-month period. McMahon Services' on average removed over 100t of scrap per day during lifting operations. The project hosted multiple work fronts, with over 200 major crane lifts being undertaken during the dismantling works.

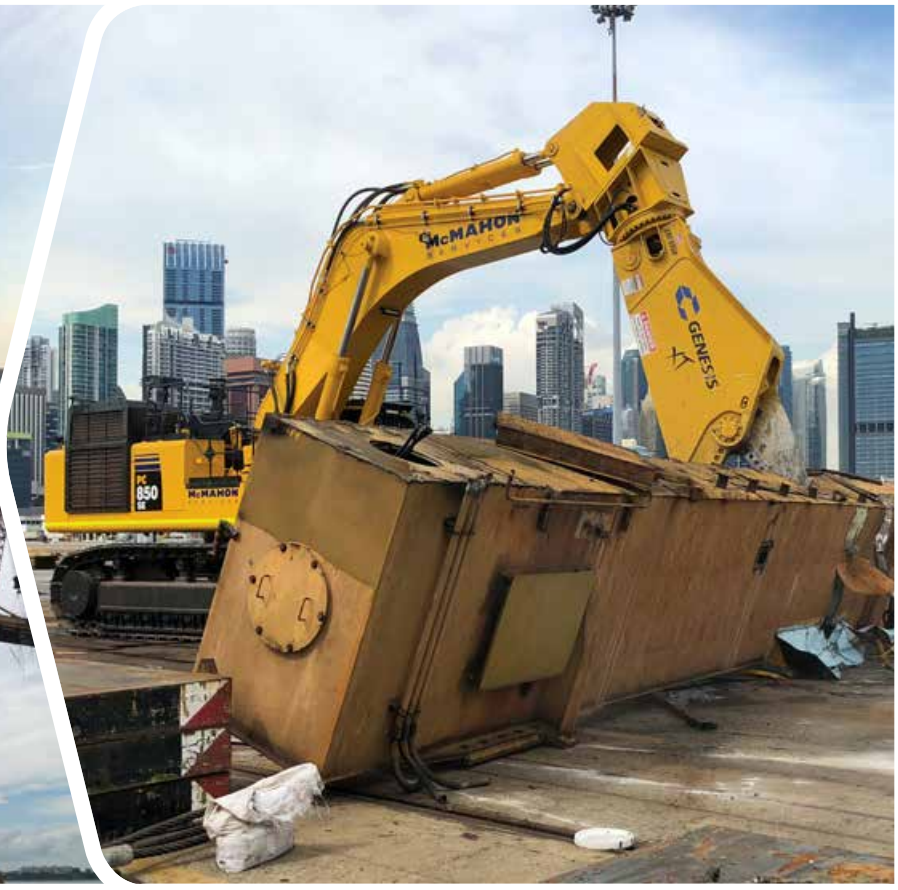
'The project achieved a 99% recycling rate'

High Risk Cranage Deconstruction Works

McMahon Services undertook the dismantling of 11 different model cranes from six different manufacturers, with the largest of the cranes weighing up to 872t with a vertical height of 101m. Each crane required detailed inspection and planning to undertake the safe deconstruction and salvage.

The deconstruction method required a high-risk cranage solution. Significant structural engineering reviews were undertaken to determine the capacity of the wharf structures to undergo the loads applied during lifting operations. Detailed crane lift studies were developed and approved for each crane lift operation.

The process for removal included substantial oxy-cutting and cold-cutting of wire, cables and subsequently



OVER 200 MAJOR CRANE LIFTS WERE UNDERTAKEN DURING THE DISMANTLING WORKS

106,000
WORK HOURS COMPLETED OVER
296 DAYS

structural members, utilising eight different cranes ranging from a 600t Crawler Crane with a boom length of 114m , to a 700t Mobile Crane.

Each crane was used at separate times with three cranes operational at each active worksite. At the peak of the project there were three active worksites where dismantling and processing work was occurring. Due to the tight schedule, both the Crawler Cranes and Mobile Cranes were used concurrently with undertaking the high-risk heavy lift dismantling works.

McMahon Services engaged design firm WGA to undertake detailed analysis designs to ensure the deconstruction sequence did not compromise the centre of gravity maintenance within the four main legs of the structure. This ensured the stability of the remaining structure at all times.

Scrap Metal and Hydrocarbon Recycling

McMahon Services utilised in-house assets to process all ferrous and non-ferrous metals for export including the use of the following;

- Komatsu PC850 excavator with a Genesis 1555R shear
- Komatsu PC500 with a LaBounty shear
- Komatsu PC450 excavator with a Genesis 995R shear
- Sennebogen 835E material handler

Overall the project deconstructed and recycled 19,600t of ferrous metal, with 37 shipping containers of non- ferrous materials being recycled and reused, including hydrocarbons such as grease and transmission fluids.

Key McMahon Services personnel with detailed knowledge of deconstruction and McMahon Services safety systems were relocated from Australia to deliver the works. McMahon Services also engaged Tiong Woon Project and Contracting as our crane partner, providing local high-risk project delivery expertise and ensuring a local Singaporean workforce supported by a foreign labour force.

STATE OF THE ART

REFURBISHMENT FOR PROFESSIONAL LEARNING ACADEMY

Orbis is a South Australia Department for Education's initiative, based at The Academy Education Development Centre in Hindmarsh. The new professional learning academy was created to provide a comprehensive program of professional learning for the state's public school and preschool educators.

The facility was designed to shake up the learning experience, and central to the new approach is the collaborative technology piece, spearheaded by Infocus interactive displays.

McMahon Services' Building Division led the fit-out works for the project, completing a high quality of architectural finishes in a very tight time frame, being delivered in three months, whilst accommodating normal building operations and minimal disruption.

Scope of Work

The project included stripping out of the existing partitions and ceiling and refurbishment of the electrical, mechanical, fire and security services, ready for the integration into the fabricated and adapted Baresque Zintra acoustic wall and Stratek woodgrain ceiling panelling to respective areas.

Newly established acoustic rated glass partitions and doors were installed, with audio visual and interactive programmed equipment integrated into specifically designed joinery. C-Bus controlled lighting and blinds were installed, automated to suit audio-visual projectors, with automated drop-down screens and interactive display operations all programmed to work with daily operations.

An existing operable wall was maintained and revitalised with wall paper to divide the largest training room area, while new floor coverings of woodgrain vinyl tiles to thoroughfares and carpet tiles to training, meeting and break-out rooms decoratively finished the floor.

New acoustic walls and partitions for break-out rooms provide creative and interactive discussions of focus groups, with a chill-out space for relaxed conversations during breaks, around a discreetly LED lit modern kitchenette area with a suspended Zintra Acoustic Connect feature ceiling.

Orbis was launched at its new state of the art Hindmarsh Centre on Tuesday 9th April 2019, officially opened by Hon John Gardner, South Australia's Minister for Education.

The event was attended by Building Services Manager James Wilson, Project Manager Mike Adler and Site Supervisor Simon Pluck. The project is an excellent example of the high-quality architectural works McMahon Services can deliver in tight delivery timeframes.

'I was very happy with the overall delivery of this project by McMahon Services and all involved. The end product was of a high standard and the customer was also very happy with the area.'

CONRAD MANSFIELD,
PROJECT MANAGER, SPOTLESS

McMAHON SERVICES GOES AGAINST THE GRAIN AT PORT LINCOLN

OVER 20,000

WORK HOURS COMPLETED

Viterra operates a storage and handling network spanning key growing regions in South Australia and western Victoria with a total storage capacity of around 10 million tonnes. They receive the main commodities grown in South Australia including wheat, barley, canola, lentils, faba beans, field peas and lupins.

In 2019, Viterra made the decision to transition to road transport for the movement of all grain on the Eyre Peninsula, to ensure they continued to provide growers and exporters with a competitive supply chain. The decision was crucial to ensure Viterra provided an efficient and cost-effective service to grower and export customers, to guarantee South Australian grain is competitive internationally.

The logistical change required the three existing rail unloading sheds at the terminal to be converted for road train access and to facilitate tipping trailers. As part of the conversion process, 50% of the shed structures were required to be raised to approximately 15m high off the ground to accommodate road trains tipping internally, as well as replacement and upgrade of various mechanical and electrical items within the sheds. Rail infrastructure in and around the unloading facility was integrated into the new access roads and pavement designs rather than removing the rail.

Early Contractor Involvement

A key project challenge for Viterra was to ensure all conversion works occurred prior to the upcoming harvest season. Due to the complexity of the scope and the multiple challenges the project faced; Viterra entered into a collaborative Early Contractor Involvement (ECI) process with McMahon Services to develop a cost-effective solution for the works.

The McMahon Services project team in conjunction with Viterra and consulting engineering firm GPA, developed a fully scoped and costed program of works that delivered the project in time for the upcoming harvest season.

The works factored in the requirements of multiple stakeholders including Viterra, City of Port Lincoln Council, Flinders Ports, rail asset owners Genesee & Wyoming Australia, the Department of Planning, Transport and Infrastructure, Viva and Caltex who operated a diesel pipeline within the project site boundaries.

The Early Contractor Involvement process ran from early May to mid-June 2019 resulting in a fully scoped, design and costed solution. The ECI process allowed for works to commence on site mid-June, well ahead of any schedule possible under a traditional design and construct delivery model.

Scope of Work

Works on site included the conversion of three railcar sheds from rail to road access, and the construction of new access roads incorporating the covered existing rail.

Civil works included piling and concrete works for the shed conversion works, and the construction of new roads including earthworks, stormwater, pavements and asphalting, fencing and signage.

Innovations

Conversion of Railcar Sheds from Rail to Road Operations

Shed construction required the demolition of half of each existing shed while retaining key items required

for operations. New structural steel totalling 120t was installed, raising 50% of the shed heights from 6m to 15m, and connecting the new structure to the existing structures.

This enabled road trains to travel through the shed and be able to fully elevate trailers and tip safely within the confines of the shed, dumping grain directly into the existing hoppers. The challenge was integrating the new structural, electrical services, mechanical services, roofing and cladding designs to fit with the retained and pre-existing structure, ensuring the connection details between the old and new railcar shed elements were compatible.

Road Construction while Maintaining Incorporated and Covered Rail Infrastructure

While the site was to be converted to facilitate the delivery of grain through road transport, the rail infrastructure was to remain in place. The project team in partnership with engineering firm Tonkin, developed an engineered design for multiple road crossings over the pre-existing railway infrastructure. This included protecting the rail with a geofabric layer to delineate the railway infrastructure, which was then laid over with multiple layers of PM20 engineered fill. The design ensured that the pre-existing condition of the railway infrastructure would remain, and where possible, untouched.

Project Challenges

Diesel Pipeline Relocation

A retaining wall was required to be constructed through part of the site to facilitate road train turning arcs within the limited space available on site. Adjacent to the retaining wall location was a redundant diesel fuel line. As part of McMahon Services' risk mitigation strategy, and in conjunction with Caltex, this 48.7m fuel line was removed during wall construction and then successfully reinstated.

Works were conducted under Caltex's Operational Excellence Management System (OEMS) Safe Work Systems required for construction works on their high-risk petrochemical infrastructure. The relocation works for the diesel pipeline were completed without incident and nil adverse safety outcomes.

While it was critical that all three shed conversion works were complete and fully operational at the commencement of the next grain season, the project team optimised the program so that at least one individual railcar shed was completed early as possible to allow for partial operations should the project be delayed.

'Earthworks totalled 3500m^3 with over 1900m^2 of asphalt laid'

COMPLEX REMEDIATION

EARTHWORKS AT HAMILTON HILL FOR NEW RESIDENTIAL DEVELOPMENT

Hamilton Hill, located in the Adelaide suburb of Woodforde, is the largest development in the Adelaide Hills in the last 30 years. When completed, the development will comprise of approximately 400 dwellings and 50,000m^2 of recreational space, including jogging trails and an outdoor amphitheatre. Hamilton Hill is the embodiment of Urban Renewal where an old council hard waste landfill has been transformed into a leafy, well planned, prestigious suburb.

Starfish Developments engaged McMahon Services to provide remediation earthworks to prepare the site for subdivision and building construction works over five stages.

Stages 1 and 2

Stages 1 and 2 occurred between October 2016 and October 2017. McMahon Services dug out old garbage pits and processed the soil removing unsuitable material to landfill. Over eight hundred concrete piles were removed from the site to ensure the ground was suitable for future services and infrastructure construction. Where necessary, larger stone was crushed and reused as fill with all suitable material being placed under the supervision of a Geotechnical Consultant. In one area, under a future apartment building, over twenty six thousand tonnes of contaminated material was buried as deep fill and capped with an additional twenty thousand tonnes of clean material sourced on site.

The construction of a repository like this is the preferred method of encapsulating contaminated materials where it will not be disturbed in the future. The total amount of material removed and reinstated was more than two hundred thousand tonnes during remediation.

Stages 3A, 3C and 4

Stages 3A, 3C and 4 works occurred between January 2019 and October 2019. The site contained significant quantities of hard waste from the construction industry and from what council had received over the last eighty years. The focus of the project was to remove and remediate all historic fill and waste material to ensure the site was suitable for residential development.

One of the first challenges on the project was remediating a site covered in thick vegetation which included numerous trees. Many of the trees were classified as significant and were protected throughout the works, and in time will be incorporated into future parkland.

Excavated materials were classified as two types; clean material suitable for use across the site, and unclean hard rubbish containing oversize stone and brick, soil, ash, timber and other anthropogenic items (pollutants of human origin like glass, steel etc). The contaminated material was found at depths between 2.0m and 8.0m. This fill was subsequently crushed, treated and capped with a minimum of 3.0m layers clean fill. Over five hundred thousand tonnes of earth was moved, treated and replaced under the supervision of a Geotechnical Engineer (to ensure the site is compacted and suitable for future buildings) and an Environmental Engineer (to ensure the contaminated material is capped and located in a way it will not affect the site in the future).

To add further rigour to the project, an EPA approved Site Auditor also oversaw the project to ensure all works were completed in a fashion that met the original objectives. The new recreational reserve will become the Adelaide Hills Council's asset, and as such, they met with the construction team on a weekly basis during the construction. At the end of construction the council also had an independent third party review of the works. The collaboration between McMahon Services, Starfish Developments and council ensured that McMahon Services achieved full compliance with the remediation action plan, and as an added benefit managed to remediate around mature trees, whilst retaining more trees than originally anticipated.

Other works included the construction of terraces for an outdoor amphitheatre, asbestos monitoring, asbestos pipe removal and disposal, removal and disposal of a fuel tank and the relocation and replacement of 160m of 375mm diameter watermains constructed using polyweld pipe. Over ten thousand tonnes of concrete was crushed and reused on site.

Quality Performance

Material tracking was critical to the success of the works and were monitored and recorded at all times.

Dump truck operators recorded all movements including material types, where the materials were placed, as well as truck size and carrying capacity. Survey pickups were conducted on all remediated areas and ensured all finishes were with the allowable ±40mm tolerances. Geotechnical Engineers provided Level 1 supervision across 430 compaction tests.

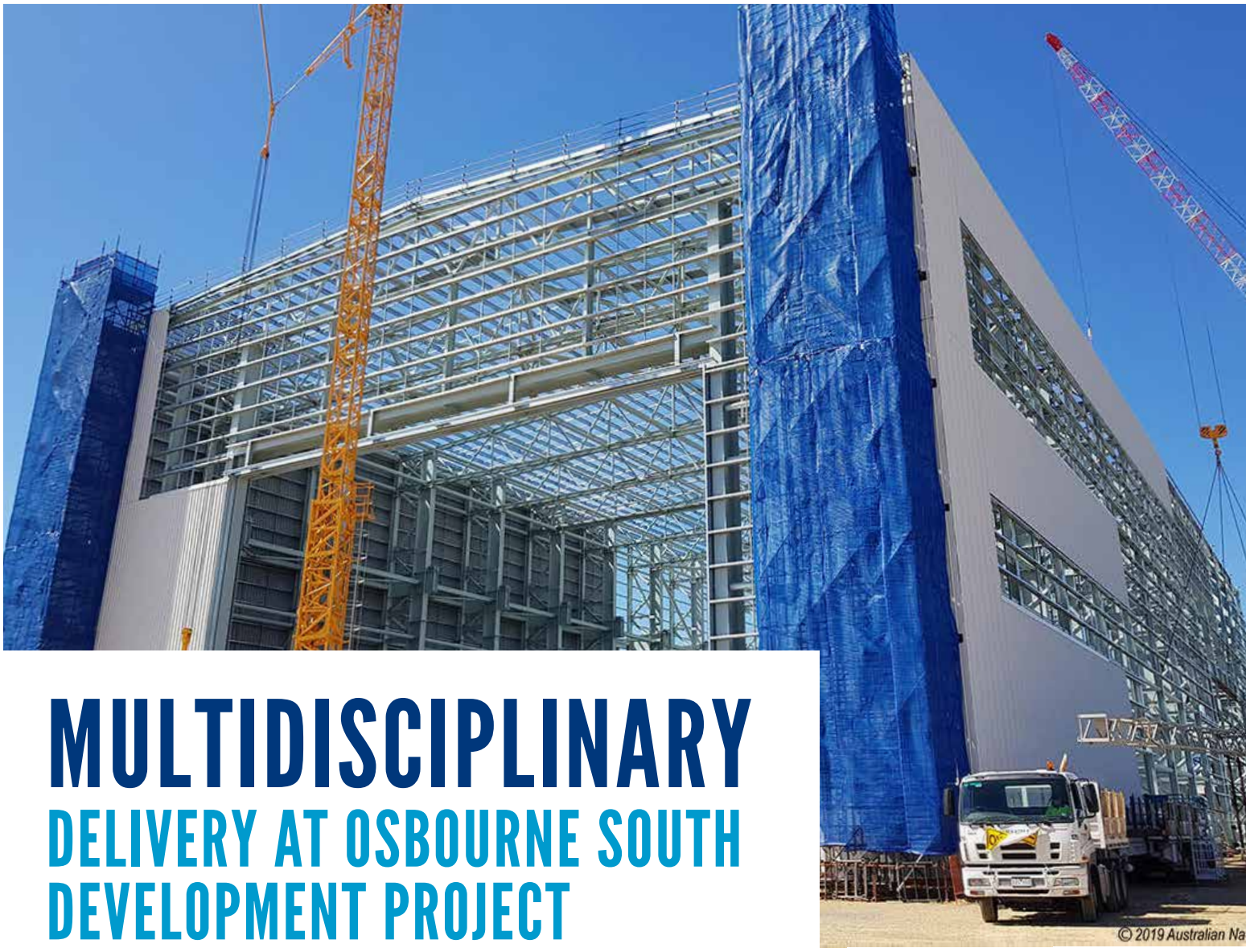
Across the works, the project team disposed of 16.3t of construction and demolition waste, 6.1t of asbestos containing materials, 34.5t of steel and various tyres to EPA licensed facilities. 97 passenger car tyres, seven light and nine heavy truck tyres, and 11 tractor tyres were removed from the site and recycled. The asbestos was the only material not recycled resulting in a 93% recycling rate for the project.

250,000M³ OF EARTHWORKS AND GROUND REMEDIATION UNDERTAKEN

93% RECYCLING RATE

55,000 WORK HOURS COMPLETED OVER THE PROJECT

7% INDIGENOUS PARTICIPATION



MULTIDISCIPLINARY

DELIVERY AT OSBOURNE SOUTH DEVELOPMENT PROJECT

The Osborne Naval Shipyard is Australia's premier naval industry hub. It is home to Australia's two largest naval projects, the Collins Class Submarine sustainment and Hobart Class Air Warfare Destroyer return after construction. The precinct is also the confirmed build location for Australia's $50 billion Future Submarine program and $35 billion Future Frigate fleet. The precinct is located at Osborne, 25km northwest of Adelaide's central business district and will be completed in early 2020.

Principal Contractor Lendlease first engaged McMahon Services in joint venture with Intract Australia to undertake to undertake early civil infrastructure works, and then consequently awarded later packages for pavements, detailed excavation, common service trench and stormwater works.

At a later date, the McMahon Services roofing team were engaged to undertake roofing and cladding works on Building 22 Block Outfitting and Ship Erection Hall for the Frigate Surface fleet. Building 22 is an impressive 187m long by 87m wide, and 50m high.

Civil Infrastructure Works

The McMahon Services and Intract team delivered a variety of multidisciplinary civil infrastructure works across the 185,000m^2 site including bulk earthworks, detailed earthworks, piling pads, demolition works, pile trimming, heavy-duty pavement construction, asbestos remediation, soil management, stormwater construction, stormwater management, common services trenching and temporary site facilities including haul roads, carparks, and hardstands for a temporary site precast yard.

Earthworks totalled over 60,000m^3 with 100,000m^2 of dynamic impact rolling for deep compaction and consolidation.

Other works included haul road construction, a 70,000m^2 temporary hardstand area, breakdown and trimming of 3000 piles, construction of the site common service trenches, 3.5km of stormwater pit and pipe for class G loading, and five gross pollutant traps were installed to depths up to 5.0m below the existing ground level and up to 2.5m into the ground water table.

The $24 million project was one of the largest projects delivered by McMahon Services this year. Various innovations under the Managing Contractor delivery model resulted in cost savings for the client totalling a value of over $6 million.

'Building 22 is an impressive 187m long by 87m wide and 50m high'

ONE OF THE LARGEST ROOFING PROJECTS UNDERTAKEN IN OUR HISTORY

Building 22 Roofing and Cladding

For Building 22, McMahon Services delivered 18,750m² of metal wall cladding and 16,830m² of metal roofing, one of the largest roofing project ever undertaken by our company.

A major challenge was working at heights of over 50m and the risk of wind associated with these elevations. Lifting was achieved using 100t cranes with 55m ultra booms and a lifting jig. Wind monitoring was performed at all times to ensure all lifts were well within the safety margin of wind loading.

160,000
WORK HOURS COMPLETED OVER THE PROJECT

14%
INDIGENOUS PARTICIPATION

Hon Minister Pisoni, David McMahon, Daniel Redman and two of the participants at the graduation ceremony

SKILLING SOUTH AUSTRALIA APPRENTICESHIPS AND TRAINEES

As one of the largest employers in South Australia, McMahon Services proudly support the South Australian Government's commitment to the creation of apprentices and trainees. In doing so, we help to secure the next generation of our workforce and ensure the continued success of our business.

McMahon Services in association with Renewal SA's Works Program and the Department of Industry and Skills' WorkReady Initiative, have recently completed an initiative on the Lot Fourteen redevelopment project that demonstrates our commitment to training and development.

We had long identified there was no formal pathway to becoming a Demolition Technician, as such, a barrier existed to gaining employment and experience in this industry. In partnership with Intract Australia, we developed and implemented a pre-employment program providing a formalised pathway to a career in demolition.

Our four-week program is believed to be the first of its kind in South Australia, which saw participants gain experience working on demolition sites at Lot Fourteen and former Football Park.

Thirteen participants were chosen from over 50 applicants, with each being engaged to complete nationally accredited training modules towards a Certificate III in demolition.

Each of these participants were also given the opportunity to undertake one weeks work experience training on an active demolition project, proving them with insight and knowledge as to what a career in demolition would look like.

Upon completion of the four week pre-employment program, eight of the thirteen participants went on to receive full time traineeships with McMahon Services and they are now working to complete their Certificate III in Demolition.

Additionally, two of the work experience participants from Lot Fourteen Stage 1 have also been offered the opportunity to continue with McMahon Services in undertaking the Certificate III in Demolition. Further evidence of our commitment to attracting and retaining talent.

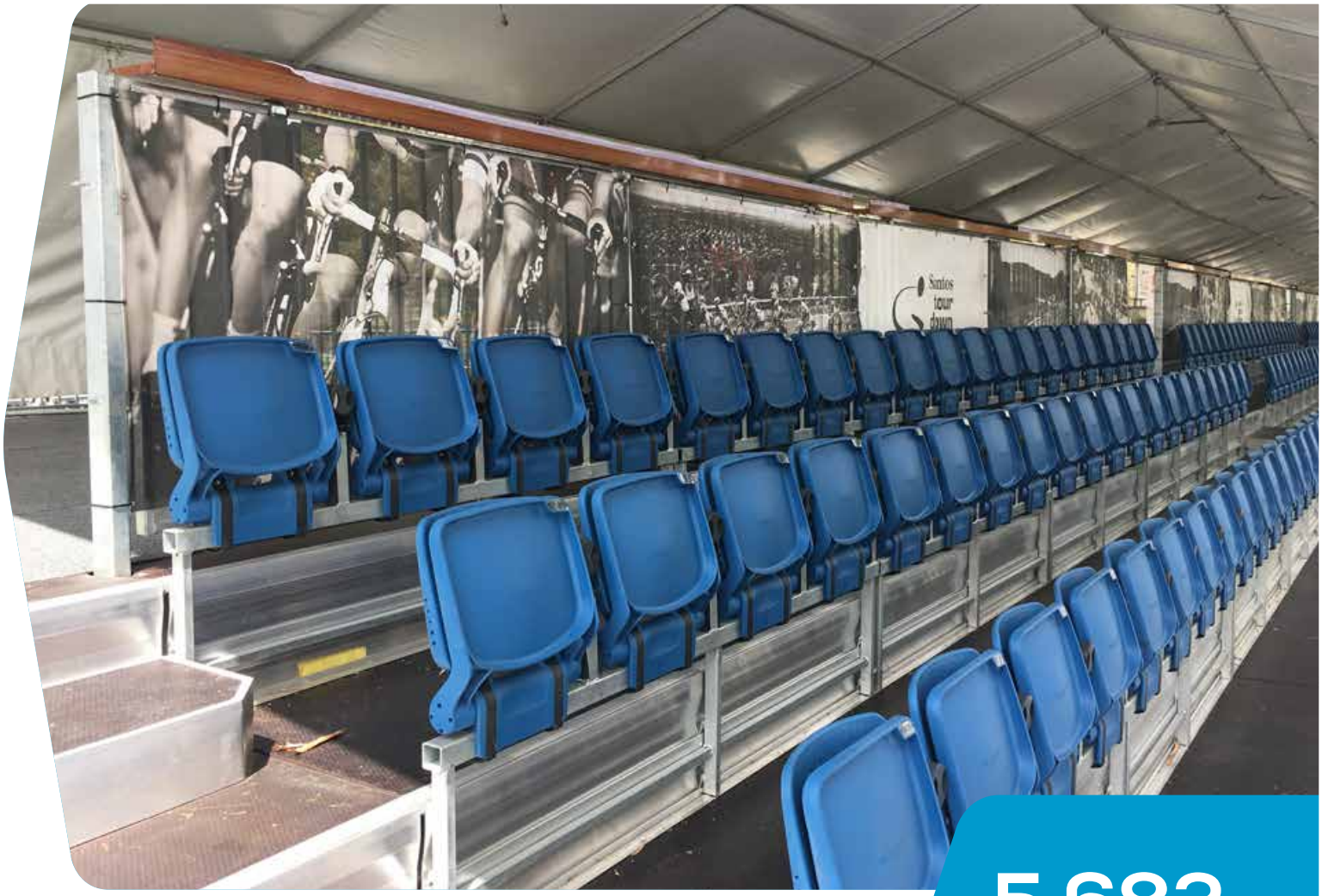
Since the implementation of this shared initiative we have further expanded this model in the form of a Certificate IV in Demolition for existing works. A new training provider has been sourced, and training is currently underway.

McMahon Services and Intract to Sponsor the First Schools Based Apprenticeship in Civil Construction

Building on the success of the newly accredited Civil Construction Apprenticeship, McMahon Services and Intract are sponsoring the very first Schools Based Apprenticeship in Civil Construction with the Civil Contractors Federation.

St Patrick's College in Edinburgh North, South Australia, has been selected for this apprenticeship after a short pilot last year demonstrated significant demand for training in civil construction. The course was oversubscribed and competition to attend was fierce. The sponsorship will cover the costs of providing an in school trainer and materials.

The Schools based Apprenticeship in Civil Construction will help both students and parents select a path into an exciting career in civil construction. It is expected that by the end of each participant's apprenticeship, they will be approaching leading hand competencies in both training and experience with onsite training a focus. McMahon Services and Intract are proud to help shape the careers of future school leavers.



EVENTS TEAM VICTORY

FOR TOUR DOWN UNDER GRANDSTAND BUILD

5,682

SEATING POSITIONS INSTALLED FROM CONTRACT COMMENCEMENT

The Santos Tour Down Under is the first stop for the world's best cycling teams and riders, and is the opening event of the Union Cycliste Internationale (UCI) WorldTour. First held in 1999, the Santos Tour Down Under is the biggest cycling race in the southern hemisphere.

The 11-day event brings UCI WorldTour male professional cycling teams to race on the streets of Adelaide and regional South Australia each January. The event also plays host to a UCI Women's 2.1-grade event, which also attracts the top athletes of female cycling to Adelaide.

The event is watched by over 800,000 spectators across the greater Adelaide metropolitan and country regions.

Scope of Work

The McMahon Services Events team have delivered grandstands and scaffolding for the Tour Down Under since 2016, with the scope of works encompassing the build and dismantle of the Schwalbe Classic Stand with 624 premium seats and a 570m^2 rear deck, the Stage 6 King William Road Stand with 858 seats and a 990m^2 rear deck, and the 6m high Stage 5 Television Scaffold Tower. Utilising McMahon Services Events' Premium Grandstand and Ringlock scaffolding systems.

To deliver the 2019 contract, a crew of 16 worked day and night shifts to erect the decks and towers over a six-day period leading up to the event, then dismantled in a single night to day shift.

A major challenge for the team was working in the inclement heat as the event occurs during the peak of summer, and working on major roads within the vicinity of highly trafficked pedestrian areas.

However, the set up and dismantling works are timed so that the majority of the major works occur at night, when temperatures drop below 25° and adjacent pedestrian and road traffic is at minimal levels.

The original grandstand used in 2016 comprised of 80kg decks, which required the use of telehandlers to lift into place and remove after the event. For subsequent events, McMahon Services Events utilised our Premium Grandstand system with lighter deck elements which allowed for manual lifting and placing. This significantly reduced the plant and equipment required on site, improved work safety and shortened the build and dismantle programs.

SOLID POUR AT LUCKY BAY FOR BALLESTRIN

The Lucky Bay Grain Storage Facility is part of a $130 million project by T-Ports that includes a port at Lucky Bay featuring 25,000t of steel silo storage, 360,000t of grain storage in ten bunkers, and a state of the art transhipment vessel with a loading capacity of up to 13,800t/day.

The Grain Storage Facility compliments the evolving grain supply chain in South Australia. The benefits of this project not only profit a lot of growers in the area, but also flow through to farming families and their local communities.

Scope of Work

T-Ports engaged Ballestrin for the construction of 1600m^2 of a concrete foundation required to be built above a 75m concrete tunnel, 4m wide and 2m tall.

The scope included both the earthworks and concrete works:

- 1700m^3 of detailed excavation was required for the tunnel
- Formwork included design, supply and install of the wall shutters, soffits for the tunnel roof, and steel circular formwork for ring beams
- Reinforcement included supply and install of 270t of steel
- Set out and install of cast in grates, steel fumigation ducts, and hold down bolts for building
- Concrete included supply and install of over 1300m^3 of S50 in-situ concrete.

T-Ports then awarded further works to Ballestrin that included installation of a 100m precast retaining wall and additional 850m^3 of concrete foundation works. The scope included earthworks, concrete, structural steel, and panel installation:

- 600m^3 of detailed excavation and bored piers
- Supply and install of 27 structural steel columns for retaining wall
- Supply and install of 30 precast panels, panel size up to 8.6m by 3.4m, 15t per panel for the retaining wall

- Supply and install of formwork, reinforcement and concrete pour for eight concrete foundations, the largest being a 160m^3 tower foundation
- Supply and install of over 1400m^2 of concrete pavement.

Innovations

Vertical Blinding to Excavated Tunnel

The tunnel underneath the silo foundations was a 2.5m excavation into engineered fill. Ballestrin noted the integrity of the earth during inspection and developed a vertical wall blinding methodology that would eliminate the need for battering or shoring. An independent Geotechnical Engineer was then mobilised to site to confirm the earth conditions and suitability of the methodology.

Rather than battering the excavation that would then require controlled low strength material backfill, the tunnel was able to be excavated with a 2.5m vertical face with daily monitoring and additional safety controls in place. The process involved vertical excavation followed quickly by a 50mm layer of vertical concrete blinding to the face of excavation, formed and poured in specific custom-built wall shutters.The outcome to the project was a faster and safer construction process. The benefit to the design was less earth would be disturbed and structural ingenuity of the engineered fill maintained.

Precision Formwork and Staged Pour for Tight Concrete Tolerances

The project specified very tight horizontal and vertical tolerances for the ring beams, ±5mm and ±2mm respectively. To achieve this, Ballestrin developed a staged pour methodology and custom-built curved metal formwork for compliance.

Each silo slab foundation contained 260m^3 to 320m^3 of quick setting S50 concrete. A pour of this size and complexity would be challenging and to mitigate any potential issues, Ballestrin in combination with the designers proposed suitable vertical and horizontal construction joints to allow greater control during construction.

A local metal fabrication company was engaged for the 24m diameter circular formwork that was a custom design and build. The steel formwork was delivered in 12 pieces and bolted together on site. The formwork was anchored into the ground to avoid movement, and had continuous radius checks throughout the pour.

10,000

MAN HOURS COMPLETED OVER PROJECT DURATION

HOUSING MAINTENANCE COORDINATION AND TENANCY MANAGEMENT SERVICES AT MANINGRIDA AND GUNBALANYA

In 2013 and 2014, Intract Australia competitively tendered for and was awarded two contracts with the Department of Local Government, Housing and Community Development. The contracts were for Tenancy Management and Housing Maintenance Coordination Services, each covering the remote Arnhem Land communities of Maningrida and Gunbalanya. The contacts have been extended twice to June 2020 since inception.

Tenancy Management Works

The Tenancy Management Works include tenancy inspections and tenancy support visits, supporting Territory Housing in arranging for tenants to sign tenancy agreements, notifying housing reference group members and community residents of scheduled housing reference group meetings, and assisting community residents to complete and lodge territory housing property and tenancy management forms.

The project team provides advice and information to community residents on Territory Housing policies and processes, and responds to tenant queries.

Housing Maintenance Contract

The Housing Maintenance Coordination contract with aims to maintain the quality and lifecycle of housing while providing training in building maintenance for local residents. Scope of works includes first response for tenant requested maintenance and repairs, regular checks to identify required maintenance works, coordination of qualified trades for specialist works, program management, communication to tenants of works schedules, and monthly reporting the Territory Housing.

A key factor for the success of this project is ensuring local cultural values, belief systems and behaviours are understood and respected. The project teams maintain close relationships with Traditional Owners and local residents to ensure expectations are clearly articulated and communicated, and that the majority of the project teams comprise of local people allowing for local representation in the works.

Community Involvement

The team in Gunbalanya have worked closely with various local stakeholders such as Department of Health, West Arnhem Regional Council, Gunbalanya

53%
OF THE OVERALL INDIGENOUS PARTICIPATION RATE IS WOMEN

School, Adjumarllarl Store, Arnhem Land Progress Aboriginal Corporation (ALPA) and the Gunbalanya Health Centre to assist in the 'Healthy Skin Program'. The program aims to reduce the prevalence of scabies and skin sores in Indigenous communities, and reduce the impact of associated chronic diseases including rheumatic fever and renal disease.

Intract have also hosted a Community Connector catch up to allow stakeholder members to workshop and identify activities that could contribute to the 'Healthy Skin Program'. An outcome of this meeting was a 'Clean Our Community Up' campaign with incentives to promote a clean home, healthy habits and therefore healthy skin. Through this, a tidy house competition, house-by-house healthy skin checks, and free rubbish collection services were established. Intract contributed to the event by donating cleaning kits, administration support and good cleaning guidelines in support of the competition and Health Skin Week.

Indigenous Participation

The two contracts require a minimum Indigenous employment rate of 40%. As of October 2019, the two contracts achieved a combined Indigenous employment rate of 72%, 53% being Indigenous women.

With many of the Indigenous personnel on the project being first-time entrants into the workforce, Intract provides culturally safe workplaces with flexible employment models, pastoral care services, and financial counselling and support.

All team members, other than the Project Coordinator, are locals or permanently reside in their respective communities.

THE CONTRACTS SERVICE APPROXIMATELY 550 HOUSES ACROSS MANINGRIDA AND GUNBALANYA

OVER 200,000 WORK HOURS COMPLETED SINCE PROJECT COMMENCEMENT

72% INDIGENOUS PARTICIPATION ACHIEVED TO DATE

INTRACT MAKES A SPLASH AT THE DEFENCE ESTABLISHMENT BERRIMAH

Defence Establishment Berrimah is located approximately 8km east of Darwin's central business district. The 150ha property contains Defence accommodation for personnel stationed around Darwin and includes a fitness and health centre, medical facilities, recreation areas and a communication centre.

Intract Australia was awarded the contract to construct new swimming pool and associated building infrastructure for Defence personnel living at the establishment.

Scope of Work

Project works were for the construction of a new swimming pool and upgrades to the attendant building adjacent to the existing gymnasium and basketball courts. The pool construction included the excavation of the pool's footprint, as well as all other plumbing and drainage works. The pool was 11m by 16m with a maximum depth of 2.2m, which required over 280,000L of water to fill the completed pool.

Initial works included service locations and isolations, clear and grub excavations, demolition of existing steel structures, installation of new watermains and tie-ins into existing mains, installation of underground power conduits, and stormwater pipework and pits.

The upgrade works to the attendant building included formwork and steel fixing, pouring the concrete base, walls and slabs, and constructing blockworks. In addition, works to the existing gymnasium building included tilting and roofing installation, as well as a mechanical fit out, insulation and linings, joinery and benchtops, amenities, and landscaping and fencing.

Over 2600m^3 of earthworks, 400m^3 of concrete, 100m^2 of roofing and 800m^2 of landscaping was undertaken across the works.

All trees within and adjacent to the construction site were protected and retained during the project works. A key driver of the project was ensuring civil works were conducted outside the wet season, particularly excavation and backfilling works.

Local and Indigenous Participation

Project workforce peaked at six personnel achieving 3000 work hours. The project achieved a 46% Indigenous participation rate, with the vast majority of subcontractors and suppliers being sourced locally.

INDIGENOUS PARTICIPATION RATE OF

45%

WILPENA POUND RESORT

STAFF ACCOMMODATION REFURBISHMENT

Wilpena Pound Resort is the sole accommodation located within the Ikara-Flinders Ranges National Park, 430km north of Adelaide. The resort comprises of 60 hotel rooms, 15 glamping safari tents, accommodation for staff, a picturesque campground, a National Park Visitor Information Centre, restaurant, bar/bistro, swimming pool and general store. The campground consists of 40 powered campsites suitable for caravans, campervans, camper-trailers and tents, as well as over 300 unpowered bush campsites.

It was identified that a backlog of maintenance across the resort and the need for lifecycle maintenance for several key assets was required. The assets identified included the existing staff accommodation building and three camping ablution blocks. All buildings were fitted with required water supply, sewerage, electricity and gas reticulation, but required upgrade works. Wilpena Pound engaged Intract Australia to undertake these works.

The project required multiple specialist subcontractor packages which was a challenge due to the remote location and wide work fronts on site. Despite the challenges, works were completed approximately one month ahead of schedule.

Environmental Performance

Ikara-Flinders Ranges National Park has a rich and complex cultural heritage combining Aboriginal and pastoral history. The park is co-managed by a board consisting of Adnyamathanha and Department of Environment, Water and Natural Resources representatives. The Adnyamathanha people (meaning hills or rock people) are the traditional custodians of the Ikara-Flinders Ranges National Park. Their connection with the land stretches back many thousands of years.

Intract placed the upmost importance on protecting fauna, flora and the surrounding environment during the works. All construction waste was appropriately segregated and disposed of in roll-on roll-off bins, then transported to licenced waste receiving facilities.

Intract NT employees attending a NAIDOC Week march.

Intract and McMahon Services' shed mural painted by local and renown Larrakia artist, Shaun Lee.

Apprentice Electrican Daniel Sparrow.

INTRACT CELEBRATES NAIDOC WEEK

NAIDOC Week celebrations are held across Australia each July to celebrate the history, culture, resilience and achievements of Aboriginal and Torres Strait Islander peoples.

This years' theme VOICE. TREATY. TRUTH. invited all Australians to walk in a movement for a better future. For generations, Aboriginal and Torres Strait Islander peoples have sought recognition of their unique place in Australian history and society today as the oldest continuing culture on the planet.

As part of the NAIDOC Week celebrations, Intract and McMahon Services, throughout the country, were invited to join hand-in-hand, in recognising and celebrating the Aboriginal and Torres Strait Islander history and culture.

On 9th July, our Northern Territory office, along with McMahon Services NT, launched their NAIDOC week festivities with an event under the stars at our Darwin premises.

The inaugural event was well attended by staff, key clients and partners, as well as family and friends.

The event, hosted by Naomi Anstess (Chief Operating Officer), began with a Larrakia Welcome to Country and Smoking Ceremony, followed by the unveiling of a new shed mural by local Larrakia artist Shaun Lee.

The piece, which tells the story of fresh and salt water coming together to create a vibrant ecosystem, reflects the partnership and collaboration between Intract and McMahon services, our journey, aspirations and the joint building of capability.

The annual Intract North NAIDOC Awards were also presented at the event, the awards recognises our clients and employees for their outstanding commitment to Indigenous engagement and Closing the Gap.

Intract North NAIDOC Employee Leadership Award: Daniel Sparrow

Our Apprentice Electrician, Daniel Sparrow, was awarded the Inaugural Intract North NAIDOC Employee Leadership Award for his commitment to the pursuit of excellence in all that he does.

Daniel shows leadership in continuous improvement and active involvement within the Intract North Team as a role model to his colleagues.

McMahon Services' Supervisor and Carpenter Zackary Hartshorn.

Carpenter, Michael Mason presenting Department of Defence representative Tracey Legg the Government Sector Award.

Plumber, Cash Ganley presenting Landbridge Group CEO Terry O'Conner with the Private Sector Award.

A-Class Electrician, Maslan Braun presenting Laing O'Rourke's Steve Shenfield with the Private Sector Award.

Intract North NAIDOC McMahon Services NT Employee Leadership Award: Zackary Hartshorn

Zackary Hartshorn, Supervisor and Carpenter, was awarded the Inaugural Intract North NAIDOC McMahon Services NT Leadership Award for his attitude in creating a culturally safe work environment.

Zackary leads by example and demonstrates inclusive practices that help to grow Intract staff and solidify the collaboration between McMahon Services and Intract.

Intract North NAIDOC Perpetual Award and Government Sector Award: Department of Defence

The Department of Defence was recognised for their leadership in Indigenous procurement.

Through the engagement of Indigenous business in the Defence supply chain, more Aboriginal and Torres Strait Islander peoples are engaging in self-determining employment opportunities.

As an Indigenous owned and operated company, Intract applauds the Department of Defence for their commitment to Indigenous Engagement and Closing the Gap.

Intract North NAIDOC Private Sector Award: Landbridge Group

The Landbridge Group were recognised for their commitment to Indigenous Engagement and Closing the Gap through futures and workforce investment.

Having engaged with Intract through our subcontract to McMahon Services NT, the Landbridge Group have consistently demonstrated real value in Indigenous business and Territory business.

Intract North NAIDOC Private Sector Award: Laing O'Rourke

Laing O'Rourke have been active in the pursuit of Indigenous engagement and Closing the Gap in the Territory for many years. Laing O'Rourke's strategic approach to Indigenous economic parity is commendable.

We recognised Laing O'Rourke for the lobbying of government for, and innovation in, package letting, that allows more Indigenous and Territory businesses to access opportunities.

Laing O'Rourke have been leaders in this space on the $500M Larrakeyah Naval Base works that has encouraged and allowed smaller Territory and Indigenous businesses to be awarded work packages on this significant project.

NAIDOC Week celebration in the South

On Thursday 11th July, our South Australian team in Dry Creek, along with McMahon Services held our second annual NAIDOC in-house event, which offered both office staff and on-site personnel a chance to come together to celebrate and participate in the NAIDOC festivities and pay tribute to the culture and history of Indigenous Australians.

Aboriginal elder Aunty Georgina Williams opened the event with a Welcome to Country, followed by John Briggs (CEO) and McMahon Services Director, Andrew McMahon, who spoke about the importance and significance of NAIDOC Week and the ongoing contribution and support both Intract and McMahon Services are doing in Closing the Gap.

Attendees were treated to a delicious native BBQ lunch, catered by Tauondi College, an Aboriginal community organisation.

By hosting events like this, we hope to open the conversation in our own communities, celebrate and learn about our shared histories, cultures and achievements and contribute to a reconciled Australia.

WOOMERA CIVIL WORKS

The Department of Defence's Woomera Range Complex located in South Australia, approximately 500km northwest of Adelaide, is comprised of the Woomera Test Range, RAAF Base Woomera and the Nurrungar Test Range.

The function of the Woomera Test Range is to provide a specialised operations environment in support of directed Defence activities for the testing of war materiel and other activities in the wider national interest. The range also supports a wide variety of trials covering many Defence related technologies including ground-based weapons systems, explosive ordnance and hazardous materials, and specialised force preparation activities.

Scope of Work

The 38.1km Range E Access Road is part of the local road network and runs east to northwest connecting Woomera Defence facilities to the Woomera Range. The project scope of works included road and shoulder repair, pavements including stabilisation and bituminous surfacing, stormwater including the replacement of two culvert structures, remediation and repair of existing culvert structures, and new road safety furniture including new w-beam safety barriers, signage and reflector guide posts.

Overall, the project team completed 76km of road shoulder repair, 215,000m^2 of pavement lime stabilisation, 235,000m^2 of spray seal, 4800m^2 of road reconstruction and stormwater upgrade along 38.1km of road.

Tech Road included culvert replacement up to 1200mm by 900mm triple cells, 8km of new shoulder construction, 5500m^2 of pavement lime and cement stabilisation and 36,000m^2 of spray seal. Road upgrade works in the Village included 3000m^2 of road reconstruction, 35,000m^2 of spray seal and 500m of concrete kerbing and spoon drains.

As the site location is 500km from Adelaide, construction planning was critical to ensure resources and material would be available on time and be used efficiently. At peak time, the project had 50 site personnel and large numbers of plant and.

Main works were completed six weeks ahead of program. Project is targeted to achieve a 35% Indigenous Participation rate.

Innovations

Real Time Kinematic GPS Surveying of as Built Roads

As built surveying of completed roads was undertaken using real-time kinematic (RTK) GPS sensors mounted on a vehicle to record completed road centre lines, and bitumen edges. The real-time kinematic GPS sensors use measurements from a base station mounted sensor as well as GPS positioning and a sensor mounted on a vehicle to provide centimetre-level accuracy of data.

The alternate method of survey would have required a two-person crew stopping every 20m to take three manual survey points, potentially taking up to two weeks to complete the survey for this project. With the vehicle mounted sensors, all as built surveying was completed in one and a half days.

Road Profiler to Double Construction Rates

Road profilers were used instead of traditional excavation equipment for the subgrade box-out works, which resulted in an increase in construction rates of 100%. This innovation in part allowed the project to be completed six weeks ahead of schedule.

24,129 WORK HOURS

WORKS COMPLETED 6 WEEKS AHEAD OF SCHEDULE

35% INDIGENOUS PARTICIPATION

Project Challenges

Limited Water Supply

Stabilisation works required significant quantities of water which was not possible to obtain on a continuous basis from mains water, due to local supplies being limited, and fill times could take up to 45 minutes per 12,000L water truck. To minimise delays to the work, multiple supply points utilised 50,000L water tanks filled on a continuous basis. 6" pumps and supply pipes from the tanks allowed for water trucks to be filled in as little as five minutes.

Winter Spray Seal Works

The original design called for S20E hot binder sealing, which could only be laid when temperatures were over 20°C. As the works were undertaken in the winter, and the road only had low traffic volumes, it was decided that the original design was not required. The project team proposed an alternative mix suitable for the traffic volumes that could be applied in cold conditions with a higher application rate that suited Defence requirements.

Road Shoulder Repair

The existing shoulder on Range E Road had been severely damaged by construction vehicles in the past, resulting in a significant drop-off between the edge of the seal and the shoulder. Intract developed an economical solution utilising onsite plant and resources. This solution helped Defence save millions of dollars in future repair works, by completing a 1.0m shoulder on each side of the road with little additional costs to the works.

Support for Neil Murray Fundraiser in Woomera

Intract Australia with McMahon Services sponsored a local community event at the Woomera Theatre on 30 July 2019, a performance by singer and songwriter Neil Murray.

Neil is a founding member of the pioneering Warumpi Band, who brought Indigenous contemporary songs such as, My Island Home, Blackfella Whitefella and Fitzroy Crossing into the Australian mainstream music industry. Neil was joined on stage with opening act 'The Dusty Feet Mob', an Aboriginal dance group from Port Augusta. The event was attended by over 100 community members.

The event also raised funds for the local Lincoln Park Horse and Human Rehabilitation Centre that offers equine therapy as an alternative to clinical counselling for veterans and the general public and also homes rescue horses.

INTRACT TAKES FLIGHT AT RAAF BASE DARWIN

RAAF Base Darwin is one of the Royal Australian Air Force's main forward operating bases. It is located 6.5km north-east of the City of Darwin and shares the runway with Darwin International Airport. Aurecon were engaged by the Department of Defence to undertake extension works to the Flight Planning Office, located within the Air Movement Terminal at the Base. Aurecon engaged Intract Australia to undertake the construction works.

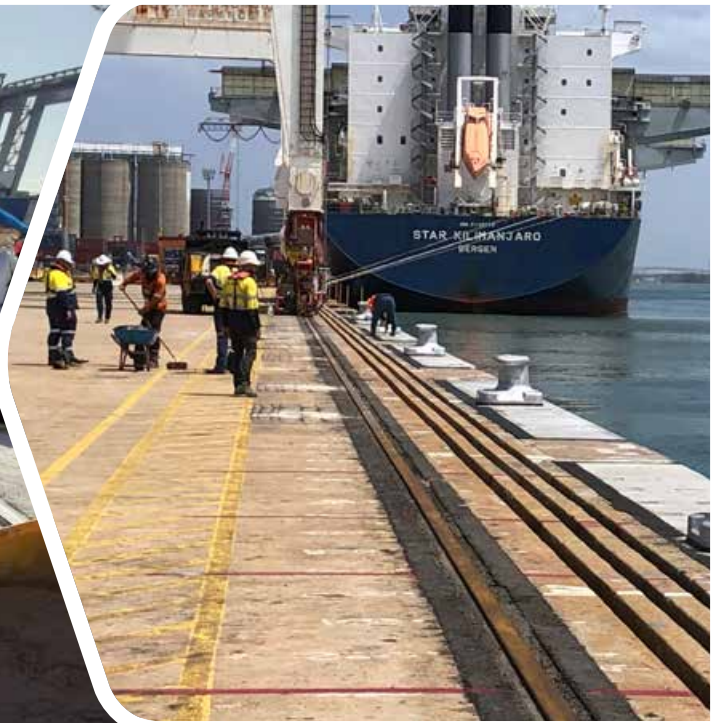
Scope of Work

The project encompassed the delivery of earthworks, construction of a new office space and refurbishment of a new building. Interior works included installation of a partition to segregate the existing office from the locker room, installation of new kitchenette and joinery, extension of an existing room to accommodate two new office spaces, a common corridor and toilet.

Due to RAAF Base Darwin being an operational airport and the works occurring on the Airside portion of the Base, the project delivery team worked closely with and complied to all Defence requirements to ensure the protection of aircraft during taxiing, take-off and landing. Foreign object debris (FOD) checks were regularly conducted and works were stopped whenever the Defence Works Officer advised of critical aircraft movements.

5000 WORK HOURS COMPLETED OVER THE PROJECT

29% INDIGENOUS PARTICIPATION RATE ACHIEVED



PORT OF BRISBANE

150T BOLLARD REPLACEMENT AND WATERMAIN UPGRADE

OVER 6,700 MAN HOURS

The Port of Brisbane, located at the mouth of the Brisbane River, is one of Australia's fastest growing container ports, and Queensland's largest multi-cargo port, and handles approximately $50 billion worth of international cargo each year.

Port of Brisbane engaged McMahon Services to undertake multiple projects across the site replacing bollards and upgrading a ship filling watermain.

150t Bollard Replacement

McMahon Services removed existing bollards and replace them with customised 150t bollards on Wharf 4 through to Wharf 12. A total of 2.5km of wharf frontage was upgraded to accommodate the large 8500 ECU Worldwide shipping vessels without disrupting wharf operations.

The wharves are operated by three different operators, and the setup of the wharves, type and arrangement of the existing and new bollards differed for each wharf. Works were delivered in accordance with the shipping loading and offloading and operational requirements of each wharf operator.

Works included the removal and reinstatement of existing 100t bollards and upgrading them to 150t capacity.

- Removal of 207 old 100t bollards
- Preparation of the existing quay line and underneath the wharf remediation work
- Supply and install 32t pedestals post-tensioning to the existing mooring structures
- Installation of 153 new 150t bollards
- Supply and install of 31 precast concrete pedestals at 32t each.

Due to the variation in the existing deck and mooring areas, level pedestals needed to be built to the best fit of the mooring areas which required a very detailed survey to be compliant with the project tolerances.

The position of anchors between existing concrete platform and precast pedestals had a highly comprehensive analysis as limited reinforcement was allowed to be cut. This created a different set-out for each pedestal structure which required rigorous quality assurance.

Ship Filling Watermain Upgrade

Along the quay line at the front of Wharves 4 and 5 were two 100mm diameter water mains used to supply fresh water to ships and saltwater for firefighting supply. Both pipes were constructed from asbestos cement piping and therefore required replacement.

Replacement works included the demolition and disposal of the existing pipe under non-friable asbestos disposal and treatment conditions, and construction, testing and commissioning of the new pipe. Other installation works included 14 new feed fire hydrants, and four new ship filling points with water meters, strainers and non-return valves.

McMAHON SERVICES

CONTINUES TO DEMOLISH MILESTONES AT LOT FOURTEEN

Lot Fourteen, the former Royal Adelaide Hospital site features many heritage Georgian revival architecture buildings dating from the early 20th Century including the Sheridan Building, the Women's Health Centre, the Allied Health Building, the Margaret Graham Building, the McEwin Building and the Bice Building. Most of these heritage-listed buildings are on the south-west of the site and visible from North Terrace.

Renewal SA, as part of their redevelopment of Lot Fourteen, required that these heritage buildings be retained, but their interiors were to be stripped out and remediated of asbestos and other hazardous materials allowing for their future repurposing.

McMahon Services were engaged to undertake internal demolition and refurbishment works on four of those buildings, including the McEwin and Bice Buildings.

Scope of Work

Internal and external demolition of works to the multi-storey McEwin Building included asbestos and hazardous materials removal, internal strip out including services, demolition of building upgrades completed in 1958, demolition of the level seven and lower ground plant structures, decommissioning and demolition of the northern and southern lifts.

The building was constructed with load bearing masonry walls, light weight partitions, reinforced concrete floor slabs and timber floor sections resulting in variable load bearing capacity across the building. This required structural reinforcement and bracing to allow demolition and strip out plant and equipment inside the building to undertake the works.

Scaffolding and edge protection were erected around the level seven plant room before demolition works could commence, and a materials chute was installed to allow demolition waste to be transferred to lower work areas for remediation and removal off site. Concrete roof, beam and column elements were dismantled using saw cutting and lifted using a mobile crane.

Significant seismic pockets (earthquake proofing) were completed throughout the entire building to allow for seismic bracing to be installed by the incoming builder.

Both the McEwin and Bice buildings are Heritage listed therefore any

9200 MAN HOURS COMPLETED ON THE BICE BUILDING

demolition works undertaken within 500mm of significant heritage building fabric were conducted by hand when safe to do so.

The Bice building works included the removal of asbestos containing materials and internal strip out works, air-gapping, physical separation, demolition of the eastern elevation of the building that was not heritage listed, separation and removal by crane of the 22t southern portico roof and columns and the manual demolition of the redundant service tunnel.

The scope also included the removal of all internal secondary concrete ceilings through the main corridors of the building. These were removed by the use of a remote-control demolition robot.

'Approximately 1100t of concrete removed'

INSTALLATION OF THE EXCLUSIVE LAYHER PROTECT SYSTEM SCAFFOLDING

Visitors to Lot Fourteen may have noticed a prominent installation of the Layher Protect System scaffolding in the laneway installed by McMahon Services' Events Division.

This innovative protection system wraps around the southern and western faces of the former Theatre Block, providing both safety and amenity.

In addition to its aesthetic benefits the system acts as a protective barrier, provides enhanced dust control and reduces noise.

However, the following also should be noted:

- Fully compatible with the Layher Allround scaffolding system
- Noise reduction up to 26dB
- Incorporates rubber sealing that achieves a virtually dust-proof outcome
- Accompanied by under-pressure arrangements, Layher Protect is widely used in asbestos removal projects.

A distinctive feature of the Layher Protect System is the use of a tensioned suspension system that allows bridging across a gate entrance.

The installation of this tensioned system at Lot Fourteen is the first time it has been used in South Australia.

IMMACULATE ROOF AND CEILING REFURBISHMENT FOR SPOTLESS

OVER 13,000 MAN HOURS COMPLETED OVER PROJECT DURATION

Spotless provides linen and garment laundry management services from 13 commercial laundries that service 4800 clients across Australia and New Zealand processing over 120,000t of laundry each year.

Their Adelaide commercial laundry featured buildings with asbestos containing ceilings requiring replacement before they became health and safety risks. For many years McMahon Services have undertaken spot repair and remediation works at the Dudley Park laundry, and were engaged to undertake the complete refurbishment of all ceilings and the replacement of the roof over the main production area.

Scope of Work

Ceiling works included the removal of 7500m^2 of non-friable asbestos ceiling and replacing it with suspended aluminium grid and vinyl tiles, in conjunction with the installation of new LED lighting. Roofing works included the removal of asbestos box gutters and the replacement of 6000m^2 of existing metal roof with new metal roof and box gutters.

New roofing included rotary ventilators, new zincalume box gutters with underslung PVC downpipes from new box gutters, new zincalume Kingklip roof sheeting on 50mm insulation blanket with associated flashings to make water tight.

Works were completed on time and under budget, this was achieved in part through the installation of fixed scaffolding over ironers, dryers and conveyor plant and associated equipment, allowing for easy and safe access to ceilings. Asbestos removal was therefore completed several weeks ahead of schedule.

Safety Performance

The major safety challenge on the project was working around electrical cables in the ceiling and roof spaces. Many electrical service locations were unknown and lint had built up on some surfaces. After all asbestos containing materials were removed, the electrical team undertook a systematic assessment and clean of all electrical services, then repaired and upgraded services as required to ensure safe operations by the roofing and cladding crews.

Another safety risk was working at heights. No roof anchor points were present in the roof so a comprehensive temporary static line system was installed to maintain 100% hook up of personnel when working on the structure.

7500M^2 OF NON-FRIABLE ASBESTOS CEILING REMOVED

NEW ZEALAND UPDATE

Auckland District Health Board Asbestos Removal Works

The Auckland District Health Board was established to improve, promote, and protect the health of communities, integrate primary and secondary care health services, and to promote effective care or support of those in need of health services or disability support.

The Auckland District Health Board has three major facilities: Auckland City Hospital, Starship Children's Hospital and Greenlane Clinical Centre. Auckland City Hospital is New Zealand's largest public hospital as well as the largest clinical research facility. There are approximately one million patient contacts each year, including hospital and outpatient services.

In 2018, Auckland District Council appointed McMahon Services onto their panel of five contractors to deliver emergency response asbestos decontamination works, programmed asbestos removal works, and asbestos works for major construction projects. The five-year contract covers friable and non-friable decontamination in Auckland City Hospital, the Greenlane Clinical Centre and minor works at Point Chevalier Campus.

Asbestos containing materials includes ceilings, fireproofing, floor tiles and vinyl, cement boards, mechanical gaskets, roof sheeting, downpipes, guttering and electrical switchboard mounts. All asbestos is removed under asbestos containment conditions including isolation and decontamination of affected areas, and disposal of materials at licenced receiving stations.

Terminal Demolition on the North Island

An oil industry leading company required demolition, asbestos and hazardous waste remediation and scrap metal services for nominated structures within an operational petrochemical terminal in the North Island of New Zealand. The scope of works included the removal and remediation of ten aboveground storage tanks, buildings and associated pipe work, the removal of hydrocarbons and asbestos removal and appropriate treatment which included galbestos, gaskets and cement sheeting.

Works were undertaken adjacent to operating terminal facilities requiring stringent adherence to the client's loss prevention system and clear delineation of demolition zones from operational zones. Permanent fencing separating the work site from a major road had geotextile fabric attached to alleviate dust mitigation from the work site.

Over 27t of asbestos waste and 1800m^2 of asbestos sheeting was removed and appropriately remediated offsite at licenced receiving stations.

695T OF STEEL SCRAPPED AND RECYCLED

ROXBY DOWNS AREA SCHOOL STEM WORKS UPGRADE

The Department of Planning, Transport and Infrastructure's Science, Technology, Engineering and Mathematics (STEM) Works program will provide $250 million funding over three years to refurbish and redevelop 139 primary and secondary school facilities for the provision of contemporary STEM programs. The new learning facility will support and enhance student engagement in STEM related areas to encourage future innovation and productivity.

Scope of Work

McMahon Services were contracted by Department of Planning, Transport and Infrastructure as part of the STEM program to undertake refurbishment works at the Roxby Downs Area School.

The scope of works included the refurbishment of various buildings between the Children's Centre and the Roxby Downs Area School. The Children's Centre portion of the project related to the part demolition and refurbishment of the Children's Centre, Library and Canteen, as well as outdoor learning area landscaping works. The STEM works upgrade consisted of the refurbishment of the science and technology laboratories and classrooms, as well as upgrade works to the courtyards.

'Working with McMahon Services over the past 2 years at Roxby Downs Area School has been an extremely positive and rewarding experience.

Having over 600 students at the school and more than 100 pre-schoolers and their educators to work around is always a challenge and the team on site managed this superbly. Our thanks go to all those at McMahon Services who were involved in the project and we are very satisfied with our final product."

ANN O'SULLIVAN, DEPUTY PRINCIPAL, ROXBY DOWNS AREA SCHOOL

ELECTRIC DELIVERY AT KWINANA POWER STATION

OVER 6700T OF CONCRETE AND 1200T OF STEEL RECYCLED

Synergy owns and operates five major power stations within the South West Interconnected System in Western Australia, which extends from Kalbarri in the north, Kalgoorlie in the east and Albany in the south.

The 900MW Kwinana Power Station, which closed in 2015, is located within the system 30km south of Perth, and was first commissioned in November 1970.

Between 2009 and 2015, Synergy closed Stages A, B and C and in 2017 Synergy commenced the Kwinana Power Station Rehabilitation Project in recognition of the risks these facilities presented, and commenced a program of demolition and rehabilitation of the area to effectively de-risk the site.

Scope of Work

Synergy engaged McMahon Services to undertake Phase 3 of the demolition works which comprised of the mechanical demolition and removal of coal transfer conveyors, towers, screenhouses, hoppers, reclaimers, foundations, tunnels, concrete slabs, a bulldozer maintenance building, diesel fuel tanks, pipework, tanks and bunds. Asbestos containing cement ducts and pipes, floodlights, fire hydrants, bore, electrical services, lighting, oily water separators, fencing and drainage systems were also removed.

The project had a significant remediation component of work with over 15,300m^3 of coal, 3300m^3 of asbestos impacted, 180m^3 of Class III soil and 1200m^3 of Class IV soil heavily impacted with hydrocarbons. Other hazardous materials removed from site included lead paint and hydrocarbons.

Project Challenges

High Risk Crane Lifts

The tallest buildings demolished were over 15m in height however, the transfer conveyors that were removed were positioned at heights of 45m above the ground and adjacent to active plant and electrical switchyards. McMahon Services mobilised 500t, 230t and 130t Mobile Cranes to safely lift down the conveyor sections with 135ft booms lifts used for access to these critical lifts at height.

Preparation works included assessing the redundant conveyor structures for structural stability and suitability for lifting works.

Conveyor trestle supports were held in place laterally by additional cranes during the conveyor removal and once the conveyor section was removed, the trestle supports were separated at their top connection point, then cut at their bases, before releasing and lowering to the ground in two separate lifts each.

OVER 16,000 WORK HOURS

McMAHON SERVICES
GRADUATE DEVELOPMENT PROGRAM

McMahon Services have been a long-time supporter of education and graduate opportunities for young students and professionals. We are often asked to provide work experience opportunities for both high school and university students, and we see this as being critical to encouraging and developing our next crop of engineers, commerce and construction practitioners.

Given the importance of developing our graduates, McMahon Services is now investing in a formalised Graduate Program across the business, which has included engagement with South Australia's major tertiary education institutes including the University of South Australia, University of Adelaide and Flinders University.

When officially launched in 2020 the program will be a three-year program with the following key elements:

- First year commences from an engagement at the end of third-year University, and extends until graduation typically in the fourth year. This provides part-time involvement, experience and a general "learning the ropes" opportunities
- Second and third years are in full-time employment roles following graduation.

We assign each graduate a mentor, a senior and experienced person within the business with the qualifications and experience to develop the graduate through the program and into future employment within the company. We rotate graduates through different focus areas and disciplines within the business to get broad skills in all aspects of the diverse industries we operate in.

Six of our current graduates who are kicking goals within McMahon Services — Tracey, John, Daniel, Tyson, Rachelle, Dale and Saba — share their experiences.

Tracey Zhang, Project Engineer, Civil Construction

After completing her Bachelor of Civil Engineering in China, Tracey moved to Adelaide where she completed her Masters in Civil and Environmental Engineering at the University of Adelaide. She then spent eighteen months as a Graduate Engineer on marine construction projects in Queensland, before returning to Adelaide joining the civil construction team.

Commencing at McMahon Services in June 2019, Tracey's work has predominately been in estimating, preparing estimates, subcontractor quotes, construction methodologies and proposal development.

"My long-term career objective is project management. Estimating is a great foundation for understanding how projects are delivered and showcase all of the elements required for a project to come together. The work is diverse here. I have completed tender proposals for earthworks, roads, bridges, carparks, stormwater and service relocations in six short months."

John Nguyen, Estimator, Demolition

John holds two degrees, the first is a Bachelor of Petroleum combined with Civil and Structural Engineering, and he then completed a Graduate Diploma in Computer Science. He joined McMahon Services in January 2018 as a graduate in our demolition team and discovered his skills and interest lay in estimating.

John quickly picked up the position requirements and was soon developing estimates for large demolition projects at Adelaide Airport, the Lot Fourteen former Royal Adelaide Hospital site, and other heavy industry sites across Australia and New Zealand.

"I studied engineering because I like to know how things work. Computer science allowed me to model engineering problems. Demolition was not the career that was forefront in my mind when I was at university, but McMahon Services offered me an opportunity and I'm glad I took it, and I thoroughly enjoy my job on a day to day basis."

'McMahon Services have been a long-time supporter of education and graduate opportunities for young students and professionals'

Daniel Tet, Project Engineer, Demolition

After completing his Bachelor of Engineering in Civil and Structural with Honours, Daniel applied for and was accepted into a graduate position with McMahon Services in our demolition team. Daniel has gained much of his graduate experience on site in locations as diverse as Olympic Dam, Adelaide Airport, Nyrstar in Port Pirie and the OneSteel mills in Whyalla.

"On site you discover there is so much more to project management than what we learned in university. There are engineering problems to solve, but there are also budgets and programs to manage, methodologies and safe work practices to develop and implement. This is only achieved by observing and engaging with the work crews doing the physical work. Only site experience can teach you that."

Engineering was Daniel's career choice because he enjoyed physics and mathematics, and an appreciation of the technical side of how things work.

"It's great to witness project progression with your own eyes. Long term I want to be a project manager on larger and more complex demolition works, and those opportunities are available here at McMahon Services."

Tyson Devine, Graduate Engineer, Concrete Construction

Tyson joined sister company Ballestrin Construction Services in January 2019 with a degree in Construction Management and Economics with Honours from the University of South Australia. In his first year, he has undertaken a variety of roles in estimating. quality assurance, project management, cost tracking and contract administration.

"You get to travel a lot in the project management side of engineering. I've worked in Lucky Bay, Whyalla and Adelaide on sites as diverse as grain silos, processing plants and roads."

Tyson sees plenty of opportunities for him in this discipline. *"Ultimately, I want to be a construction manager."*

Rachelle Brand, Undergraduate Accountant, Finance

Not all our graduates are engineers and Rachelle is proof of this. Rachelle works for Intract, and has recently finished a Bachelor in Business in 2018, majoring in Events and Tourism Management at the University of South Australia in 2018, and at the end of 2019 she will finish her final year of a Bachelor of Commerce (Accounting) degree.

Employed part-time while she is studying, Rachelle performs accounts payable, accounts receivable, management accounting, project accounting and works with our financial system Pronto.

"I like mathematics and business, so accounting seemed like the right career choice for me... there are so many paths I can take in commerce and accounting, and I look forward to seeing what the future holds for me in this space."

Dale Haynes, Undergraduate Engineer, Civil Construction

While completing his final year of an Honours Bachelor degree in Engineering (Civil and Architectural), Dale works part time within the civil estimating team preparing cost estimates, delivery methodologies and project plans for tender submissions.

"I like both the design and construction aspects of engineering, but there is far more to the profession than just these elements. Tendering exposes you to the business side of engineering and construction, which you don't learn much about at University."

Dale got into engineering because he enjoys making useful infrastructure. *"I can see plenty of opportunities in the company to achieve my career objectives, but the challenge is knowing which stream — construction, estimating, project controls, design — that interests me the most."*

Saba Jazi, Project Engineer, Civil Construction

Saba has recently moved to Australia from Iran, and completed her Bachelor of Civil Engineering at Shahrekord University, and her Masters in Road and Transport at Azad University Science and Research Campus in Tehran.

Saba works in the estimating team using AutoCAD software to complete accurate and comprehensive quality surveys and has been building price models for small and large civil projects.

Saba has enjoyed learning about the diversity of roles on the construction side of Engineering, and enjoys the challenge of building internal and external relationships and improving her English.

"The great thing about having a group of graduates in one team is our shared approach to problem solving, building trust and rapport.

It is great that we can share ideas and work on projects together. We complete group exercises like practicing talking to clients on the phone, seeking feedback on tenders, how to construct roads, what plant is used for what tasks, and how to understand productivity rates. These skills aren't really taught at University and it is fun learning in a group."

McMAHON SERVICES ACES DUAL LIFT AT MEMORIAL DRIVE

100%
RECYCLING OF DEMOLISHED MATERIALS

In 2019, the South Australian Government commenced construction works for a major upgrade to the Memorial Drive Centre Court site, engaging Kennett Builders as the Managing Contractor with Tennis Australia also being a major contributor. The objective of the works was to rejuvenate the historic home of tennis in South Australia.

Works included the renewal and upgrade of the courts, delivering a new outdoor show court and two new match courts to better position Adelaide as a host for tennis tournaments.

The courts also required a new steel framed fabric structure to span the existing court platform area and create a roof structure for the existing North and South Stands. To achieve this last objective, the existing roofs on the North and South Stands were required to be demolished.

Scope of Work

Works included the mechanical demolition of the two steel roof structures over the North and South Stands at the Memorial Drive Tennis Centre courts, and the demolition of four light poles and chain link fencing.

The 64t South Stand roof was 1190m^2 in area and was removed in a single lift utilising two 250t cranes providing man box support. The cranes performed within predefined slew limiters to ensure the hazards of knocking other structures inside the constrained work site were mitigated. The roof was lifted onto the centre court which was protected with a layer of 200μm plastic over a 12mm conveyor rubber. A 13t rubber tracked excavator with a demolition shear attachment then cut the roof into transportable sized pieces for removal off site.

The 45t North Stand roof with a surface area of 935m^2 was mechanically separated by personnel in a man box into four equal sized sections and then lifted via a 200t crane onto the pad for further mechanical demolition by the excavator and transportation offsite.

Traffic management strategies were developed and implement to protect pedestrian movement near the court and to allow the safe ingress and egress of plant, equipment and salvaged materials transported to and from site. Works were conducted in the heart of Adelaide's central business district requiring close liaison with Adelaide City Council and the Department of Planning, Transport and Infrastructure.

Over 80t of steel was demolished and removed from site achieving a 100% recycling rate for the project. Workforce peaked at eight personnel who achieved 2000 work hours, and works were completed within the five-week delivery schedule.

'It has been an absolute pleasure working with everybody from McMahon Services on this job. It is a breath of fresh air working with people that are professional and know what they are doing.'

KYM COLLINS, SITE MANAGER, KENNETT BUILDERS.

NEW ADDITIONS TO FLEET

McMAHON SERVICES OPERATES AND MAINTAINS ONE OF AUSTRALIA'S LARGEST FLEETS OF CONSTRUCTION AND DEMOLITION PLANT AND EQUIPMENT. OUR $80 MILLION NETWORK OF COMPANY-OWNED PLANT AND EQUIPMENT IS CAPABLE OF SERVICING PROJECTS IN URBAN, RURAL AND REMOTE LOCATIONS ANYWHERE IN AUSTRALIA.

Over 400 major plant items comprise of dozers, demolition and civil excavators, graders, roller, dump trucks, batching plants, service trucks, water trucks, soil blending machines, prime movers, hook life bin trucks, low loaders, semi-tippers and cranes.

The list below is a summary of those items added in 2019.

Trucks and Trailers	
Isuzu FSR 120-260 Custom Service Truck	1
Volvo FH16 Prime Mover	1
Southern Cross Skel Semi-Trailer	1
8 x 5 Tandem Trailer	3
8 x 5 Tandem Tipper Trailer	1
Mitsubishi Fuso Fighter Concreters Truck	1

Specialised	
Genesis GXT995R Shear	1
Genesis LXP200 Shear	1
500 Kva Doosan Generator	1
Kobelco CKE2500g-2 250tonne Crawler Crane	1
30000l Self Bunded Diesel Tank	1

Light Vehicles	
Hilux Ute	15
Hiace Van	2
Landcruiser Sahara Sedan	2

Civil Earthmoving Equipment	
PC360 Excavator	2
Bobcat S590 Skidsteer loader	1
Bobcat E35 Excavator	1
Bobcat T450 Skidsteer loader	1
Bobcat T770 Skidsteer loader	1
Dynapac CA2500d Roller	1
Caterpillar 12M Grader	1
Terex Finlay 693 + Mobile Screening Plant	1
Powerscreen 1300 Maxtrak Cone Crusher	1
Caterpillar CW34 Multi Tyre Roller	1

McMahon Services lifts their game with the acquisition of a Kobelco CKE2500G-2 Crawler Crane with a lifting capacity of 250 tonnes.

We selected the crawler crane for the Lot Fourteen Stage 2b Demolition project because of its easy ability to relocate across the site without the need to demobilise counterweights and fly sections each time it moved which is required with hydraulic all-terrain cranes. This provided significant program gains and increasing productivity rates. The Crawler Crane also eliminated extra traffic movements of Franna cranes and semi-trailers moving dismantled crane loads around the site.

A 90 tonne counterweight and a 76 metre main boom with an 18 metre fly jib provided superior lifting capacity around the site. It could lift a 13 tonne excavator to the top of the Outpatients Building to assist with the demolition of the concrete helipad, a feat that would have not been possible on this project.

Our purchase enhances our fleet capability with a crane that offers both heavy lifting capabilities combined with long height and reach versatility.

State of the Art In-house Surveying Capability

A key service offering McMahon Services brings to civil and building construction is our in-house surveying capability. Not only do we employ a team of professional surveyors, we also utilise a vast array of state-of-the-art surveying tools, technology and software that bring significant cost and program savings to clients.

Our in-house surveying took off in 2014 when we first fitted our graders, excavators and land plane with Global Navigation Satellite System (GNSS) and Trimble Site Vision Grade Control software. The benefits were immediate and three-fold:

- Three-dimensional grade control results in accurate levels and completed earthworks performed well within design tolerances, while allowing for excavation and grading works to be performed without the use of timber stakes
- Real-time and accurate recording of earthworks datum and volumes reports of materials moved, which sub-sequentially produces accurate and timely as-built drawings of completed works
- Cost savings and program gains in reduced work times and the elimination of post works completion surveying.

In the last five years we have invested heavily in our surveying capability and technology. Today we employ two Surveyors and an Apprentice Surveyor who is completing his Diploma in Surveying. The team manages all surveying requirements for all applicable civil and building projects delivered across South Australia and we offer similar services to clients in all other states.

Our surveying team ensures industry technology and software applications remain current and state-of-the-art. Fifteen of our largest machines including land planes, graders, dozers, excavators and compactors are now fitted with GNSS guidance systems and Trimble control software, offering versatility in our surveying and grade control offerings.

Our surveying capability has delivered proven results in a variety of applications including road construction, concrete works, high precision surveying, building works and piling.

WASTEWATER TREATMENT PLANT

CLARIFIER UPGRADE WORKS

Originally built and operational in 1966, the Bolivar Wastewater Treatment Plant located in the northern suburbs of Adelaide treats up to 470ML/day of wastewater.

In 2018, SA Water identified the need for major upgrades to the internal mechanical scraper mechanism for eight clarifiers at their Bolivar Plant. McMahon Services were engaged by Head Contractor Waternish Engineering to undertaken the clarifier upgrade works in partnership with Ballestrin Construction Services who undertook the concrete repair works.

The Bolivar Wastewater Treatment Plant clarifiers were constructed in 1966 with the original plant. Clarifiers are settling tanks built with mechanical means for continuous removal of solids being deposited by sedimentation. It removes solid particulates or suspended solids from the wastewater with concentrated impurities discharging from the bottom of the tank known as sludge, while the particles that float to the surface of the liquid are called scum.

The Bolivar Plant clarifiers were made of reinforced concrete construction, cast in-situ and included 50mm levelling screeds and expansion and construction joints. Works comprised the upgrade of seven clarifiers and installation a new clarifier mechanism. Each clarifier was approximately 45m in diameter with two scraper arms.

The McMahon Services-Ballestrin team commenced works with high pressure water cleaning and hydro demolition of internal concrete structures and removal of debris using large vacuum recovery unit.

The next steps were the mechanical decommissioning of scraper arms, gearbox and associated mechanisms, followed by the demolition of mechanical and civil structures.

Decontamination of asbestos containing materials in the internal launder and weir plate joints were also undertaken. The project team worked closely with the client to ensure all asbestos was identified, recorded and subsequently removed and disposed of offsite at EPA licenced receiving stations. Stringent control measures were implemented to control airborne dust to mitigate any effect on adjoining facilities.

Concrete remediation works were undertaken on the following elements of the clarifiers: screeds, structural wall joints, cantilever tie-in beams, radial channel infills and the protective surface coating of outer launder.

Internal scaffolding was erected on a continuous basis to allow work crews ease of access to the clarifiers during the works.


M MAHON

SMASHING SUCCESS FOR

ORORA GLASS WAREHOUSE EXPANSION

Orora is an international manufacturer and supplier of packaging products including glass bottles, aluminium cans, closures and caps, boxes and cartons, packaging equipment, recycled paper, rigid and flexible packaging, bags and sacks, and packing materials and supplies. They employee approximately 7,000 people worldwide operating predominately in Australasia and North America.

In 2018, Orora embarked on an upgrade to their warehouse facilities situated 50km north of Adelaide near the outer suburb of Gawler. The new AG5 warehouse facility was for the expansion of their glass packaging operations. Principal construction contractor Pike Constructions engaged McMahon Services to undertake earthworks, civil and concrete works for the new warehouse.

The facility runs 24/7, 365 days a year and features automated guided vehicles (AGVs), robotic vehicles that replace the functions of forklifts drivers and people in one of their storage facilities. McMahon Services were required to plan for the continuous and automated operations on site while undertaking construction works.

Scope of Work

The civil works package included bulk earthworks, pavement construction for bitumen areas, pavement construction for heavy and light duty concrete areas, landscape excavations, retention basin extension works including mounds and batters, excavation and backfill for a new retaining wall, a carpark and new office building.

Road works including construction of new link roads on the west, east and north sides, new stormwater infrastructure and service relocations. Other works included earthworks and pavements for automatic guide vehicle (AGV) tracks.

Civil infrastructure works undertaken on site comprised of 155,000m^3 of earthworks, 1300m of stormwater, 1100m of kerbing and 550m of road. The warehouse pad totalled 32,000m^2 comprised of a heavy-duty pavement with 28,000m^3 of rubble base and 4500m^3 of concrete works.

The project achieved a 21% Indigenous participation rate, and all subcontractors, suppliers, materials, plant and labour were sourced from the northern suburbs of Adelaide and Barossa Region to support the local industry.

Project Challenges

Cost Savings in Earthworks Delivery

A requirement of the project was to utilise site-won material for all earthworks. The project team achieved this by testing all existing materials then developed a staged methodology whereby site-won material could achieve Level 1 geotechnical engineered fill requirements. This process resulted in a cost saving of over $1 million had imported fill been sought instead.

The site contained an environmentally sensitive basin with birds, vegetation and marine plants and animals which collected water used in Orora's manufacturing operations. Earthwork methodologies were developed so that the basin was never impacted during the works and continued to provide the required water resources at all times.

Future Proofing Pavement Works

The project team consulted with Pike Constructions and Orora Glass on the design of the pavements and identified design improvements that would future proof their whole-of-life durability and allowed for future construction works. This included provisions for future road tie in-works, and new pavements to accommodate heavy vehicle movements for future civil works when required.

'I've been doing this for the best part of 25 years and the way McMahon Services go about their work is as good as I've seen, super impressed with what the team and my team have achieved in the first stage of the AG5 project.'

PHILLIP PIKE, MANAGING DIRECTOR, PIKE CONSTRUCTIONS

25,000
WORK HOURS

21%
INDIGENOUS PARTICIPATION RATE

McMAHON SERVICES SERVES UP SUCCESS FOR SANITARIUM

Sanitarium Health and Wellbeing is an Australian and New Zealand plant-based food company founded in 1898. Their product range includes breakfast cereals, yeast spreads, peanut butter, protein blends, soy, almond and coconut milks, and liquid breakfasts. Sanitarium operate factories in New South Wales, Western Australia, Queensland and New Zealand.

Sanitarium's 850m^2 office building at Cooranbong, New South Wales is known as the Sid Cole Building. When it was discovered that friable asbestos was present in the insulated roof cavity, Sanitarium engaged McMahon Services to remove all asbestos from the building and reinstall a new PIR insulated roof. Sanitarium took the opportunity of the asbestos remediation works to also upgrade the building's roof, drainage and air-conditioning systems.

Scope of Work

The project scope of works included encapsulation of the building, demolition of the existing roof, ceiling and insulation, design and construct of a new roof system, and the design and install a new compliant air-conditioning system.

Challenges facing the project were maintaining segregation from the adjoining pilot plant as it remained in operation through the duration of the project, working within an operating site that had that had its own specific access and operational requirements, and maintaining the integrity of the building's weather proof system throughout the various stages to protect internal fit out of the office and pilot plant.

Over 1000m^2 of scaffolding was required for encapsulation allowing for asbestos removal and weather protection. Asbestos containing materials included iron and timber impacted roofing and structures, ceiling insulation, tiles and lining. Other works included roof space cleaning, air conditioning decommissioning and removal, installation of a new timber roof structure, 900m^2 of roof replacement and associated flashings, 700m^2 of ceiling replacement, and the installation of new stainless-steel gutters and downpipes.

The project team proposed a PIR insulated roof design for the works which was readily taken up by Sanitariuim. The PIR option provided insulation and soundproofing in one product removing the need to install separate ceiling insulation. Program gains were achieved and the entire roof was sheeted in only three days.

A new compliant air conditioning system was introduced to the building that filtered fresh air, pressurised the building interior and utilised modern heat recovery technology for energy efficiency.

Workforce peaked at 20 personnel who completed 20,000 workhours.

NEW SENIOR APPOINTMENTS

Michael Lazaraki
Construction Manager SA

Michael joins McMahon Services as an experienced management professional with an extensive work history in a variety of civil construction projects spanning over 20 years. He holds a Bachelor of Engineering (Civil) from the University of South Australia.

He has overseen a number of key projects in Queensland, New South Wales and South Australia for clients in the water, transport, petrochemical, mining, power, residential development, Defence and marine industries.

Michael's latter roles as Project Manager and Project Director oversaw complex multi-faceted projects in a variety of locations valued over $200 million. These projects including major highway projects, complex bridge construction, substations, wharves, water pipelines, and water and wastewater treatment plants.

Michael is based in Adelaide will undertake Construction Management roles on infrastructure and transport projects.

Jessica Desmond
Payroll Manager SA

Jessica joined McMahon Services in 2016 first as a Divisional Administrator for Building Services, then later as a Payroll Administrator progressing to Payroll Manager in 2019, responsible for a workforce of over one thousand employees and labour hire personnel.

Her background before joining McMahon Services was in the water industry as a Project Support Officer, document controller and Personal Assistant.

Jessica gained much of her experience on the SA Water's North South Interconnection System Project (NSISP) program undertaken between 2010 to 2014, when South Australia was developing its infrastructure to protect against future drought conditions experienced at the time. Her skills included program management, business support and document control.

AWARDS

Some of the women from McMahon Services supporting Sarah Townsend (fourth from left) who was nominated for the Women in Civil Award.

Some of the civil team supporting Craig Bond and Stuart Gigg who won Manager of the Year and Supervisor of the Year, respectively.

Double win for McMahon Services at the Civil Contractors Federation Industry and Training Awards

On Friday 5th April, the Civil Contractors Federation (CCF) Industry and Training Awards and Hall of Fame awards were held at the Adelaide Convention Centre.

For over 50 years the Civil Contractors Federation (CCF SA) has been the peak industry body, representing, promoting and connecting the civil construction industry in South Australia.

The awards provide an opportunity for the high achievers within the civil industry to be celebrated and recognised by their peers.

This year female leaders working in the state's civil construction sector dominated, with the majority of the awards going to women!

Civil Contractors Federation SA Chief Executive Phil Sutherland said his organisation had recently commenced a campaign to attract more women into the industry, with the awards reflecting the greater level of diversity in the traditionally male-dominated sector.

McMahon Services were represented in three categories, with Craig Bond awarded Manager of the Year and colleague Stuart Gigg taking out the Supervisor of the Year. Representing the women at McMahon Services was Sarah Townsend, nominated for the Women in Civil award.

Congratulations to our winners, what a great representation of McMahon Services as a company!

Brenton Volegsang, Andy Levett, Michael Atkinson, Daniel Carter and Chris Latham who held key management roles on the project, at the awards in May.

Iconic Augusta Power Stations Decommissioning project recognised by Australian Institute of Building

On Thursday 19th September, the Australian Institute of Building (AIB) awarded McMahon Services the Professional Excellence in Building Award in the category of 'Other' at their national awards, held in Sydney.

This nomination followed the win at the South Australian Professional Excellence in Building Awards held in May. The award is designed to acknowledge not the project itself but the industry leadership and management team that delivered the successful works.

This was the first time the Institute has recognised a demolition and decommissioning project with an award. Although unconventional, demolition is often a necessary precursor to construction and companies like McMahon Services frequently work hand in hand with industry leaders to facilitate the regeneration of our built environment.

It is an honour to receive recognition from the AIB who have acknowledged the hard work, dedication and ultimately the professionalism shown by McMahon Services, Flinders Power and the entire management team at Port Augusta.

Well done to all involved!

Phil Colton and Tony Woods with the award.

McMahon Services win New Zealand Demolition and Asbestos Association Award

On Friday 30th November, the New Zealand Demolition and Asbestos Association (NZDAA) presented McMahon Services with their first award in New Zealand for the 2018 Demolition and Asbestos Awards for the category 'Asbestos or Demolition Best Practice Project under $1 million'.

The award recognised McMahon Services' first project in New Zealand, the decontamination of vintage cars contaminated with asbestos dust for the Museum of Transport and Technology (MOTAT) in Auckland.

John Flavel, National Manager for McMahon Services New Zealand, was in Auckland to receive the award on behalf of the team.

"This is a proud moment for our New Zealand team," John said. "I commend Project Manager Anthony Woods, Site Supervisor Phil Colton (pictured) and the rest of the team for their professionalism and impeccable delivery of the works."

Key to the success of the project was that McMahon Services trained the museum curators and conservation and registry teams – who were already experts in conserving artefacts – on how to clean and remove asbestos contamination under Class A and B conditions.

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The WORKS

McMAHON SERVICES