

PERTH DISTRICT COURTS BUILDING

BROOKFIELD MULTIPLEX
PERTH WA





PLEASING THE COURT

With over forty years experience in the successful delivery of major projects, including Telstra Stadium and Federation Square in Melbourne, and the Perth Convention and Exhibition Centre, Brookfield Multiplex was a natural choice to manage the design and construction of Perth's new District Court building.

Brookfield Multiplex is a member of the Western Liberty Group consortium led by ABN AMRO, which joined with the West Australian Department of the Attorney General in this pioneering Public Private Partnership to provide Perth with world-class court facilities. Cox Howlett & Bailey Woodland Architects and Planners designed a building filled with open

space and light, to be a much more user-friendly, safe, and secure court building.

Located in the centre of town on the corner of Hay and Irwin Streets, the entire site footprint is only 60 metres by 60 metres. The District Court building is linked to the existing Central Law Courts by two pedestrian tunnels under Hay Street, and contains some 29 custodial cells and 53 car-parking bays in the two basement levels. There is a glass-roofed atrium between the smaller three-storey building and high rise building, which is linked to the tower by cross bridges.

The tight site area and very limited laydown space for materials delivery, combined with traffic management requirements including free access

for the Fire Station on Hay St, and free-flow for heavy CBD traffic, presented major challenges. Project Director Tony Hodder, who formerly managed Brookfield Multiplex's work on Federation Square, explains the importance the company places on communication. "We went to great lengths to keep all the buildings in the area updated with what we were doing. If there were particular operations of construction that were likely to inconvenience people, it was important to keep them as fully informed as possible so that necessary arrangements could be made to minimise the inconvenience."

The twelve-storey tower section of the design is equivalent to a normal sixteen-storey building, as the floor to floor centres rise to 4.6 metres

in height, and formwork and propping systems needed to accommodate this extra height, as well as a fourteen metre clear span in the width of the tower.

Tony Hodder notes, "Within the building itself some of the complexities encountered included six individual lift and stair cores which although relatively small were spread out along the length of the building. Between the cores on the west side and the east side of the building was a 14 metre clear span within which the courts were situated. These aspects made the structure "non typical" and maintaining an acceptable construction cycle time added to the challenge."

Additionally a further challenge faced by

Brookfield Multiplex in Western Australia, along with many other builders, has been one of available resources. The present high demand for construction in WA has placed tremendous pressure on the availability of contractors, and on the coordination of following trades. Due to the industry demand for joinery, for instance, some of the finishing trades were brought in out of the preferred sequence, and extra shifts were organised to get the job done.

The tower building is topped by a "gravitas", a pre-cast architectural structure to give the building an eye-catching feature. A precast structure of these slender proportions at the top of the building had its own difficulties of erection sequence and stability. However as Tony Hodder

puts it, "I don't believe any construction of any sort is impossible - there's always a way."

Brookfield Multiplex is proud to be part of the team constructing the new Perth District Court building, which sets the standard for courts in Australia and beyond, for the future.

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IN TOTAL CONTROL

With over 40 years experience providing multi-disciplinary consulting engineering services, with offices across the country, Wood and Grieve Engineers rely on over 300 enthusiastic and committed staff, a flat management structure, and a great reputation for client service, to provide private industry and government clients with top quality project design, administration, and management. As one of the partners in the Western Liberty Group consortium responsible for the District Court building – a Public Private Partnership

with the WA Government – Wood & Grieve designed and supervised construction of the mechanical, fire, and lift services, to service the judicial staff, people in custody, and the public. Lift systems were designed to keep the different users separate, and the air-conditioning is also area specific.

Wood & Grieve principal and project engineer, Paul Gray, explains, “Most of the services including the mechanical and the lifts are all integrated with the Court Room Allocation and

Management System (CRAMS), which allows control of air conditioning systems within courtrooms to be aligned with booked court sessions. This is all controlled by the computer-based building management system, to suit the requirements of each area.”

The mechanical systems are designed to run on simple and effective energy saving and trouble-free principles, which minimise the need for any re-heating of air. The fan-coil air-handling unit blows air through a coil filled

with cold water, distributing cool air through the building via the variable air volume boxes. The percentage of air drawn from outside the building is determined by the amount of carbon dioxide and contaminants in the return air, and by the temperature of the outside air. Paul says “In winter, when lights and body warmth raise heat in the enclosed court rooms, the system is designed to use an economy cycle, so that instead of using chilled water the system brings in 100% cold external air to cool the space.”

Environmentally Sustainable Design (ESD) concepts incorporated by Wood & Grieve include the computer control interrogation and interrogation of the operation of air conditioning, as well as ventilation, so that plant operates only as needed, with all systems designed to give adequate access for future maintenance and upgrading.

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TECHNOLOGY CONSULTING

With extensive experience designing and implementing over 250 audiovisual and IT designs for courtrooms throughout Australia, CHW Consulting were well prepared for their role as Technical Court Services Project Manager. As a member of the Western Liberty Group consortium with the private sector responsibility for this major Public Private Partnership (PPP), CHW provided best quality fully independent advice on the choice of advanced technologies and components, and on the integrated system management design for the complex information technology requirements of the new multi-storey Perth Law Courts.

The building's audiovisual network includes cabling for a range of sound recording and production facilities including microphones, hearing-aid assistance, digital sound and camera recording systems and full audio and video playback facilities, video display systems, and CCTV security and public address systems, for all 24 Courtrooms. For 14 Courtrooms CHW designed integrated video and audio conferencing systems, and video recording paths. The 6 Type A Courtrooms are capable of conducting a full electronic trial, and providing legal counsellors with digital facilities to view items shown in court and via intranet. The integrated AV network also serves the needs of 21 Jury Rooms, 9 Protected Witness Rooms, 6 Judges' Chambers, the Holding Cells, 4 Mediation Rooms, Judicial Officer's Conference Room and assembly areas.

CHW Director, Tim Hales, explains that at the State's request, CHW conducted a benchmark review to ensure that the most modern court technology would be installed, once construction reaches the final stage and contractors install the IT equipment. CHW provides a full-systems design, specifying the best components available to meet the client's desired outcome, budget and environment, and staff travel widely to review the best of new technologies.

For clients in Justice and Courts, Health, Education, and Commercial Building, CHW Consulting specifies the best components and technology to give long-term service. For the Perth Law Courts, Tim explains, "We listed every one of the thousands of components in the system and gave each one a life-time expectancy, so the client could then life-cycle the cost of any replacements needed over time, into the whole project."

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MODEL BEHAVIOR

For over fifty years Cays Engineering has been specialising in the management, detailing, fabrication and welding of structural steel, heavy plate, and mechanical items, for the construction, mining and infrastructure industries.

Over the years they have gained an excellent reputation for delivering a quality product on time, and for working closely with their clients to ensure a successful outcome for all involved.

This process is enhanced by their close association with steel detailing company Cadstruction Drafting and the 3D modelling package used, this produces the peace of mind that if the steelwork goes together in the model, it will do the same on site.

On a complex project such as the Law courts, Cays Engineering provide the site with a copy of the 3-D model which enables the project team,

site supervisors and riggers to develop the best construction methodology.

As Cays Operations Manager Paul Stephenson explains, "We pride ourselves on being able to provide a professional service that leads to considerable savings in time and expense for our client; it also leads to a very close working relationship."

"The Law Courts is an example of this, there were many different stages, levels and areas of steel for the Law Courts, but thanks to Cays "Team" approach and Multiplex's excellent organisation, we were able to ensure the right steel for the right areas at the right time, so the job ran very smoothly despite the tight and limited access to the central city site."

Cays Engineering operates a fully documented quality control system, and prides itself on having a stable and professional workforce

committed to delivering every project in a safe and timely manner.

Currently Cays are working for Multiplex again, on the 12-storey Bishop See Project, a composite steel and concrete building. Paul explains, "We are fabricating over 200T of beam modules in the factory to which we install the formwork and reo cages prior to delivery to site, the beams are then craned straight into position ready for the concrete pour, saving time and costly access issues on site."



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INDEPENDENT MEANS

In just seven years, the John Massey Group - JMG - has become established as a highly respected and completely independent building consultancy company, acting as building surveyors specialising in Building Code of Australia (BCA) compliance certification for state and commonwealth projects such as courts, prisons, hospitals and arenas, as well as for commercial and residential projects. JMG also provides Universal Access consultancy to ensure easy access both into and within buildings for people with disabilities or restricted mobility.

JMG is proud to be part of the team working on the District Court building, a Public Private Partnership between Western Liberty Group and the WA Government. As the building surveyors, acting as the approval authority, JMG worked with the range of building partners to ensure precise timing of the staged design and construction, which was an important issue on this major PPP project.

Company director John Massey explains how rapid progress was achieved. “We issued

some nine compliance certificates, one for each floor, as they were designed, so that the design team didn’t have to concentrate on the whole building, and the builder, Brookfield Multiplex, could get started on the project, and gradually go up, floor by floor, and continue work.”

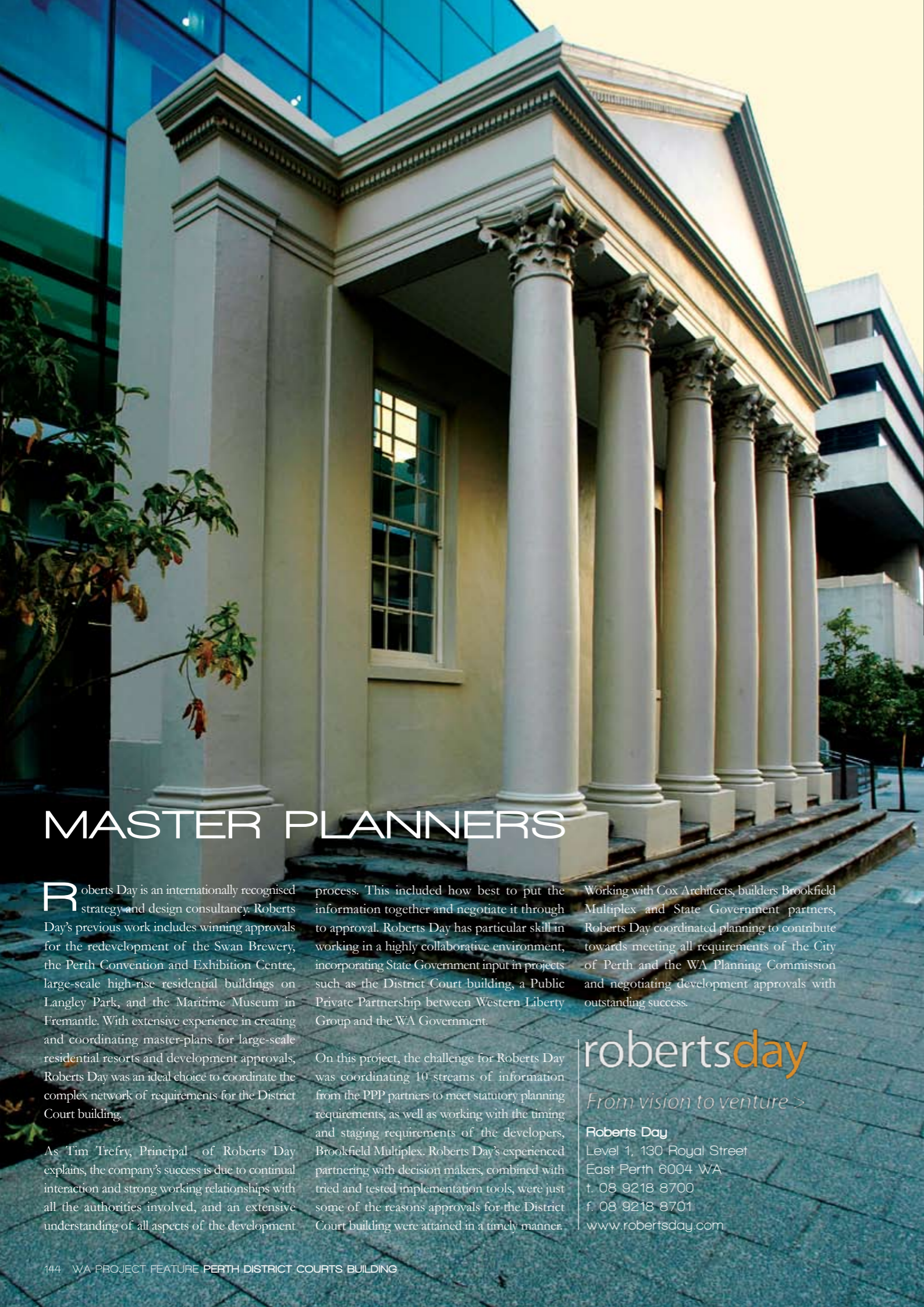
Another very challenging issue unique to multi-storey secure buildings such as the District Court building, is resolving security in the event of an emergency while still maintaining a safe building. JMG worked

with fire engineers Complete Fire Design (CFD) to solve this problem by developing comprehensive evacuation plans and maintaining separation between groups of people not allowed to mix, such as witnesses, protected witnesses, jurors, judicial, staff, and public.

Separate fire stairs and separate escape plans and mustering points were provided to maintain separation to evacuate about 2,000 people, while a secret and totally isolated escape route was set up for judges. For people

in custody, JMG and CFD designed internal, fire-sterile safe havens fitted with natural and mechanical venting.

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SECURITY SOLUTIONS

MASTER PLANNERS

Roberts Day is an internationally recognised strategy and design consultancy. Roberts Day's previous work includes winning approvals for the redevelopment of the Swan Brewery, the Perth Convention and Exhibition Centre, large-scale high-rise residential buildings on Langley Park, and the Maritime Museum in Fremantle. With extensive experience in creating and coordinating master-plans for large-scale residential resorts and development approvals, Roberts Day was an ideal choice to coordinate the complex network of requirements for the District Court building.

As Tim Trefry, Principal of Roberts Day explains, the company's success is due to continual interaction and strong working relationships with all the authorities involved, and an extensive understanding of all aspects of the development

process. This included how best to put the information together and negotiate it through to approval. Roberts Day has particular skill in working in a highly collaborative environment, incorporating State Government input in projects such as the District Court building, a Public Private Partnership between Western Liberty Group and the WA Government.

On this project, the challenge for Roberts Day was coordinating 10 streams of information from the PPP partners to meet statutory planning requirements, as well as working with the timing and staging requirements of the developers, Brookfield Multiplex. Roberts Day's experienced partnering with decision makers, combined with tried and tested implementation tools, were just some of the reasons approvals for the District Court building were attained in a timely manner.

Working with Cox Architects, builders Brookfield Multiplex and State Government partners, Roberts Day coordinated planning to contribute towards meeting all requirements of the City of Perth and the WA Planning Commission and negotiating development approvals with outstanding success.

robertsday

From vision to venture >

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Opened in May 2008, the District Court building in Perth houses District Court criminal jury trials and civil matters, and includes West Australia's first permanent high-security court facility. With proven domain expertise in high security services, Honeywell was able to offer sound solutions to project builders, Brookfield Multiplex.

Honeywell Building Solutions designs, installs and maintains the systems which keep workplaces safe, secure and energy efficient. Honeywell has a long operations history in the security industry and the District Court building provided an exciting challenge due to the design and construct nature of the project.

"Essentially the basement levels of the building are a custodial facility, with a depth of security not normally found in what appears to be a typical city commercial building," Honeywell Project team leader Russell Preece said.

Honeywell undertook the supply, installation and commissioning of all required security services. This complex infrastructure includes CCTV, (both live and digitally recorded video) intrusion detection, duress alarm systems, access control systems, intercoms system, prison cell and general door control. Honeywell also provided the critical detection systems including

contraband and weapons, explosives, narcotic, chemical and under vehicle surveillance system.

Honeywell's Australian developed Digital Video Manager (DVM) system is designed for customisation, and when installed with the seamless integration of Enterprise Building Integrator (EBI) Security Management System, provides a world class alarm management and response system.

Honeywell also provided all heating, ventilation and air conditioning controls for the project and the building management system using the Honeywell EBI headend and XL500 controllers. Full system integration was achieved via a fully open Protocon LON system which interfaces to the chillers, fire systems, lighting control and generators to maintain occupant comfort level, increased energy efficiency and optimise facility management.

In addition to the standard interfaces, the Honeywell BMS system also provides a high level interface to the Court Room Administration Management System (CRAMS). This system provides efficient use of energy within the complex, as it allows control of air conditioning systems within the court rooms to be aligned with the booked court sessions.

The project – a PPP between Western Liberty Group and the WA Government – was subject to rigorous review by the WA Government at every stage and was delivered using Honeywell's Project Velocity Methodology – its best practice project management procedures.

"I think the most successful outcome for all stakeholders was the flexibility we built into the system to accommodate design changes and to provide the State with a first-class security system," Mr Preece said.

The District Court building is a showcase of the quality and technical excellence delivered by the local experienced team at Honeywell in Perth.

"Honeywell Building Solutions is proud to have been involved in this landmark project," Mr Preece said.

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BIG RIG

The District Court building in Perth is a major construction located in the heart of the Central Business District, opposite the existing Central Law Courts. It was constructed as part of a Public Private Partnership between Western Liberty Group and the WA Government. Difficult access to the confined site through heavy city traffic required careful planning and organisation by Perth Rigging, to ensure an optimal sequence of deliveries for the 150 tonnes of structural steel erected on the site.

The company drew on 30 years of experience to ensure smooth planning and flow of work, with 15 of its 70 employees worked on the project. John Standley, who worked on the tender process, comments that “jobs succeed because you get the right communications going and the right cooperation happening.”

Using tower cranes provided by the contractors, Perth Rigging erected 867 pre-cast wall panels, and 390 hollow-core floor panels on in-situ beams. The job went smoothly, and no particularly difficult issues were encountered, although the nature of the work naturally includes a range of occupational health and safety issues. As John Standley puts it, “you just have to work through to address and overcome each workplace safety issue and deal with them accordingly”.

Perth Rigging is involved in numerous large projects in the current Western Australian construction boom, including several other multi-storey buildings in central Perth. They handle a range of work, including providing structural steel, precast concrete frames, steel frames, and structural pre-cast panels such as the cladding panels installed at the District Court building.

Perth Rigging recently started planning for work on the Perth Arena, a new indoor stadium with a sliding roof, containing several thousand tonnes of steel. They will build the sliding section of the roof on the ground, and the 2,500 tonne structure will then be jacked up 40 metres.

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GCS—THE BEST FORM OF ALL

Global Construction Services Limited (GCS Group) is an ASX-listed construction services company with operations in the Western Australian market stretching back more than 25 years.

Over the past 12 months, GCS Group has undertaken a number of acquisitions, with each business adding new products and services to the group’s capability.

Today, the Group provides a wide range of products to customers in the residential, commercial and industrial construction industries including: scaffolding, formwork, material hoists, temporary accommodation and chemical toilets, together with related labour services.

GCS Group has established a first-rate reputation in the market and has been invited to work on a number of Western Australia’s high profile projects including the Raffles Hotel redevelopment project, Century City at 100 St Georges Terrace Perth and the Claremont Quarter project.

One of GCS Group’s most recently completed projects – delivered through its CASC Constructions subsidiary – is the District Court Building.

The \$195 million project is one of the most significant court developments to be undertaken in Western Australia, involving the construction of a state-of-the-art, purpose-built court building on the corner of Hay and Irwin Streets, opposite the existing Central Law Courts in Perth.

For this project, GCS Group worked as a subcontractor to Multiplex, supplying and erecting formwork, access scaffolding and rack and pinion hoists for the building’s construction over the duration of the project.

GCS Group Managing Director Enzo Gullotti said he was pleased with the work completed for the District Court Building. “We were very pleased to be involved in a project of this size and significance,” said Mr Gullotti.

“The end result will be a fantastic development and a building that all West Australian’s can be proud of.”

Looking forward, GCS Group aims to build upon its position in the West Australian market as well as enter new industry sectors and geographical markets.

In January 2008, the company announced the launch of operations in the North West through a new business division, GCS Northwest Pty Ltd.

By establishing a presence in Karratha, the Group now has increased its exposure to the numerous opportunities created through the resources boom and is currently tendering and pricing projects in the region.



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ARCHITECTURAL DOOR HARDWARE DISTRIBUTORS & COMMERCIAL LOCKSMITHS

Established in 1970, Parker Black & Forrest Pty Ltd has steadily grown to its current position as the leading consultant and supplier of door hardware in Western Australia.

Specialists in the commercial field, Parker Black & Forrest prepare detailed specifications for architects, designers and builders in the construction and fit-out industries. Their commitment is to provide professional service and technical advice, coupled with the supply of a comprehensive range of products to suit all commercial applications.

The new 'Perth District Law Courts' facility represents one of the largest and most prestigious projects undertaken this year and incorporates a large variety of product with balance of function, aesthetics and security. Parker Black & Forrest are proud to have had a part to play in such a landmark project constructed by one of Australia's premier builders, Multiplex Constructions.

CREATING THE RIGHT PATH

For Triple T, installing the underground pedestrian tunnel and the sewer main diversion for Perth's new District Court building was a huge logistical achievement.

Triple T's Jim Patching said the biggest challenge while building the pedestrian tunnel under busy Hay Street to connect the new building to the existing Central Law Courts was that Hay Street had to remain open.

"Normally, we would dig a hole and pour concrete walls, but we developed an alternative proposal using drainage culverts. We did half the road at a time and took on the responsibility of running the job so Brookfield Multiplex could get on with building their building," Mr Patching said.

St Georges Arch, located on the outside of the District Court building, was over 100 years old and had no footings, had to be treated delicately.

That ground was supported by GFWA. Triple T's trench was six metres deep across Hay Street and the ground had to be supported very close to this old brick structure.

As well, the footpaths contained all the services for the City of Perth – high pressure gas and the city's main power cables. Instead of diverting or switching off the infrastructure, the cables were supported on crane trusses – something that had never been done before.

"Brookfield Multiplex engineers were involved in the design for this part of the project, we all had to work as a team," he said.

The culverts – three and a half metres tall and 1200 mm wide were top heavy and had to be rolled in. They were dropped in on a concrete slab and rolled into place on wheels. Perth Rigging dropped the culverts into a small gap between the services. To add to the challenge, a

main sewer line was running through the middle of the area and had to be diverted.

The section was backfilled before tackling the other half – much easier because the existing building was a concrete construction which looked after itself.

Triple T

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CASTING SUCCESS

Paragon Precast produces high quality precast concrete products for the construction industry. It specialises in architectural precast and also provides structural and precast elements, ultrafloor flooring systems and artwork panels

The company was established in 2003 and was formerly Marble and Cement Works WA. About half of its 40 employees worked on the District Court building, a Public Private Partnership between Western Liberty Group and the WA Government

Paragon Managing Director, Fred Howe said that once working drawings were developed, production for District Court building began in April 2006.

“It was a fast track job and we finished production in September 2007,” Mr Howe said.

The project threw up challenges with programming and resources.

“We had to hold onto the moulds and from a logistical point of view, it tied up a large amount of space.”

About 780 panels of concrete were supplied, from a minimum of 4.6 metres high and up to six metres wide, with a weight of around 11 tonnes each.

“Handling these panels was the main challenge,” Mr Howe said.

“The panels were delivered to the site on their edges - they couldn’t be delivered flat due to the crane on site so we designed large A-frames to fit on a normal semi-trailer.

“Delivering the panels on their edge meant the crane could lift them straight off the trailer and onto the building,” he said.

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UNCOVERING THE TRUTH

For Multiplex’s \$195 million Perth Law Courts Project, GMF Contractors carried out bulk excavation and removal of sand and waste, on a particularly deep excavation which required the building of special ramps to extract the bulk material. Their operators achieved an optimum result, working in extremely confined spaces.

The central city location of the site presented another challenge, as GMF’s trucks had to shift large quantities of material through congested roadways and peak hour traffic. Around 12 of GMF’s 62 staff worked on this site, and job supervisor Laurence Biagioni, says that precise timing of truck arrivals and departures was essential, to avoid blocking the exit for the busy fire station across the road from the site. GMF had their radio-controlled trucks lined up waiting in East Perth, working in precision timing with Multiplex’s site supervisors.

The company took extra care in excavating the site to provide a clean neat level surface on the walls and the piles of adjoining buildings and all contaminated surface waste was taken to the appropriate disposal station, and clean sand was re-used at other GMF sites all over Perth.

GMF Contractors are proud to have contributed to the smooth and successful completion of the Perth Law Courts Project, and believe that the personal day-to-day involvement of the directors of this family business is the key to good communication with clients, which has been a feature through over 20 years of operation.

GMF’s large fleet of excavators, loaders, graders, water cars, trucks, etc, and conformance with all OH&S requirements, as well as a highly trained, quality workforce, make GMF a natural choice

for all major projects needing bulk excavation or filling of soil, site clearance, machine hire and bitumen paving.

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ALL THE RIGHT SIGNS



Varisigns has 30 years experience specialising in large sign projects for shopping centres, resorts, hospitals, office towers, multi-level parking complexes and recreation centres.

Their experience includes both large and small projects, entry statements, way-finding solutions, safety and occupational health signage and feature markings for public space.

Varisigns' Managing Director, Craig Dempsey said the company prides itself on offering total signage solutions. "From fire door and road traffic signs all the way through to large illuminated sky branding signs," Mr Dempsey said.

"We are able to accomplish this through our strength in scheduling and documenting signs for

large projects, in our manufacturing techniques, installation and in working with the other trades on large constructions. Our staff are highly trained and experienced and have a commitment and loyalty to the projects we undertake."

As with all projects, signage in Perth's District Court building needed to comply with all the relevant building codes of Australia and functionality of signage within the building. "This means marking on exposed glass, tactile Braille toilet signs, clearly marked fire doors and sufficient directional signs," Mr Dempsey said.

According to Mr Dempsey, signs are an integral part of what makes a building work. "There were certain principles to consider in this building. These included people arriving in the foyer to go up to

the courts or to find interview rooms. If signs don't work or are inadequate, staff in the building are constantly being interrupted by people asking questions or wanting directions", he said. "At all times our aim is to be part of the team that gets the building finished on time and on budget. We congratulate Brookfield Multiplex, Western Liberty Group and the State Government on a great team effort. It was a pleasure working with them."

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