

MUCHEA LIVESTOCK

MAIN CONSTRUCTION COMPANY : Cooper & Oxley
CLIENT : WAMIA
PROJECT MANAGER : Incoll Managment
PROJECT SIZE : 5.2ha
PROJECT END VALUE : \$42 Million
COMPLETION : December 2009
ARCHITECTS : Ferguson Architects
CIVIL ENGINEER : Prichard Francis Associates
STRUCTURAL ENGINEER : Dubbo Consulting Engineering
QUANTITY SURVEYORS : Ralph Beatie Bosworth P/L
HYDRAULIC SERVICES : Lincoln Scott

AUSTRALIA'S LARGEST DUAL-SPECIES STOCK HANDLING FACILITY



176 WA PROJECT FEATURE MUCHEA LIVESTOCK CENTRE



AUSTRALIAN NATIONAL CONSTRUCTION REVIEW



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Constructing Australia's largest dual-species stock handling facility at Muchea was the kind of project Cooper & Oxley Builders excel at. The Muchea Livestock Selling Centre (MLSC) exemplifies best practice design and construction, from the extensive roofing to the stock accommodation below. The buildings and pens incorporate the latest animal welfare guidelines, the best in human occupational health and safety measures and significant environmental initiatives.

The Muchea facility replaces the Midlands saleyards, which after almost a century of use had become dilapidated and hazardous for workers, and were not able to meet the needs of the 21st century stock trade. There had been a decade of lobbying by the Western Australian Farmers Federation for their replacement.

The Western Australian State Government announced a funding package of \$54.4 million in 2008, which included monies for purchase of the site, environmental and conservation works approval, Chittering Shire planning approval, earthworks (including five dams), road upgrades and the construction of the facility.

The Livestock Selling Centre itself occupies 5.2 ha of the 303 ha Muchea site. It is envisaged by the government, and the Western Australian Meat Industries Association who owns the site, that further livestock related industries will eventually locate there and form part of a new employment node.

According to media statements by the WA Agriculture Minister, Tony Redman, the MLSC aims to be most efficient facility of its kind in Australia.

Cooper & Oxley's construction tasks included constructing the centre's light steel frame, saw tooth roofing for the entire sales complex, constructing cattle and sheep pens, cattle drafts, 32 ramps, an 8 bay truck wash, a canteen and internal office buildings. There are walkways throughout the facility, including a separate public walkway, and there are amenities for both staff and users. It's worlds away from the dust and post-and-rail yards of the old days.

The complex is due to commence trading in January 2010 – only 13 months from commencement of contract in December 2008, a testament to the speed with which Cooper & Oxley can undertake and accomplish a task.

On the water management front, the MLSC is ahead of the pack. It will be Australia's first major stock sales centre which is fully self-sufficient for water, with the catchment potential of the roofing fully utilised for rainwater harvesting. There is a 35,239KL capacity clean water dam.

Another environmental measure is best-practice treatment of all wastewater from the centre via a series of lined effluent ponds holding up to 150,000 KL so that all site water can be recycled on site. The grey water dam capacity is 64,794KL.

Rigorous DEC Works approval conditions applied to the project, which Cooper & Oxley successfully complied with, and extensive modelling and testing was undertaken to ensure that the facility's operation has minimum impact on the surrounding environment. Large areas of bushland on the site were fenced to protect them from stock, and extensive tree planting is planned.

Design and construction also focused on occupational health and safety for staff and users. Key stock handling areas have been designed to minimise human contact with stock, in addition, any dogs brought on site must be muzzled at all times, and smoking is banned.

The full roofing of the facility adds to health and safety for both animals and people, by eliminating exposure to the elements. Standing in hot sun is not only bad for users and workers, it can lead to increased animal stress. Interior lighting is being provided by a system designed to industry standards.

As a major point for trans-shipment aggregation of export cattle and sheep, as well as a central point for domestic sales, it has been built to handle sales of up to 3,200 head of cattle, 30,000 head of sheep and up to 1,000 head of veal. Annually, it is expected to handle around a million sheep and 120,000 cattle.

The WAMIA has developed new codes for animal treatment which have been given form at the MLSC. The measures include water to all pens except the sheep sale pens, feeding pens for both cattle and sheep, soft flooring of sawdust or woodchips over compacted clay in all areas except stock drafts and sheep selling pens. The drafts have been constructed to maximise stock flow and eliminate bruising, and there are hospital pens for any animals which require supervision or care on arrival. Other aspects of the code which relate to treatment of stock by workers and users will form part of the centre's operational induction and ongoing management.

The Centre sits on a level 16 ha pad, and has an 8.63 ha hardstand area for loading and unloading of stock trucks, car and truck parking and a truck depot. This area also has the maintenance compound, workshop and waste management working area.

As part of the wider site vision, a traffic management plan has been developed, and induction programs for the centre's operations are ready to put in place.

It's another major milestone for Cooper & Oxley, who have been part of Western Australia's ongoing development since 1952, when the company was formed in Northam by Tom Oxley and Bob Cooper. In 1973, the company opened offices in Subiaco, and completed major metropolitan projects including Perth Children's Court, refurbishment of the Perth Mint, the West Australian Newspaper printing plant at Herdsman Park, the WA College of Advanced Education, the Midvale Velodrome, the 100 unit Homeswest development in Bennet St East Perth and the five level Silverton Apartments in Mount Street Perth.

More recently, they have consolidated their reputation for being able to complete projects across the development spectrum, constructing the new state-of-the-art Ellenbrook Secondary College, Kwinana Aquatic Centre, Joondalup Aquatic Centre, Alinta Gas Stations CS6 and CS9, Midland Library, Kalgoorlie Boulder Racing Club Grandstand, Bandyup Women's Prison, Cambridge Library, the Adolescent Centre at Stoneville and a security upgrade for Canning Prison.

They won the Heritage Council Conservation Commendation from the Australian Institute of Architects for their recent work with Spowers Architects on the refurbishment and upgrade of the Western Australian Parliament House.



This job entailed constructing a new three story wing with offices, meeting rooms and alfresco dining facilities for staff, enclosing an existing courtyard to create more offices, renovating the gymnasium and wet areas and remodelling the kitchen exhaust system. Working on a building of such major public importance, utilising many heritage materials such as Jarrah and stone, and ensuring the new additions worked in with the existing structure made an excellent showcase for the skills Cooper & Oxley have developed over five decades in the trade. They also performed their task in a way which minimised disruption to the working Parliament on site, which required careful organisation of construction timetabling, great care for public safety and excellent logistics.

Another award-winning project was the Challenger TAFE Maritime Centre designed by Cox Howlett and Bailey Woodland, which won the Architecture Australia Colourbond Steel Award in 2006.

Located within the Fremantle Port Authority, the Centre was designed as three double storey connecting shed forms, to echo the setting and the maritime style. A pre-cast concrete tilt-up panel system forms the bones, with Colourbond stainless steel cladding as the external surface. A saw tooth roof of Colourbond acts as a connection between the separate buildings.

Whatever the project, Cooper & Oxley have well and truly demonstrated they can meet a client's expectations on time, and on budget, while adding significantly to the built environment in Western Australia.



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WALLIS WATER, WATER EVERYWHERE

Wallis Water, part of the Wallis Group, has 'triumphed through innovation' at Western Australia's flagship livestock infrastructure project, the Muchea Livestock Saleyard.

By its very nature, an agricultural industrial development of both large scope and scale, Muchea required an innovative approach to the provision, use and management of the most valuable of resources, water. An approach which required commitment to both design and implementation. An approach, which was delivered by specialist service provider, Wallis Water.

Wallis Water provided not only extensive knowledge of the complex regulatory requirements and technologies available but also the range of skills and experience to see the project to completion.

The Wallis Group designed and implemented water management technologies and processes at Muchea that have resulted in a net reduction in potable demand in excess of 75%.

This outcome has significantly reduced the total footprint for water assets (bulk water storage) by matching supply more closely with demand and has provided water security for the development into the future through on-going technical support and maintenance services.

The company's access to, and understanding of, specialist technologies has resulted in the successful completion of many major infrastructure projects in areas with significant environmental constraints.

Projects which included nutrient, heavy metal and hydrocarbon removal for storm water flows, high density greywater and blackwater reuse projects and Integrated Water Cycle Management designs for cluster residential and industrial projects. Projects which the Wallis Group have demonstrated to be well within their capabilities.

With offices in Perth and Sydney and operations in all states of Australia, the Wallis Group have proven they have the answers to water management issues on major development projects.

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INSTALLATION QUALITY

Alan Jones Electrical was established in 1986 and specialises in commercial and industrial electrical contracting. Since its beginning the company has now grown to include twenty employees due to the company's reputation for quality installation and service, which has resulted in a steady increase of business over the years.

For the Muchea Livestock Centre, Alan Jones Electrical provided electrical installation, communications and control services. Experienced site foreman, Paul Cusworth ensured all work on the project was delivered on time and in full and that the Alan Jones Electrical renowned dedication to safety and premium installation practises were upheld at all times through out the duration of the Muchea Livestock Centre project.

The company are now utilising their specialised skills on the Rio Tinto Remote Operations Centre among a variety of other smaller-scale projects.

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QUALITY AND DURABILITY

Having been in the rotational moulding business since the early 1990s, Rapid Plastics (WA) offer an extensive range of polyethylene products to suit each of their client's individual needs.

The company caters for the agricultural, horticultural, industrial and domestic markets and offer free delivery up to distances of 800kms, although some conditions do apply.

Specialising in water storage tanks, underground storage tanks, liquid cartage tanks, stock troughs and tubs, aquaculture tubs, cup and saucer tank troughs, fire fighter units and trailers, chemical spray tanks, diesel transport units, Rapid Plastics (WA) delivers in terms of durability, range and quality. All products are manufactured from the highest food-grade material and are fully UV resistant.

For the Muchea Live Stock project, Rapid Plastics (WA) manufactured stock troughs for the livestock handling yards by using their specialised rotational moulding process. With a brief to provide a stock trough with was resilient, lightweight and economical in price, Rapid Plastics met the project specifications on time and with their trademark superior service.

Rapid Plastics (WA) recently obtained certification of the international quality management standard ISO9001:2008, ensuring clients of quality, value and the company's commitment to improvement.

Rapid Plastics (WA) are currently supplying their exclusive Poly design tanks to mine sites as well as an assortment of other industrial applications.



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STRONG AS STEEL

Metro Lintels specialises in the fabrication and erection of structural steel. Boasting a dedicated team, Metro Lintels has a combined total of over 100 years experience within in the construction industry.

For the Muchea Livestock Centre, Metro Lintels supplied and erected all structural steel components. Galvanised treatment was required for all steel, with special care taken within the checking process due to the acidity of the soil and buildings in use for the project. A Z450 higher treatment grade purlin material was used, which was sourced from the eastern sates with the entire amount of coil required sent to WA to ensure the tight program was accomplished. All purlins were specially rolled with down turned lips on the flanges to prevent corrosion in the specific project environment.

Equipment used for the centre included Tipo D8, PCS Plasma and Ficep Beamline, which was equipped with a state-of-the-art robotic drilling arm that holds iscar high-speed intercooling drill bits capable of running up to 1800 rpm. All shop detailing was also carried out by Metro Lintels own in-house detailing department.



Metro Lintels were able to detail, fabricate, treat, deliver and erect the Muchea project with a period of four months.

As a testament to their high-quality workmanship, Metro Lintels have received a number of Master Building Association awards over the last few years for their excellence within the commercial construction, mining and rural business sectors. The company were proudly awarded the Master Builder's Association 'Award in Excellence in Structural Steel' in 2006 and 2008 for their specialist work in turning architects visions into reality.

For further information on Metro Lintels products and services – visit their Website at www.metrolintels.webnode.com

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MARSH CIVIL PARTNERS CONSTRUCTION

The ability and experience of Marsh Civil to project manage and construct a wide range of civil servicing and infrastructure projects within Western Australia has been highlighted with the contractor's work on the new Livestock Centre at Muchea in Western Australia.

A world class facility, the Muchea project clearly demonstrates Marsh Civil's capability to work 'in partnership' to deliver high profile projects safely and to a high standard.

Marsh Civil was awarded the civil stormwater drainage works package for the Muchea Project with the scope of the works including the installation of stormwater drainage pipe (sizes 300dia -1800dia), trenching and backfill (to 6m depth) and the installation of a number of Gross Pollutant Traps.

The completion of the works involved overcoming a number of challenges including the shortage of concrete pipe, the clay conditions, a short timeframe and the coordination of works around other subcontractors.

With their philosophy of excellence in management and technology, Marsh Civil overcame these issues by adopting innovative techniques such as the utilisation of ribloc drainage pipes in lieu of heavier concrete pipes. The advantages of this type of pipe include ease of transport, lighter weight and hence easier to move resulting in reduced worker fatigue, exposure to injuries and quicker installation times.

Founded in 1967, this privately owned company has grown significantly and now provides a wide range of services including Clearing,

Environmental Site Remediation, Geotechnical Site Remediation, Demolition, Subdivisional Works, Earthworks, Retaining Walls, Sewerage Reticulation, Stormwater Drainage, Roadworks, Water and Gas Reticulation, Power and Telstra Installation, Masonry Infill Fencing, Landscaping & Structures and mining infrastructure services installations for the WA mining sector.

Marsh Civil operates from a state-of-the-art administration complex situated in Maddington and prides itself on an extremely stable and loyal workforce with third party accredited Quality, Environmental and OH&S systems to Australian Standards.

The company is currently working on a range of projects including The Glades Estate Byford for LWP, the Jindowie Estate Yanchep for Australand, Reflections Estate, Secret Harbour for Carcione Group and BHP NPI Yandi RGP5 Industrial Services in partnership with Kerman Contracting



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STEEL FOR CATTLE, CATERPILLARS AND COMMERCE

Whether they are fabricating access ladders for 400 tonne Caterpillar and Terex dump trucks for mines at Karratha in Western Australia, or making balustrades for an office, Conquest Engineering and Supplies apply superior steel fabrication skills and deliver top class results. They fabricated and installed all of the balustrades for the offices and truck wash bay at the new Muchea Stock Handling Facility, along with the frames for the air conditioning throughout the facility, welding for 158 cattle watering troughs and design and fabrication of the emergency shower in the truck wash bay chemical shed.

Conquest worked from the architects designs to produce detailed shop drawings using their 3D design software, then fabricated the 93m of office area balustrades and 140m of truck wash bay balustrades from hot dip galvanised mild steel. The project offered challenges at both design and install ends – with the Muchea facility a public place, often crowded with multiple trades simultaneously, all steel work had to meet strict standards of safety and quality. In addition, as part of meeting RSPCA guidelines for animal treatment, all the cattle troughs and structural steel elements around stock areas had to be a bruise-free design. Installation, including onsite MIG welding, which was complicated by the site's lack of mains power, with generators used to supply electricity for works.

Conquest's workshop on the Great Northern Highway is ideally situated for their ongoing work for clients such as Westrac, as this is the main route to the booming mining region. Conquest fabricated the handrails and access ladders for Westrac's 777 series water trucks, which are constantly in operation across numerous mine sites. Other

mining sector work has included fabricating the access ladder for the Terex RH400 face shovel used for open cutting; and supplying the tipping bins into the Pluto project. Currently, they are engaged in work for Woodside Resources, designing and fabricating the floor trolleys and 15 picking ladders for Rankin Two Platform. This is a testament to the quality of their work, as Woodside requires all suppliers meet the AS 9001 Quality standard.

Other areas of expertise include the manufacture of slashers and remote controlled, hydraulically driven feeder bins for primary producers. They recently completed balustrading and handrails for three major shopping centres projects by Doric at Joondalup, Rockingham and Armadale; and undertake regular work in conjunction with allied company Artex Enterprises supplying steel elements for a range of projects including commercial facades.

Essentially, if a thing needs to be made from steel, this family owned company can do it.

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