

# ROSEBERY SCHOOLS

## BUILDING FOR ACHIEVEMENT

Back to school 2011 students and teachers in the Palmerston suburb of Rosebery, Northern Territory recently witnessed the opening of the new, state-of-the-art Rosebery Schools.

The project involved the construction of a pre-school, primary school, middle school, and associated works. The co-location of the primary and middle school enables shared sports and performing arts facilities, including an oval and a gymnasium (which will also be a community cyclone shelter). There is also provision on the site for a future childcare centre with up to 50 places.

Funding for the project included a \$3M contribution from the Australian Government.

In August 2008, the Minister for Infrastructure and Transport announced the award of a \$3.2M contract to BMD Constructions to complete headworks (installation of sewerage, water, power and roadworks) for the site. This included the construction of a service road, which ran from Belyuen Road through to Forrest Parade. The work involved heavy vehicles moving in and out of the site on a regular basis.

The tender for construction of the schools was announced in early March 2009 and construction of the schools commenced in April/May 2009.

Darwin-based company, the Halikos Group won the \$59 million tender from the Northern Territory Department of Construction and Infrastructure to build the 16 building Rosebery Schools Campus to accommodate up to 1600 students.

“This was a great local project that provided 150 jobs at the height of construction, created an extra 1450 educational places for our children and supported growth in Palmerston,” said Chief Minister and Education Minister Paul Henderson.

“Halikos is an award-winning company with a reputation for building interesting and innovative designs and delivering major projects on time.”

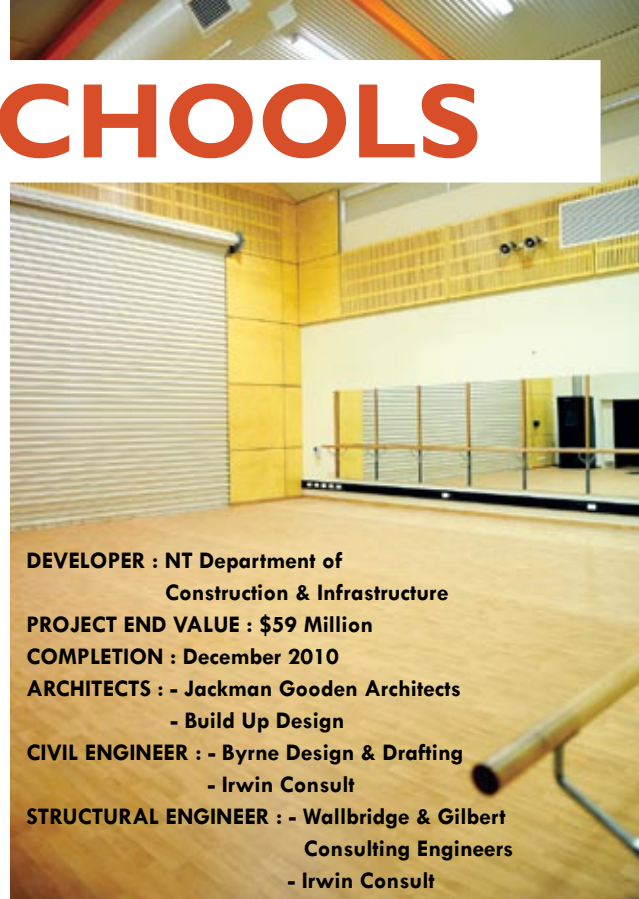
Contract methodology for the project was Design and Construct, which requires the Contractor to undertake the final development of the design, document, and construction of these facilities.

Two principals have been appointed for primary and middle schools - Adam Voigt - formerly of Darwin's Ludmilla Primary - and Lorraine Evans - formerly of Darwin's Nightcliff Middle School.

The new principals said they could not wait to get their “state-of-the-art” schools up and running for Term 1 this year.

“It's the first purpose-built middle school in Palmerston,” Ms Evans said.

Mr Voigt said the flexible spaces in both primary and middle would aid those students who did not learn well in traditional “square classroom” settings.



**DEVELOPER :** NT Department of Construction & Infrastructure  
**PROJECT END VALUE :** \$59 Million  
**COMPLETION :** December 2010  
**ARCHITECTS :** - Jackman Gooden Architects  
- Build Up Design  
**CIVIL ENGINEER :** - Byrne Design & Drafting  
- Irwin Consult  
**STRUCTURAL ENGINEER :** - Wallbridge & Gilbert Consulting Engineers  
- Irwin Consult



Ms Evans said her school would be fitted out with the latest technology - including smart boards, laptops and wi-fi Internet access.

“I want kids learning and using the technology, whether they're sitting in the classroom, or outside measuring the growth of their produce,” she said.

In the middle school, sports flooring to the gymnasium was completed, planting of the lawn to the sports oval has been carried out, guard/hand rails were fitted to ramps/retaining wall, bike racks have been fitted to bike shed enclosures, and new asphalt has been laid to the spine road and line marking completed.

Construction features of the primary school include: carpet and vinyl laying to rooms, extra control measures to minimise erosion to drains due to heavy rains, ceiling tiles completed with wall coverings being fitted to rooms, irrigation installation to sports fields and completion of a caretaker's slab.

NT Minister for Education and Training Chris Burns said the schools will meet the demand of the rapidly growing Palmerston East population.

“Education is a priority of the Henderson Government in our 2030 Strategy, and our Smart Territory Strategy is delivering quality teachers, programs and infrastructure to deliver better learning outcomes for our students,” he said.

“There will half a billion of NT and Commonwealth dollars invested in schools infrastructure across the Territory. We have more teachers working in the Territory than ever before and our Smart Territory strategy is delivering targeted quality learning programs to help our students achieve in school.”

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## LEARNED SURVEYING

Engineering Surveyors Fyfe JMA rose to the challenge of setting out buildings on the Rosebery Schools site without the advantage of using traditional methods such as grids or profiles.

As part of the Fyfe group, Fyfe JMA provides a wide range of survey services to the Northern Territory. In 2008, JMA was acquired by Fyfe Pty Ltd, a land and resource development consultancy specialising in providing surveying, engineering and town planning services to South Australia, Queensland and the Northern Territory. Operating offices in Darwin and Alice Springs, Fyfe JMA has more than 40 years experience and complements Fyfe's own experience in the survey industry.

For the Rosebery Schools project Fyfe JMA provided the setout of 16 buildings on site plus a range of associated services. The project proved unusual in that the Fyfe JMA team set out the buildings without the use of grids or profiles.

"When we were contracted by Halikos in 2009 the design and construct was already underway," says Fyfe JMA's Darwin Field Manager, Adrian Gallagher who worked on the project together with Peter Davies, Cain Kalsbeek and Barry Matthews.

"We had rough areas where the buildings would go so we'd work out what was needed then pass it back to design and services. We had one survey party on site for around 18 months."

Adrian says there were new types of products and equipment used on site including Trimble S6 robotic theodolites and R8GPS.

There were some challenges too. "Like most design and construct projects the timeline between plans and setout was very tight," he says.

"The scale of the project was also fairly large, requiring us to place 240 ramsets on every block wall corner.

"Fortunately, we were able to achieve successful outcomes and even finished three months ahead of time because we weren't waiting on plans," Adrian explains.

Currently, Fyfe JMA has 22 staff with work ranging from the \$80 million Tiger Brennan Drive project at Palmerston to new housing, retail and industrial developments from Alice Springs to Darwin.

The calibre of Fyfe JMA's work on the Rosebery Schools project has raised the company's profile – already setting industry benchmarks – even higher.

"We have also led the way in re-instating the practice of extending surveys back on site," Adrian says.

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## LAYING THE GROUND

Specialists in roadworks, subdivision, drainage, car parks, concrete and plant hire, Allan King & Sons Constructions Pty Ltd played a pivotal role in preparing infrastructure at the Rosebery Schools project.

As contractors to Halikos Pty Ltd, Allan King & Sons Constructions Pty Ltd were engaged on the Rosebery Schools project to carry out all civil works associated with the construction of building pads, internal roads and car parks. This project also involved a significant amount of vegetation clearing, stockpiling and screening of topsoil material. The total value of works for the project was \$2.9M.

A privately owned local civil construction company in operation in the Northern Territory for over 15 years, Allan King & Sons was originally founded in Katherine by Directors Allan and Sandra King. The company has since expanded its operations to include Jabiru and Darwin.

During this time, the company has worked in conjunction with major companies and organisations such as the Department of Transport and Works (now known as DPI), the Department of Defence, Xstrata Mining, Rio Tinto and Energy Resources of Australia.

The company prides itself on the specialist skills its employees offer, which include: project management services; civil engineering services; final trim grader operators; skilled plant operators; diesel mechanics, fitters and boiler makers; certified plumbers; concreters and; various trade apprentices.

Due to the robust nature of works it undertakes, the company ensures all plant and equipment is maintained and serviced regularly by its own fully qualified diesel mechanics and apprentices.

Recent projects have included the Victoria Highway Floodplain Immunity Project, Edith River Bridge Duplication, Darwin Middle School, Kalumburu Airfields and Internal Roads and Palmerston Super Clinic.

For the Rosebery Schools Project, the company started in April 2009, finalising works in October 2010.

"Fortunately, it was relatively smooth sailing with no particular challenges," says Project Manager Michael Ioannou who led an expert team, which varied in number depending on the task in hand.

"The only time we encountered a few problems was with groundwater. We resolved this by undertaking major excavations and filling with suitable material."

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# WELDING SINCE '77

Fabricated metal manufacturers M&J Welding drew on their years of experience to install all structural steel components at the Rosebery Schools project.

Dipcla Pty Limited – trading as M&J Welding Pty Ltd - is a private company categorised under steel-structural manufacturers and located in Berrimah, NT, Australia. The company offers a range of prefabricated structures, including those of American origin.

Together with his wife Janice, Mick Dunne has been a Director of M&J Welding for the past 30 years, heading up a team that varies in number from 11 to 20.

“I started the company in 1977,” Mick says. “Originally, I did an apprenticeship as a boilermaker and welder and came up here from NSW to live and work when I was 20 years old.

For the Rosebery Schools project, Mick’s wealth of experience and know-how has paid off.

“Fortunately, we’ve got a good team together here but generally, there is a lack of good tradespeople in the industry - you just can’t get enough of them right now,” he says.

“We were contracted by Halikos to put in all the structural steel for the Rosebery Schools project. Basically, the process involves buying in raw steel, cutting it and assembling it into what looks like a giant Meccano set before taking it to the site ready to be installed.”

“Apart from having to schedule work around the Wet season, fortunately there were no major challenge for us and things ran pretty smoothly,” he says. “The work was done concurrently with other projects we were working on over a period of roughly nine months.”

Other projects M&J Welding Pty Ltd has worked on include the Darwin Convention Centre.

“For that project we used around 1,000 tonnes of steel,” Mick says. “We were also contracted by John Holland to put in the steel fabrication for Charles Darwin University Medical Centre.”

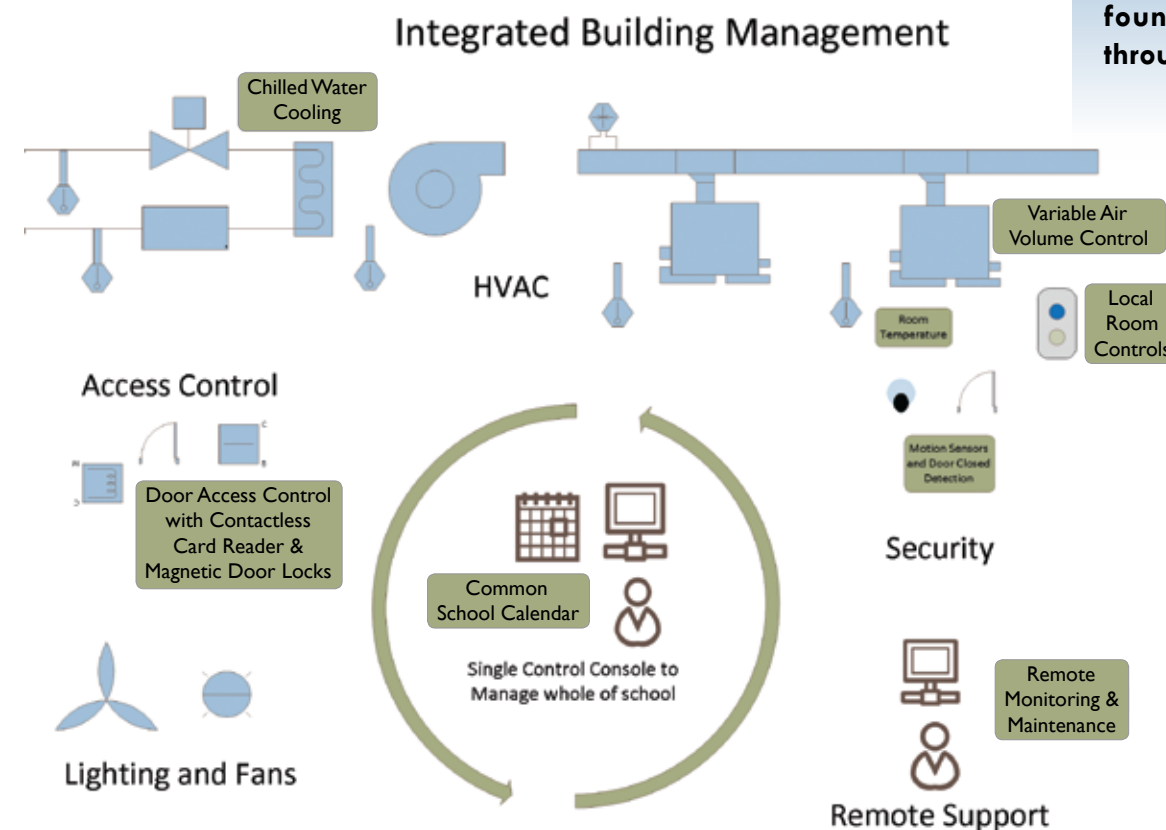
More recently, M&J Welding are finalising work on 15 NT schools as part of the Building the Education Revolution (BER) program - the single largest element of the Australian Government’s \$42 billion Nation Building program.

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## STATE OF THE ART B.M.S.

“The Rosebery Schools project has the most advanced, integrated building services and energy saving features found in any school throughout Australia.”



### System statistics include:

- 1) 230 VAV controllers
- 2) 87 Distributed BMS Controllers
- 3) 4 Chillers
- 4) 38 Air Handlers & VSD's
- 5) 45 Access Controlled Doors
- 6) 574 Lighting circuits
- 7) 176 Monitored Doors
- 8) 192 Motion sensors
- 9) 1 Integrated system

The Rosebery Schools Complex in Darwin now has the most advanced, integrated building services and energy saving features to be found in Australia. ISAS undertook the successful design and installation of the Integrated Building Management System.

ISAS Technical Manager, Tony Pearce says “It’s advanced, building upon decades of experience ISAS has in the BMS field. We have been given the opportunity to get it all working together, it just works as one. We have brought BMS control of schools to a new level.”

The system integrates four pillars of Building management (Access, Lighting, Security and HVAC) into one cohesive whole.

The integration of the multiple systems has made the system “better, stronger, faster”. We can control in ways that would normally be impossible or very expensive. Using a common platform with a common communication protocol makes it possible.

### System features:

- 1) Common calendar for whole of school.
- 2) Intruder detection integrates with lighting control.
- 3) Building arming integrates with HVAC and lighting control.
- 4) HVAC occupancy control integrates with lighting and access control.
- 5) Access control integration with school timetable.

If a classroom is unoccupied the HVAC system will automatically control the room using minimal energy. Once occupied, the room is conditioned to achieve a comfortable learning temperature. During classroom breaks, doors are automatically secured, nonessential lighting turned off and HVAC turned down to a minimum. Local control allows the automatic to be over-ridden at the touch of a button.

Turning on the alarm system for one of the schools buildings turns off the lighting and HVAC for that building. Should an intruder be detected in the building, lights are automatically turned on, leaving no place to hide. Every room, every access door and every light can be configured.

ISAS Field service technicians receive automatic email/SMS indications warning of failures. The Service Technician can connect to the system from wherever they are, using Wireless or fast ADSL, to rapidly resolve the issue.

### INTEGRATED SWITCHGEAR AND SYSTEMS

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COOL  
RUNNING



Despite the fact that the Rosebery Schools project was Mobile Electrics (NT) Pty Ltd's largest single mechanical services project ever undertaken, the company delivered successful outcomes on time and on budget.

Mobile Electrics is well recognised in the Northern Territory as a company that offers robust capabilities in providing mechanical and electrical services to many large building companies, developers and Government departments throughout the Northern Territory and Kimberley regions in Western Australia.

Thanks to its wealth of experience, the company was able to rise to the challenges of one of its biggest projects to date - designing and constructing a total mechanical services package at the Rosebery Schools' site.

"Rosebery Schools is the largest single, mechanical services project ever undertaken by Mobile Electrics," says Project Manager Doug Pickering.

"The project involved work on 39 chilled water air handling units located in 19 plant rooms; over 10,000m<sup>2</sup> of ductwork; nearly 3500 l/m of chilled water pipework and over 3000kw of total cooling capacity delivery by oil-free, direct drive centrifugal air cooled chillers; 230 VAV boxes; hundreds of supply and exhaust grilles and; over 50 split systems. All was delivered on time and on budget."

The project also called for the use of Polyethylene (P.E.) pipework, which was used almost exclusively for the chilled water system. Both electro fusion and butt-welding techniques were used while the chilled water headers are manufactured locally using Polyethylene. New technology included Powerpax" chillers utilising magnetic bearing

technology in the form of Danfoss Turbocor oil-free direct drive centrifugal chillers

One of the biggest challenges on this project was that because of the large area of the site, it was difficult getting chilled water to the 19 plant rooms with only two centrally located chiller plant enclosures.

An early attempt at solving this was to have the chilled water pipework reticulated within covered walkways and building envelopes, however, this posed potential risks during the construction program, as most of the covered walkways were some of the last items to be constructed on site.

A final resolution to the problem came with the underground installation of all the inter-plant room reticulated pipework using P.E. for the service pipe as well as for the protective outer jacket.

Currently, Mobile Electrics is involved in a major upgrade of mechanical services for Big W and Kmart at Casuarina Shopping Square, a GPT owned property.

"We are also working on the BER 15 school project as part of the Federal Government's stimulus package," Doug explains. "Both of these projects' total value is around 9 million dollars."

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