

Cardno

NEWS



ISSUE **16**

Cardno expands engineering service offering

More inside...

NEWS FLASH: Cardno merges with two US environmental firms – ENTRIX and ERI.

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ENTRIX and ERI company snapshots

ENTRIX Holding Company (ENTRIX)

ENTRIX specializes in water resources management, environmental risk management, facility permitting and compliance and natural resources economies. The company is also regarded as a leader in the assessment of the environmental and economic impacts of oil spills and is substantively engaged on environmental protection work on the current oil spill in the Gulf of Mexico.

ENTRIX employs 615 staff across 30 offices throughout the US and in international branches in Canada, Ecuador and Peru.

The firm's major clients include BP, Southern California Edison, TransCanada, Pacific Gas & Electric Company, Chevron, Placer County Water Agency, Pepco Holdings and Dow Chemical Company.

Environmental Resolutions, Inc (ERI)

ERI is an environmental soil and groundwater remediation firm primarily focused on the petro-chemical market in the US.

The majority of ERI's work is undertaken for leading oil and gas companies on sites contaminated with hydrocarbon residues, such as service stations, refineries and bulk oil storage facilities.

ERI has more than 150 staff spread across nine offices throughout the US.

The company's major clients include Exxon Mobil, Chevron, ConocoPhillips, US Federal Emergency Management Authority (FEMA) and Pacific Gas & Electric Company.

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EDITORIAL



A message from the Managing Director

Welcome to the 2010 edition of Cardno News.

This has been a year of consolidation and growth for Cardno after what was a challenging 2009 for most companies globally.

In February, we expanded our service offering to include electrical and mechanical engineering when we merged with the ITC Group, an Australian-based building services firm. The company has around 100 staff spread across five Australian capital city offices and is now known as Cardno ITC. Read more about the company's extensive capabilities and the merger on page 2.

In May, we announced the highly strategic merger with Australian Underground Services Pty Ltd (AUS), which has become Cardno AUS. Comprised of 30 staff based in Victoria, Cardno AUS is a company which provides underground services locating and mapping capability. Further details about this strategic partnership can be found on page 5.

In June, two US-based environmental consultancy firms, ENTRIX Holding Company (ENTRIX) and Environmental Resolutions, Inc (ERI), joined the Cardno group adding 770 staff to our operations in the Americas. ENTRIX is one of the largest pure-play providers of environmental and natural resource consulting services in the US. ERI is an environmental soil and groundwater remediation firm primarily focused on the petro-chemical market in the US. The mergers provide Cardno with leading capabilities in the key growth markets of resources, oil and gas, energy, environmental remediation, water sustainability and climate change.

In other news, on February 1 all of Cardno's development assistance brands transitioned to the Cardno brand. The move brought together our three development assistance companies – Cardno Acil in Australia, Cardno Agrisystems in the UK and Emerging Markets Group in Washington D.C. and Brussels – all of which will now be known as Cardno's Emerging Markets Region.

In addition, in the first half of this year several Australian and New Zealand merger partners also transitioned fully to the Cardno brand. Cardno Young, Cardno Alexander Browne, Cardno Lawson Treloar, Cardno Eppell Olsen (in New South Wales), Cardno Forbes Rigby, Cardno Stanwill, Cardno Low & Hooke and Cardno TCB all became Cardno.

In terms of new projects, I'm pleased to advise that many of our businesses working in both the physical and social infrastructure spaces continue to win significant work. Increasingly our divisions are also working on projects together and cross selling services to provide a holistic and integrated approach to our clients.

In February, we announced our half-year results. This relatively good performance in difficult times means that Cardno remains in a sound financial position. Our strategy of diversification across geographic regions and sectors helped us weather the downturn of 2009 and will help us maintain positive results as we move forward.

Finally, I would like to take this opportunity to recognize the support of clients and staff through the challenges of the last 18 months, and thank you all for that support.

Andrew Buckley
Managing Director

Major engineering software release

After five years of development effort, water engineering software firm Micro Drainage® Limited has released version 12 of their drainage design software, WinDes®.

WinDes has been designed by engineers, for engineers and uses proven and universally adopted methodologies to design and analyze drainage systems.

The original WinDes program has been completely re-written from scratch in parallel with the ongoing development and release of updated modules. The program is now a powerful and flexible tool that can satisfy the changing needs of civil engineering consultants and approving authorities.

WinDes has been designed by engineers for engineers and uses proven and universally adopted methodologies to design and analyse drainage systems.

Micro Drainage Managing Director Jane Middleton said the new version, WinDes W.12, was developed to meet the increasing emphasis on sustainability and legislative demands being imposed on developers globally.

“We work closely with regulatory bodies and approving authorities, as well as with our customers, to build a suite that equips engineers to confront the challenges of legislation, climate change, sustainability and combined urban and rural drainage,” said Ms. Middleton.

“New capabilities take into account the latest government directives on flooding and water management, including Sustainable Urban Drainage Systems, flood flow path modelling and the use of green roofs,” she said.

“WinDes W.12 allows engineers to follow the principles of Quantity, Quality and Amenity, which shape the systematic

approach to sustainable drainage design.”

“Moreover, the new version incorporates 196 customer requests for additions and improvements to the software.”

Productivity and seamless integration have also been the driving forces behind the upgrade.

“Providing a refreshed platform to keep pace with the newest software technologies was another key objective,” said Ms. Middleton.

“The new suite is compatible with 64-bit computing to facilitate greater dataset handling, faster run time and improved module integration.”

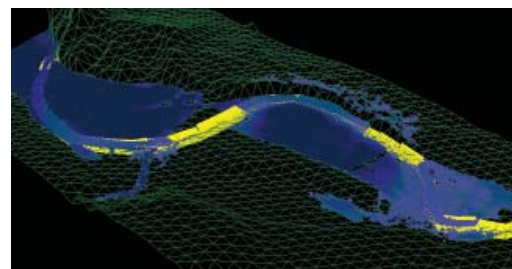
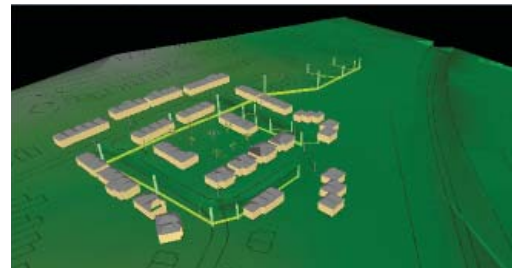
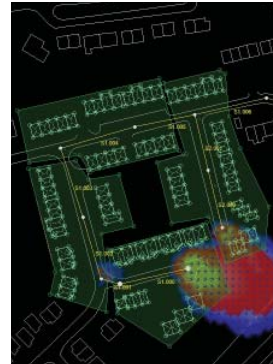
The revised software produces a single file format. This enables the software to morph around the site or project. Modules can be added or removed and run simultaneously so changes made in one module will automatically be applied to active modules.

WinDes is used by every water services company in the UK and 90 percent of the top UK civil engineering consultancies as well as by engineers across the world. Therefore, Micro Drainage has taken care not to compromise the workflow that current WinDes users are used to.

The new capabilities are options that can be switched on or off, according to the users preferred way of working.

A complete portfolio of training courses is available to help users gain the maximum productive value from every module of WinDes.

Micro Drainage has also been working closely with the wider Cardno group to look at developing local products suitable for the Australasian and North American markets.



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Cardno expands engineering service offering

In February, Cardno announced a major new merger with Australian-based building services engineering firm, ITC Group.



The multi-disciplinary consultancy brings a broad range of new engineering disciplines to Cardno including electrical, mechanical, fire, hydraulic, sustainability, facility solutions, audio/visual, asset auditing, security, vertical transportation, lighting, acoustic, telecommunications and environmental auditing.

Cardno's Managing Director Andrew Buckley said electrical and mechanical engineering for the building sector is an area that Cardno has been targeting for expansion for some time.

"The complementary nature of ITC's electrical, mechanical and specialist engineering services with Cardno's existing capability provides an excellent opportunity for further growth through cross selling," he said.

The 100-person business, which is now known as Cardno ITC, has offices in five Australian States and Territories.

In its 12 year history, Cardno ITC has developed a solid client base, working with the Commonwealth Bank, Bovis Lend Lease, AMP and Telstra. The firm also works extensively with government organizations such as the Australian Tax Office, Department of Treasury & Finance and Australian Customs.

The firm has worked on client assignments throughout Australia including in capital cities, regional centers and remote mining areas, as well projects overseas in countries that include Hong Kong, China, Cambodia, South Korea, Laos, France and New Zealand.

Cardno ITC also offers significant experience in environmental / energy auditing and has green building rating credentials.

Jason Varker-Miles, Managing Director and founder of ITC, said the group provides sustainability consulting, strategy and policy well beyond engineering.

"Cardno ITC is currently providing building sustainability services for several major banks and developments in Australia. We've also worked on international sustainability projects, including providing assistance to the Australian Embassy in Cambodia and Laos," he said.

"In addition, we provided engineering services to the University of New South Wales (UNSW) for one of their major new buildings, the NSG Building. The UNSW campus has well over a billion Australian dollars of real estate, with the NSG Building now the most energy efficient building on campus," said Mr. Varker-Miles.

The partnership fits well with Cardno's existing physical infrastructure services.

Mr. Varker-Miles said the merger would benefit the wider Cardno group as well as clients and staff.

"There are significant opportunities for Cardno ITC to partner with other members of the Cardno group. We're already seeing results with Cardno ITC referring work to teams on the Gold Coast, in Melbourne, Canberra and Sydney," he said.

"We can now provide our clients with a broader range of services in Australia and overseas," he added.

"Finally, due to the vast array of markets Cardno operates in, our staff will have increased opportunities to work on major projects and also work in areas we have not previously been exposed to."

Cardno ITC is currently working on several major building projects including the Work Cover tenancy in Victoria, which will have a floor area of over 200,000 square feet, two major projects for CBA in New South Wales, both in the order of over 530,000 square feet, and a number of significant public sector projects in Brisbane.



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Creating a vision for tribal homeland

After decades of displacement and being dispersed across the state of Oregon, the Native American community of Grand Ronde now has a vision for the future.

While the US Government returned the ownership of the land to the people of Grand Ronde in 1983, until recently the community did not have a plan for the use of the land or a strategy to encourage tribal members to return to Grand Ronde.

Cardno WRG's Portland office has been working with the Confederated Tribes of the Grand Ronde to develop a Community Master Plan, which is a visioning document for the Tribes.

Mimi Doukas, Cardno WRG's Director of Planning, said the plan was conceptualized from the Tribal Council's desire to create a self-sufficient, tribal homeland rooted in the Tribes' cultural past.

"Grand Ronde is a rural area located in Oregon. The community is home to a few thousand people who are mostly tribal people," Ms. Doukas explained.

"The Master Plan was created to provide a physical design that outlines how the community will develop and grow over the next 25 years. It also serves as a guide for

future growth and investment," she said.

Cardno WRG's planners worked with the Tribal leaders in establishing a common vision and future framework for the Grand Ronde Community. While Cardno WRG's civil engineers provided transportation and infrastructure analysis as part of the master planning process.

The Grand Ronde Community Master Plan builds upon the community's existing attributes, amenities and public investments including a Tribal Council, administration staff, school, library, dentist, hospital and tribal housing.

Cardno WRG Senior Community Planner, Ryan Givens said the plan needed to incorporate facilities that attracted tribal members back to the area.

"For the Confederated Tribes of the Grand Ronde, it was important for people to have an emotional connection to Grand Ronde to encourage them to return and stay in the community, which is why we developed a master plan," said Mr. Givens.

"To achieve this, as well as to support the future growth of the community, we created a series of nodes including a town square, government center and open space network."

"Having core infrastructure means Grand Ronde will be a complete community. Currently the tribes have shared agreements with

nearby schools and water suppliers," he said.

Given the Tribal Council's desire to draw people back to Grand Ronde, population projections were also a major component of the Master Plan.

Ordinarily planners would use past population figures to project future growth, but due to the nature of the community this data was not available. Instead, Cardno WRG worked with the Tribal Council to determine growth goals and what infrastructure was necessary to support the community.

"Through the Master Plan we've been able to translate where the Grand Ronde community wants to be into a physical plan," said Mr. Givens.

"Now that the plan for the future has been articulated, Cardno WRG hopes it can work with the Tribe to make the vision a reality," he said.



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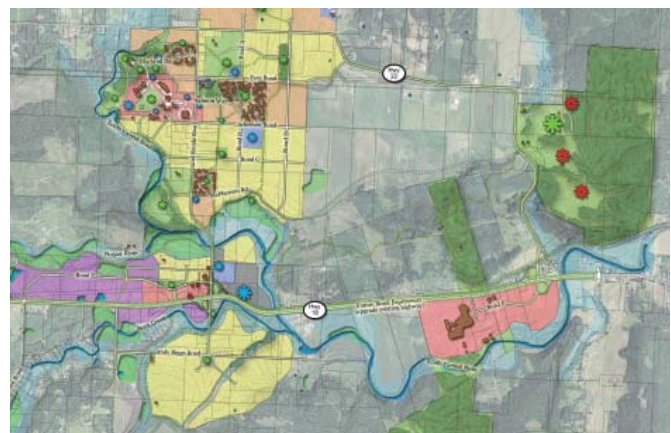
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Cardno WRG's planners guided the Tribal leaders in establishing a common vision and future framework for the Grand Ronde Community.



Growing service locating business through strategic acquisition

Cardno is set to increase its service locating business following the strategic acquisition of Australian Underground Services Pty Ltd (AUS), an Australian utility detection and mapping services firm.

The 30-person business, which is now known as Cardno AUS, is based in Victoria.

Cardno believes that the Australian infrastructure market is ready for the introduction of subsurface utility engineering as a means of improving the accuracy of the utility information used for design and construction of physical infrastructure projects.

Cardno AUS undertakes services location through surface geophysical technologies, state of the art non-destructive vacuum excavation and data management services.

Cardno Managing Director Andrew Buckley said further developing our services locating business is a strategy that Cardno has been targeting since the acquisition of US-based Cardno TBE in late 2008.

“The acquisition of AUS will allow us to transfer our professional Subsurface Utility Engineering (SUE) global expertise from Cardno TBE to Australia and leverage off AUS’s existing client base. Cardno TBE has already successfully achieved this in Canada and the UK.”

Cardno believes that the Australian infrastructure market is ready for the introduction of SUE as a means of improving the accuracy of the utility information used for design and construction of physical infrastructure projects. It is documented that SUE will reduce costs and provide accountability through the certification of the location, identification and mapping of underground utilities prior to construction.

“We see AUS as a highly strategic partner to help drive the growth of SUE services in Australia,” said Mr. Buckley.

Cardno AUS has developed a solid client base since commencing operations in January 2005, which includes state road authorities, national contractors and major engineering consulting firms.

Mr. Buckley noted that Cardno is currently working with Standards Australia to introduce a standard for SUE services for Australia and New Zealand along the lines of the standards used in the US and Canada.

Scott Guy, Managing Director and founder of AUS, said the acquisition by Cardno

will enable the business to increase its service offering and be positioned to be the premier provider of SUE services for Australia.

“Through our partnership with Cardno, we can now offer our clients a wider range of services throughout Australia,” said Mr. Guy.

“We can also leverage Cardno’s expansive network of offices in Australia and New Zealand to grow our presence and provide Cardno’s existing clients with our specialist services. For example, we recently commenced work with Cardno’s Canberra office on the redesign of the Anzac Avenue intersection in Canberra.”

“Moreover, we already have a strong working relationship with the company, having worked with Melbourne-based Cardno Grogan Richards for more than three years.”

Cardno AUS is currently expanding into New South Wales and setting up a base in Sydney. The office will provide Cardno AUS’s full suite of services.



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Building an education revolution in Indonesia

In December, Cardno's Emerging Markets Division will complete one of the largest education development programs ever undertaken by the Australian Government, delivering more than 2,000 new schools and a raft of reforms to help the Indonesian Government revolutionize its education system.

The AU\$385 million AusAID project was developed as part of Australia's AU\$1 billion aid package to Indonesia following the devastating Boxing Day tsunami of 2005.

The Australian and Indonesian Governments have worked in partnership, with the help of Cardno as Managing Contractor, to roll out this remarkable package of education assistance.

The four-year Australia Indonesia Basic Education Program (AIBEP) has delivered 2,014 junior secondary schools, providing places for more than 330,000 new students from some of the poorest and most remote regions of the archipelago.

Cardno's Lead Technical Adviser Brian Spicer said the enormous scope of this initiative made it one of the biggest education programs ever undertaken.

"Most aid projects tend to focus narrowly on one aspect but this program builds both social and physical infrastructure in a systematic approach to reforming and improving education for Indonesian children," Dr Spicer said.

"The program is already producing impressive results: Indonesia's post-primary enrollment rate is up by one percent; almost half of the new enrollees are girls and nearly half of the students come from families with an income of less than US\$2 per day."

The program has trained thousands of school principals, teachers, parents and members of school management committees as well as helped develop policies across key areas like gender equity, inclusive education and quality assurance.

With Cardno's help, a new National Strategic Plan was developed, giving momentum to Indonesia's goal of achieving universal education.

Dr. Spicer is particularly proud of Cardno's support of the Indonesian Government's Education Quality Assurance System, securing continuous improvement in the system for years to come.

"This is a major change for an education system that has been stuck in an out-dated and hierarchical approach to education and education management," he said.

"It is this that makes it one of the most ambitious and ultimately one of the most successful education programs globally."

The success of AIBEP is a huge achievement for the Australian Aid Program and has been widely recognized as such by other donors, the Indonesian Government and other stakeholders in Indonesia's development.

Cementing its reputation in this sector, Cardno was recently appointed as the managing contractor for the School Reconstruction Program (SRP) in West Java and West Sumatra, which is jointly funded by AusAID (AU\$10 million) and USAID (US\$5 million).

As part of the program, 60 new schools will be constructed to help replace those destroyed in two earthquakes which hit the region in September 2009, killing more than 1,000 people and damaging thousands of educational facilities.

SRP Team Leader Gerome Rich said Cardno would facilitate a community driven approach to the project.

"A key feature of the program is that the schools will be built using community-based construction," said Mr. Rich, a former project manager on the AIBEP program.

"This approach will see school committees plan and manage construction of their local school, with the help of more than 100 Cardno staff," he said.

"This will ensure school communities can manage and take responsibility for their local infrastructure well into the future."

The program has been in the planning phase since late 2009 and entered implementation phase during May. The entire program is expected to be completed within 12 months.

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With Cardno's help, a new National Strategic Plan was developed, giving momentum to Indonesia's goal of achieving universal education for all.



Cardno beats the heat with new Hervey Bay water park

From designing the skeletal structures of giant whales to zero-depth water lawns and static waves, Cardno's engineering ingenuity, in partnership with Wide Bay Water Corporation, was recently put to the test on the new WetSide Water Education Park at Hervey Bay in south-east Queensland.

Located on the Hervey Bay foreshore mostly known for its spectacular whale watching, the AU\$12 million water park was officially opened by Premier Anna Bligh last December as part of Queensland's 150th anniversary celebrations.

The eco-friendly park was developed with the support of the Fraser Coast Regional Council, Wide Bay Water Corporation and the Queensland Government and is believed to be the first in the world to harvest and use stormwater as part of its goal to provide guilt-free entertainment while educating visitors on the precious resource of water.

The 2.5-acre park is built on 384 piers sunk deep into the sand to raise the traffic areas on boardwalks, preserve the dune structure beneath and allow native plants to flourish.

Attractions include a massive zero-depth water lawn interspersed with dozens of cascading fountains, a static wave pool, water slides, tipping bucket facilities,

"This is a significant project within the Wide Bay region which Cardno is proud to be part of."

play equipment, a toddlers' pool and an educational walk along interlinked timber boardwalks.

Various sculptures are also found throughout the park, including giant whale and dolphin structures.

Cardno Senior Structural Engineer Evan Shaw said the project had been an exciting one to work on.

"It's been great to be involved in such an innovative project as this as it has had such a big impact on the local community," Mr Shaw said.

"Cardno has been involved in the project since inception and contributed to concept development and layout, provided engineering support through the approval process, produced construction documentation and supervised the project through to final delivery."

The park was constructed over an eight-month period by PBS Building, with the main challenges being to construct a 132,000 gallon storage storm water tank underneath the car parking area as well as to pour a 115-foot diameter concrete slab in one pour.

"The 115-foot diameter concrete slab for the main area of the park had been requested to be poured all at once," Mr. Shaw said.

"The slab contained and covered a large number of conduits for electricity and water for the cascading foundations and was suitably reinforced to minimize cracking of the concrete."

Another challenge was to design the skeleton of two giant whale sculptures to ensure their structural integrity while making sure they were built to withstand the forces of nature and children.

Cardno also produced the structural design for the static wave machine, which utilizes technology from Scotland and allows visitors to ride the wave on their boogie boards. Design for the play equipment was also developed by Cardno and incorporated tipping bucket technology from Canada.

With the park located adjacent to the beach, the Cardno team also had to develop solutions to ensure against the mighty forces of nature, with soil erosion of particular concern considering the park's proximity to the sand.

Since opening, the park has been warmly received by visitors who alongside tourists are encouraged to read the informative messages provided by Wide Bay Water Corporation on the educational boardwalks which detail facts on water conservation and its associated responsibilities.

"This is a significant project within the Wide Bay region which Cardno is proud to be part of," Mr. Shaw said.



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New highway to transform township's growth

The East Taupo Arterial Highway on New Zealand's North Island is set to help change the growth of the picturesque town of Taupo.

Currently the majority of road users travelling from the upper areas of the North Island to the southern parts of the Island must use the State Highway 1. The State Highway 1 runs through Taupo and along the foreshore of pristine Lake Taupo, the town's main tourist destination.

The 10 mile long, NZ\$110 million East Taupo Arterial Highway will take heavy traffic away from the lakefront and town center.

Hamish Crawford, a Licensed Cadastral Surveyor from Cardno TCB's Taupo office, said currently on average one B-Train truck travels through the town every minute due to the position of the State Highway 1.

"Cardno TCB is thrilled to be a part of the development of the East Taupo Arterial Highway as we believe it will transform Taupo and aid its future growth," said Mr. Crawford.

"Taupo sits on the northern edge of Lake Taupo and a lot of recreation activities are focused around the Lake, which is a major attractor to our town," he said.

"Taupo has a population of 30,000 that swells to 60,000 during the holiday period. The increase in population, along with the heavy traffic from State Highway 1, makes it nearly impossible to cross the highway to access the lakefront during this time."

"By diverting through traffic around the township, it will allow easier access to other parts of Taupo and open up growth areas in and around Taupo. It also means that activities and tourism can focus on and take advantage of the natural frontage of the lake," he said.

Cardno TCB was responsible for establishing accurate survey control over the route, detailed topographical survey of the entire area, some of the construction setout and volume calculations as well as construction monitoring Quality Assurance surveys.

"The accurate survey control and topographical surveying had to overcome complications such as the extremely active geothermal ground, rugged terrain and densely vegetated areas," said Mr. Crawford.

"As we worked our way through the vegetation we had to be very careful not to damage native plant species, including Prostrate Kanuka which is only found in the Taupo area," he added.

The route incorporates a 1,500-foot long bridge over Contact Energy land and the Waikato River. Contact Energy is a New Zealand energy company that uses the geothermal land east of Taupo to generate electricity.

The Contact Energy land is covered with turbines, bores and a network of geothermal pipes, so a bridge had to be built over the facilities.

Surveying teams from Cardno TCB's Wairarapa, Hawkes Bay and Wellington offices also assisted with the topographic surveying.

"Cardno TCB's ability to source additional resources from our other offices throughout New Zealand was a real advantage for the client. It also allowed us to undertake urgent works immediately," said Mr. Crawford.

Cardno TCB's Taupo office provides surveying, urban development engineering and planning services to a range of private developers as well as government clients throughout New Zealand.



"The accurate survey control and topographical surveying had to overcome complications such as the extremely active geothermal ground, rugged terrain and densely vegetated areas."

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Partnering with Ugandan companies to improve healthcare

Under the Uganda Health Initiatives for the Private Sector (HIPS) Project, Cardno's Emerging Markets Division is partnering with private sector companies in Uganda to help them improve and expand the healthcare services offered to their employees, dependents and members of the community in which the companies operate.

HIPS is a USAID-funded, five year project that commenced in 2007.

One innovative part of the program has been the Text to Change partnership. The initiative involves using text messages to support companies in providing key prevention and health education messages to their employees and community networks.

It has built on the success of the USAID Uganda Business Preventing AIDS and Accelerating Access to Anti-Retroviral Treatment (PART) project, which was also implemented by Cardno.

Cardno Project Manager for HIPS, Jeanne Ellis, explained that the project's goal is to provide technical assistance to design and implement comprehensive workplace health programs.

"We aim to maximize the accessibility of HIV/AIDS, tuberculosis and malaria prevention and treatment services and to provide reproductive health and family planning knowledge to people working for these private companies and in surrounding communities," said Ms Ellis.

The specific objectives of HIPS are to:

- Expand access to, and utilization of, health services in the private sector
- Increase the number of Global Development Alliance partnerships to leverage company-sponsored health services
- Strengthen private sector employer organizations to support health initiatives

- Implement innovative approaches to support orphans and vulnerable children through the private sector.

Cardno is the prime contractor and the main implementer and manager of the project.

"We have a team of 15 professional staff working in the field in Uganda who are supported by staff in our Washington DC office," said Ms. Ellis.

"Our role is to serve as an advisor to the private sector, helping them develop, implement and manage health programs," she said.

"We're undertaking activities in the areas of prevention, treatment, training, capacity building and alliance building to ensure access to health programs via the private sector are improved and expanded."

One innovative part of the program has been the Text to Change partnership. The initiative involves using text messages to support companies in providing key prevention and health education messages to their employees and community networks.

Participants opt-in to the program by sending an SMS to a number. They then receive a daily text, which is primarily an interactive question and designed to spark conversation and thought on both conventional and controversial topics around HIV/AIDS, reproductive health and family planning.

Text messages are available in local languages and English, and incentives such as mobile phones and t-shirts encourage responses.

Text to Change started in August 2009 and the results have been positive. Ms. Ellis said the launch of the program resulted in a 40 percent increase in the demand for sexual and reproductive health services from participating company clinics.



"Also, text responses have generated data on knowledge, attitudes and practices concerning a range of sexual and reproductive issues from participants, which can be used for future programming," she added.

HIPS also seeks to expand the number of qualified and accredited private sector health providers in the area of HIV/AIDS, tuberculosis and malaria. This will help ensure the Ugandan private sector has the skills to continue to improve the health services offered to their staff and surrounding communities after the HIPS initiative has been completed. So far, HIPS has helped 88 clinics gain government accreditation in HIV/AIDS treatment and 27 clinics gain government accreditation in tuberculosis treatment.

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Happy feet for Sydney's famous fairy penguins

Sydney's famous colony of little penguins is sure to be blessed with the pitter-patter of happy young feet well into the future, thanks to the careful watch of ecologists from Cardno Ecology Lab.

Cardno Ecology Lab was commissioned by the owners of the Manly Pavilion on Sydney's north shore to monitor the penguins' behavior and breeding patterns to ensure their safety during the recent AU\$8 million refurbishment of the historic building.

Manly foreshore is home to a colony of approximately 100 breeding little penguins – also known as fairy penguins – with each pair fledging on average about two chicks per season.

While most of the colony's burrows are located some distance from the Pavilion, up to eight burrows were located within a few yards of the building, sparking concern from developers and the local community.

Cardno Ecology Lab Senior Environmental Scientist Dr. Craig Blount said close monitoring of the birds found penguins breeding in three burrows during construction.

"Out of the three active burrows located in the vicinity of the Pavilion, we had five chicks fledge during construction," Dr. Blount said.

"This is a great result – it's equivalent if not better to what's known from this area in the past," he said.

"We're confident that with careful and ongoing management of the area, the little penguins

will continue to live compatibly with their surroundings in Manly."

Cardno Ecology Lab was contracted by the Pavilion's owners to advise on how best to minimize disturbance of the colony during the construction phase of the redevelopment.

"We recommended the introduction of noise and activity buffers, not only for when the chicks are in residence but also over the critical movement period of dusk when the parent birds return to the nest to feed their young," Dr Blount said.

Cardno Ecology Lab was contracted by the Manly Pavilion's owners to advise on how best to minimise disturbance to the fairy penguin colony during the construction phase of the redevelopment.

"We also recommended changes to the building design to shield the penguins from any additional noise and light pollution."

Manly Pavilion owner John Coddling, whose renovated venue opened to rave reviews in March, said he would take every step possible to ensure the penguins continued to thrive.

"We will do whatever we can at a management level to mitigate any potential effects on the Manly colony," Mr Coddling said.

"Already, our management plan includes

nominating a member of staff each week to become a penguin warden to make it their duty to ensure the penguins are well looked after," he said.

"We've also implemented measures to ensure we are good neighbors of the penguins by having dim lighting, no loud music and a no smoking policy throughout the venue, to name but a few measures."

Cardno Ecology Lab and Manly Pavilion are discussing further ways of managing general operations of the facility over the next five years, keeping in mind the best interests of the penguins.

Dr Blount also worked closely with the Department of Environment, Climate Change and Water's volunteer penguin wardens, providing bi-weekly updates to the community and receiving helpful advice in return.

He said apart from human impact, dogs, cats and foxes posed the greatest threat to the Manly penguins.

With a team of 14 experienced scientists, Cardno Ecology Lab specializes in environment and threatened species assessments, habitat mapping, development of management plans, water quality and sediment assessment plans and monitoring thereof.



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John's Pass Bridge replacement



Cardno TBE served as the prime consultant on the project.

After 35 years of connecting the Florida beach communities of Madeira Beach and Treasure Island, the John's Pass Bridge is being replaced.

The 850-foot long bridge consists of two low level bascule bridges, each carrying two lanes of traffic. The existing bridge is being replaced with new low level bascule bridges, associated fender system and bridge tender house.

Lance Lairscey, the Business Unit Manager of Cardno TBE's Construction Services team, explained the replacement effort was prompted by years of heavy traffic and saltwater damage to the Bridge's pilings.

"Cardno TBE served as the prime consultant on the project, including construction contract administration, monitoring and inspecting the contractor's on-site construction operations and

providing management engineering services," said Mr. Lairscey.

As part of the replacement, the John's Pass Bridge was raised to over 33 feet at the center and the channel beneath the Bridge was widened from 60 feet to 100 feet. This increased clearance will mean more vessels will be able to pass under the Bridge and reduce the lifting of the drawbridge.

Construction of the adjacent roadway, a new drainage system, Mechanically Stabilized Earth (MSE) walls, lighting and signals were also carried out.

The John's Pass Bridge is the main route connecting Madeira Beach and Treasure Island so access to the Bridge at all times was crucial.

"With 20,800 vehicles using the Bridge every day, one of the two bridges had to remain open at all times," said Mr. Lairscey.

"In addition, marine traffic had to be maintained during construction with only night time channel closures permitted."

"To manage closures we coordinated with the US Coast Guard, Florida Department of Transportation, marine patrol and local municipalities to obtain approval and make sure the surrounding public was kept abreast of the situation," he said.

The John's Pass Bridge is scheduled to be completed in August 2010.

Cardno TBE's core competency is in the coordination of major infrastructure projects. The team provides a range of engineering solutions with a particular focus on construction services, civil and environmental engineering, right-of-way, transportation and subsurface utility engineering.



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Ambitious Brisbane infrastructure projects keep Cardno Bowler busy

Construction materials testing and geotechnical specialist Cardno Bowler has completed one of the largest public infrastructure projects ever undertaken in Brisbane, following the opening of the Clem Jones Tunnel (CLEM7) in March.

The AU\$3 billion, four-mile tunnel directs vehicles underneath the Brisbane River, bypassing up to 24 sets of traffic lights along the way.

The tolled tunnel, operated by RiverCity Motorway Group, provides a much-needed link for cross-city travel for tens of thousands of vehicles per day.

Construction Material Testing (CMT) for the tunnel, which consists of two parallel roadways with each dedicated to either north or southbound traffic, was conducted by Cardno Bowler under the watch of Division Manager David Bowler.

"Apart from the emblematic nature of the project and the novelty of working in a tunnel, the most noteworthy aspect of this job for us was the crushed recycled concrete used underground as a support for the road surface," Mr. Bowler said.

"The recycled concrete was stabilised with fly ash before being placed and compacted into the shape it had to be. Our job was to test it, both in terms of compaction levels and in the strength achieved in situ."

Extensive testing of the material was conducted by Cardno Bowler's Geebung Laboratory, under the guidance of Geebung Manager Chris Pearce.

"It is very important that the material below the road surface is mechanically stable and able to carry traffic loads," Mr. Pearce said.

Appointed to the CLEM7 project at inception in 2007, perhaps the biggest challenge of the job lay in the complex geometry of the rearrangement of the road network, with retaining walls and new road surfaces being built alongside the heavy traffic conditions of the M1 Pacific Highway.

Cardno Bowler Hillcrest Manager Mike Sandilands and his team were primarily concerned with testing reinforced soil structure backfill and road construction materials at the tunnel's various entry and exit points.

"The job was quite challenging from a logistical point of view in terms of operating beside the congested motorway, particularly when switching traffic from one position to another while working in that area," Mr. Sandilands said.

CLEM7 is the first section of Brisbane's new M7 motorway, which is due to be completed in 2012 following construction of the Airport Link project, on which Cardno Bowler is also working.

The company has also provided CMT services to other major projects in and around Brisbane, including the Gateway Upgrade, the Ipswich Motorway Upgrade and the Ipswich-Logan Interchange Upgrade.

Cardno Bowler is now turning its focus to begin work on the US\$15 billion Liquefied Natural Gas (LNG) project in Papua New Guinea (PNG), which will see LNG processed in the country and exported from the capital Port Moresby.

The project is expected to transform the PNG economy – adding substantial revenue to its Gross Domestic Product.

CLEM7 is the first section of Brisbane's new M7 motorway, which is due to be completed in 2012 following construction of the Airport Link project, on which Cardno Bowler is also working.



Photo supplied by RiverCity Motorway



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Cardno's excellence rewarded with two national awards

Cardno has received national recognition for excellence in two completely different projects, including its role in deepening the channels to the Port of Melbourne and for its design of cutting-edge new drainage solutions at Byford Central near Perth.

In March 2010, the Port of Melbourne Corporation's Channel Deepening Project took top honors as the Project of the Year at the prestigious National Infrastructure Awards, with Cardno Lawson Treloar one of the leading consultants on the job.

The AU\$1 billion project involved dredging in Port Phillip Bay and the Yarra River, deepening the channel to provide access for vessels with drafts of up to 45 feet, allowing ships to carry full capacity loads in and out of the port.

Delivered ahead of schedule, at least AU\$200 million under budget and within strict environmental guidelines, the project beat tough opposition in Sydney's AU\$1.8 billion desalination plant and Brisbane's AU\$3 billion Clem Jones Tunnel.

"This was a fascinating project to work on," said Cardno's Project Manager David Provis, whose team provided support on meteorological and oceanographic matters including wave climate, tide levels and monitoring systems dating back to 2001.

Cardno has received national recognition for excellence for its role in deepening the channels to the Port of Melbourne and designing cutting-edge new drainage solutions at Byford Central near Perth.

"Port Phillip Heads is one of those interesting areas where there are very strong currents and reasonably rough wave conditions which combine to make it very turbulent."

Cardno produced robust modeling of the project and its impact on current and tidal conditions in the bay, including calculating currents inside the 325-foot deep canyon at the bay's entrance.

The team also modeled the movement of turbid plumes caused by dredging and conducted comprehensive ship simulation tests.

"We're currently in the process of finishing post-dredging assessment as part of the environmental approval process," Dr. Provis said.

"I think the outcome has been very good for the environment and for the port."

Cardno's Perth-based Civil Infrastructure team was also recognised for a job well done, with its receipt of a National Excellence Award from the Stormwater Industry Association in late 2009.

The award acknowledged excellence in aquifer storage and recharge undertaken by Cardno and its client Formica Property

Group in designing drainage for Byford Central, a 700-lot subdivision located 25 miles south-east of Perth.

Led by Project Manager Paul Nichols, Cardno designed the bulk fill for the 160-mile subdivision to also act as a shallow aquifer. This involved shaping the low permeability natural soils and then placing a 4-foot layer of sandfill over them.

Roadside swales and soakwells on individual lots were designed to capture water run-off close to source before discharging it into the underlying sand fill, where over time it seeps through the sand into subsurface drains which lead into a piped drainage network.

The innovative method, known as Water Sensitive Urban Design, brought major benefits to Byford Central, including enhanced water run-off management, less piped drainage required and reduced alienation of open space by limiting the need for tree removal and hard engineering works.

"We were delighted to receive the national recognition as a lot of hard work had gone into the project," Mr. Nichols said.

"We were also very pleased with the positive feedback from local and state authorities, particularly since it had taken several years to gain local government acceptance of the design."

Since receiving the award, several other developers have approached Cardno to assist in drainage related matters, leading to a full audit of all drainage and flood management planning and design on more than 3,000 future lots in the Byford area.



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Central Parklands the jewel in the Springfield crown

Cardno is currently involved in putting the finishing touches to the spectacular new Springfield Central Parklands, officially known as Robelle Domain, located in the heart of the master planned city of Springfield, south-west of Brisbane.

Linking Springfield's CBD, shopping precincts and University of Southern Queensland campus at Education City, the parklands provide an aesthetically pleasing town center while adding great value to the development which is expected to support a population of up to 105,000 residents within the next 20 years.

The success of the project has been underscored by Cardno's intelligent stormwater diversion drainage design.

Once completed, the AU\$54 million project will offer residents 60 acres of beautifully landscaped gardens and cascading waterways, with public facilities including an amphitheatre for local events, water play precincts, up to five miles of walkways, kiosks and several hectares of BBQ and passive recreational areas.

The park is connected to the city's smaller recreational reserves via a system of bikeways and paths, providing Springfield with a range of public amenities.

"When Robelle Domain is complete it will be a spectacular amenity," said Robbie Marshall, Business Unit Manager of Cardno's Springfield office, whose team has provided civil engineering services to Springfield Land Corporation since 2000.

"Sized at 20 percent larger than Brisbane's Roma Street Parklands, this is one of the largest inner-city parklands in south-east Queensland and features innovative engineering designs which have allowed the ambitious architectural design to be realized.

"This will be one of the signature projects of our Springfield office."

Working collaboratively with JMAC Constructions, the success of the project has been underscored by Cardno's intelligent stormwater diversion drainage design, required to reclaim approximately 10 acres of urban parkland space.

This collaborative approach has ensured engineering solutions satisfied safety, constructability and budgetary requirements, while considering the overall project aesthetics and deliverables.

"The site sits on the delta of two major creeks in the area," Mr. Marshall said.

"In order to effectively use the available land, Cardno has designed an extensive underground piped stormwater system, where one arm of the creek gets picked up by inlets at one end, bypasses some of the park through a system of underground culverts before

being piped into a central lake to join the other creek," he said.

"That is really the engineering highlight of the project for us."

The lake then feeds into a system of cascading waterways which flow through the remainder of the park, providing a beautiful setting while delivering practical drainage solutions built to cope with a 1:500 year flooding situation.

To achieve this, 325,000 cubic feet of earthworks was moved and approximately 1,800 feet of six foot diameter pipeline positioned underground to redirect one of the creeks.

Cardno also provided construction supervision for the earthworks and geotechnical engineering of the park as well as soil testing, sewerage and water reticulation design and advice for event planning to ensure semi-trailer access to the site.

Work on Stage 1 of the Parklands is expected to be completed later this year, with AU\$30 million in funding jointly provided by the Federal Government (as part of its recent

stimulus package), the Queensland Government, Ipswich City Council and Springfield Land Corporation.

In May 2010, Greater Springfield was awarded the FIABCI Prix d'Excellence award for Best Masterplanned Community. The awards are the annual accolades bestowed on the works of the world's best properties. Greater Springfield was selected from a total of 54 international projects in the running for recognition.



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Cardno NEWS in Brief

Cardno WRG supports innovative green school

Cardno WRG's Landscape Architecture team was recently selected to be part of an esteemed team of professionals who will design and build one of the US's premier green schools.

Orangewood Elementary School in Phoenix, Arizona, will receive the gift of a high performance, 5,000 square foot LEED

Certified/Collaborative for High Performance Schools-Certified classroom hybrid.

The school will be built by professionals and community volunteers and is due to be completed by 2011. It will be built in just 30 days, similar to a "barn-like-raising" approach.



Cardno WRG's team will be donating in-kind resources to complete the sustainable design of landscape, irrigation and hardscape of the new facility.

High performance schools like these are built to replace portable, annex buildings. They also help to improve the health of children and faculty members, progress student education and reduce energy usage. The new facility will become a hybrid of school and house, offering multi-purpose uses such as after-school programs and a community meeting space.

Orangewood School is one of four schools selected for the launch of this US-wide platform and is spearheaded by Brighten A Life, CAUSE AND EFFECT Evolutions and City of Phoenix Mayor Phil Gordon's Office.

The chronicle of this compelling outreach volunteer initiative can be viewed on local Phoenix DMA TV reality show *The Road to the Green Schoolhouse Series*. A video from NBC news can also be seen at: <http://www.azcentral.com/12news/schoolsolutions/articles/2009/12/16/20091216green-CR.html>

Accelerating the value of Cambodia's agriculture

Through the Cambodia Agricultural Value Chain (CAVAC) program, Cardno's Emerging Markets Division is helping farmers in Cambodia to accelerate growth in the value of agricultural production in rice-based farming systems.

The aim of the program is to develop mutually beneficial partnerships, market connections and competitive advantages between key parties along the value chain. Ultimately this will increase investment and generate value for stakeholders, particularly smallholder farms.

Bruce Coyne, Cardno's Executive Director of Private Sector Operations, explained CAVAC is AusAID's flagship program for agriculture and rural development in Cambodia and will help ensure the country's food security.

"The program will provide assistance in four key areas – agribusiness development, water management and irrigation, research and extension as well as the business enabling environment," he said.

"Addressing these key constraints will help stimulate the development of rice-based farming system value chains so that smallholder incomes are improved on a sustainable basis," said Mr Coyne.

CAVAC is a 28 month project which started in March 2010. It will initially focus on rice and fruit and vegetable value chains in the provinces of Kampong Thom, Kampot and Takeo.

Beneficiaries of the program include some 180,000 households of smallholder farmers in the three target provinces, traders and agribusiness operators who will develop production and market linkages as well as women in production, marketing and business trading environments.

Cardno is serving as the Operational Contractor and will provide procurement, logistical, financial management and administrative support to the AusAID-appointed Team Leader and the Australian Centre for International Agricultural Research.

Staff from Cardno's Melbourne office will lead the implementation and will be supported by staff in the company's Washington D.C. office.

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Stimulus helps transform school infrastructure

Cardno teams across Australia are helping transform Australian schools as part of the Federal Government's Building the Education Revolution (BER) program.

BER is a AU\$16.2 billion investment that provides world-class educational facilities through new infrastructure and refurbishments to all eligible Australian

schools. BER is a key element of the Australian Government's AU\$42 billion Nation Building – Economic Stimulus Plan, which aims to provide economic stimulus by supporting employment through local infrastructure projects.

Cardno is contributing to the development of more than 250 schools in New South

Wales, Queensland, Victoria and Western Australia. The company is providing a range of services including structural engineering, building services, civil engineering and surveying for design and construction.

Supporting Australia's Indigenous communities

As celebrations are held across Australia for the annual National Aboriginal and Islander Day Observance Committee (NAIDOC) Week, Cardno continues to show its support for Indigenous communities.

During last year's NAIDOC Week, Cardno commissioned a painting by Indigenous artist Troy Douglas Lenihan, which is now on display in Cardno's head office in Brisbane.

More recently the Cardno Board has implemented a strategy to demonstrate the company's commitment to Indigenous Australians. The strategy is entitled Working with Indigenous Communities, the Cardno Commitment.

David Merrett, Business Unit Manager of Cardno's Management Services team, explained the key elements of the strategy are around recognising and respecting traditional values, acknowledging the disadvantaged position Indigenous people have inherited and promoting tolerance, respect and mutual understanding.

"The strategy is also about recognizing the importance of developing the skill base within Indigenous communities

by providing employment and training opportunities wherever possible," he said.

Cardno has a history of working with Indigenous communities on social and physical infrastructure projects. The company provides a range of services that can help Indigenous communities achieve their social, economic, environmental and customary outcomes and understands the factors that contribute to successful Indigenous programs.

In March, the Management Services team completed the Indigenous Environmental

Health Infrastructure Program. The purpose of the Program was to improve the water and sanitation infrastructure of 17 mainland Indigenous communities in Queensland.

The Program was a joint arrangement between Queensland's Department of Infrastructure and Planning and the Federal Department of Families, Housing, Community Services and Indigenous Affairs. Cardno was appointed as Mainland Program Manager for the duration of the three year project.

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Above: Cardno Managing Director Andrew Buckley receives painting from Indigenous artist, Troy Douglas Lenihan



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