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Cardno's expanding global footprint

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At the forefront of the booming resources industry

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# A message from the Managing Director

Welcome, to another edition of Cardno News.

As I anticipated in the last issue the past year has proven to be highly successful for Cardno.

Cardno has bolstered its position as a global provider of physical and social infrastructure services, increasing the number of offices worldwide from 26 to 46.

With the support of our clients, staff and shareholders Cardno has continued its expansion into the US market with the acquisition of international development assistance company Emerging Markets Group (EMG) and physical infrastructure company WRG Design Inc..

In addition to Cardno's US expansion, Cardno crossed the Tasman to join forces with one of New Zealand's longest serving surveying and engineering consultancies, Truebridge Callender Beach (now Cardno TCB).

On Australian soil, Cardno has also continued to grow and diversify its services offering, with the acquisitions of landscape architecture and environmental services company S.P.L.A.T. (now Cardno S.P.L.A.T.), structural engineering company Low & Hooke Partners (now Cardno Low & Hooke), and civil and structural

consultants Buckland Engineers Australia (now Cardno Buckland).

Each of these acquisitions strengthens our ability to better service clients, and enhances the wealth of knowledge and cultural diversity in the company. This has also enabled Cardno to build upon its skilled and progressive workforce which is the foundation of our success.

In this issue you can read about our most recent acquisitions as noted above and also about our projects including the Liberia Community Rehabilitation Program, the Brisbane Water Foreshore Flood Study in New South Wales, the Al Anbar Low Cost Housing project in Dubai and the Papua New Guinea Electoral Support Program.

With the continued focus on sustainable growth and service excellence, the coming year presents many new opportunities for the Cardno group.

I hope you enjoy reading Cardno News.

A handwritten signature in black ink, appearing to read 'A Buckley', written over a white background.

**Andrew Buckley**  
Managing Director

**Cardno has bolstered its position as a global provider of physical and social infrastructure services, increasing the number of offices worldwide from 26 to 46.**



# Cardno's expanding global footprint

2007 has been a landmark year in Cardno's history, entering both the United States domestic engineering market, and securing access to US funded international development assistance projects.

Managing Director Andrew Buckley said the US offered significant opportunities for Cardno to expand its business in the delivery of both physical and social infrastructure services.

"We have spent considerable time and resources researching the potential of this market and how best to expand," he said.

"We made a conscious commitment to appoint Michael Renshaw as General Manager for North America to identify well established partners to lead the growth strategy."

"Entering a new market can have its challenges, and we needed to find quality partners who

shared our vision for growth, had a similar culture and possessed leadership to support further expansion in the region."

## Cardno welcomes Emerging Markets Group

Cardno's formal US expansion began in May 2007 when Emerging Markets Group (EMG) became part of the Cardno group.

EMG is a leading international development consulting practice delivering economic growth, financial sector, healthcare, private sector, public sector and tourism services.

Originally established as a specialist unit of Deloitte, the practice was set up at a time when development experts and donor agencies were beginning to turn their attention to the private sector as an integral component of the development process.

Today EMG employs more than 430 staff across some 60 countries with corporate offices located in Washington DC, Brussels and London.

In almost three decades EMG has worked on a variety of projects including financial reform in Thailand, Indonesia and Korea after the Asian Financial Crisis; development of the Namibian tourism sector; tracking and monitoring systems for grain movements in Sudan during food emergencies; and implementation of a land titling system in Afghanistan.

EMG's clients include USAID, European Union, UK DFID and the Millennium Challenge Corporation.

Mr Renshaw General Manager for North America said the addition of EMG has played a key role in realising Cardno's strategy to create a global development assistance business.

"EMG complements the services, clients and geographic reach of Cardno Acil and Cardno Agrisystems," he said.

Without a presence in the US, Australian companies have traditionally found it difficult to access the US development assistance market.

"EMG, through their corporate office in Washington DC, has a strong history of success in procuring USAID projects, the largest bilateral international development assistance financier in the world," Mr Renshaw said.

"In addition to a strong US operation, EMG's offices in London and Brussels will bolster Cardno's existing European presence."

In almost three decades EMG has worked on a variety of projects including financial reform in Thailand, Indonesia and Korea after the Asian Financial Crisis; development of the Namibian tourism sector; tracking and monitoring systems for grain movements in Sudan during food emergencies; and implementation of a land titling system in Afghanistan.



EMG President Andy Dijkerman said EMG's skills and knowledge have grown by fostering a development and socially conscious organisational culture.

"In Cardno, we have found like-minded professionals with a common set of experiences, with values placed on diversity and a commitment to sustainable development," said Ms Dijkerman.

### **WRG Design Inc. offers further US growth potential**

Less than one month after the addition of EMG, Cardno accelerated its US expansion, welcoming physical infrastructure services consultancy WRG Design Inc. in June 2007.

WRG offers physical infrastructure services in land use planning, civil engineering, water resources, sustainable development, survey and landscape architecture. The head office is in Portland, Oregon and the firm has a further five offices in the growth oriented states of Nevada, Arizona, California, Idaho and North Carolina, which in total employ some 370 staff.

WRG boasts a quality array of publicly listed, private and government clients that span the residential, commercial, industrial and public infrastructure markets.

Mr Renshaw said with WRG, Cardno has identified a business with the right cultural fit as it offers similar capabilities to existing physical infrastructure businesses in Australia and other countries.

"Partnering with a business with its head office in Portland was a bonus, as the city is also home to Cardno's software company, XP Software," he said.

In its 17 year history, WRG has proven successful in reacting positively to market shifts in the US economy.

Mr Renshaw said although the residential market in some parts of the US has softened, WRG is fortunate to operate in the majority of recognised growth regions and a considerable proportion of its revenue is generated from services for commercial and retail clients such as Costco, IKEA, Lowes, Kohls and Home Depot.

Darren Welborn President of WRG said he believed the partnership would help the business expand its service offering and realise its own growth ambitions.

"In Cardno, we have partnered with an international firm which provides WRG with increased potential to better serve our clients and to provide increased career development

opportunities for our staff, not only in the US, but internationally," Mr Welborn said.

"WRG has always been a high growth and profitable business."

"By joining with Cardno, we will be able to accelerate our organic expansion and look to complement our existing discipline offering with targeted mergers."

### **US Growth Outlook**

Mr Renshaw commented that Cardno's new US team is excited about the growth prospects for North America.

"As a new entrant in this market, Cardno provides an attractive option to other US and Canadian firms looking for partners to help them realise their own growth ambitions as part of an international group of companies," he said.

Mr Renshaw said Cardno's North American expansion is intended to provide increased opportunities for staff to develop international expertise and exposure to alternative approaches to project or program design and delivery.

"This is likely to lead to an enhanced range and quality of services Cardno can offer its clients," he said.

## **WRG offers physical infrastructure services in land use planning, civil engineering, water resources, sustainable development, survey and landscape architecture.**



# Cardno leads \$60m Indigenous infrastructure program

Queensland's remote Aboriginal communities are set to receive a major boost with \$60m worth of water, sewerage, waste management and roads and drainage infrastructure to be rolled out over the next two years.

Cardno has been appointed to manage the Indigenous Environmental Health Infrastructure Program (IEHIP) through a joint arrangement between Queensland's Department of Local Government, Sport and Recreation (DLGSR) and the Federal Department of Families, Community Services and Indigenous Affairs (FaCSIA).

The program covers all mainland Indigenous communities with initial projects at Kowanyama, Lockhart River, Mornington Island, Palm Island, Wujal Wujal and Yarrabah.

These projects were selected based on a prioritisation process with determining factors including the urgency of the work, the population served (i.e. number of beneficiaries) and the cost benefit ratio of each project.

The overall objective of the program is to improve environmental health outcomes for the communities through improved water supply and waste management infrastructure.

"Improved water and sanitation to be delivered through this program will have a direct and positive impact on the health and well-being of the people who live within these communities," said David Merrett Cardno's Program Manager and Management Services Business Unit Manager.

"In addition, the program aims to generate employment opportunities not only during construction but beyond by providing training to improve the communities' ability to manage project delivery related to infrastructure," he said.

The sheer remoteness of many of the communities has created some interesting challenges, such as difficulties with access, particularly during the wet season, and sourcing contractors interested in working in these areas, particularly given the current volume of construction activity elsewhere throughout Queensland.

Cardno's role is to administer the overall program. This includes determining the scope of each project in consultation with the community, preparing feasibility assessments, identifying cultural heritage issues, outlining designs of appropriate solutions and providing cost estimates.

Cardno then appoints and supervises external project managers who become responsible for the detailed design, construction supervision and project management of individual projects.

An important aspect of Cardno's role as program manager is to facilitate communication between the communities, state and federal government sponsors and other stakeholders. This is achieved through regular newsletters and project updates, as well as regular community consultation at all stages of project implementation.

Cardno has had a long involvement in many of these communities including working on water and sewerage projects on Palm Island, Mornington Island and Yarrabah. In addition Cardno's Management Service Business Unit has prepared Strategic Asset Management Plans for many remote communities, including all the outer Torres Strait Island communities.

Mr Merrett highlighted the benefits of the program in terms of building on Cardno's capacity to deliver projects of this nature with the involvement of personnel from a number of Cardno's regional offices as well as a dedicated unit within Management Services in Brisbane.

**"Improved water and sanitation to be delivered through this program will have a direct and positive impact on the health and well-being of the people who live within these communities."**



# Crossing the Tasman

Signing off on a merger is not the end of the hard work when it comes to forming a union with a global infrastructure services consultancy such as Cardno.

That's the message from Cardno TCB Managing Director Ray O'Callaghan who has been at the forefront of the recent merger between Cardno and one of New Zealand's longest-serving private consultancy firms.

Truebridge Callender Beach, which was founded in 1919, joined with Cardno in June 2007 and the new business, Cardno TCB, has spent the past few months adjusting to life as part of an international operation.

"We're now getting to understand the Cardno way and the various focuses of a large corporate company compared to a smaller, privately owned practice," Mr O'Callaghan said from his Wellington office.

"We've been in business for 90 years so it's about getting the team to appreciate the important role they now play in a global company, without forgetting the important role they play at a local level," he said.

Cardno South East Australia and New Zealand General Manager Roger Collins-Woolcock is excited about Cardno's first expansion into the New Zealand market and the opportunities it will bring for staff and clients.

"With the close relationship between Australia and New Zealand, the merger offers significant opportunities for the cross-selling of Cardno

"With the close relationship between Australia and New Zealand, the merger offers significant opportunities for cross-selling of Cardno and TCB skills across the Tasman."

and TCB skills both ways across the Tasman," Mr Collins-Woolcock said.

Mr O'Callaghan said the benefits of the Cardno TCB merger became apparent almost immediately.

"Although we have always offered excellent skills locally, before the merger we simply weren't able to provide the breadth of specialist expertise required to bid on large infrastructure projects," he said.

"Following the merger, Cardno TCB was approached by a major contractor to provide engineering services for a major road infrastructure project in Taupo.

"The market is now beginning to recognise our ability to call upon the expertise of the Cardno group globally.

"It's great for the company but it is also a fantastic opportunity for our team in Taupo."

Cardno TCB, which employs more than 110 staff in six offices throughout New Zealand, has earned a reputation for delivering urban development, surveying, planning and civil

engineering services to a loyal following of private developer, building contractor, local authority and government clients.

Mr O'Callaghan said one of the first priorities for the business post-merger was the restructuring of its offices in Wellington, Auckland, Hawke's Bay, Wairarapa, Taupo and Christchurch.

"Before the merger with Cardno, we were one entity with six offices," he said.

"Now we have structured the operation into six formal business units, which enables us to better manage our staff, clients and projects."

Cardno TCB has provided infrastructure services to land developments at Whitby, Churton Park and Woodridge Estates in Wellington, as well as Brentwood Park in Taupo and Kotuku Park on the North Coast.

The company's experience also includes several projects for Hutt City Council, including one of New Zealand's largest stormwater pumping stations for the Opahu stream.



## Shaping the landscape

In 2007 Cardno added a new element to its already extensive service offering by partnering with landscape architecture firm S.P.L.A.T. to form Cardno S.P.L.A.T.

Queensland's landscape architecture industry has undergone dramatic growth in recent years on the back of a buoyant property market.

With Gold Coast and Brisbane offices, Cardno S.P.L.A.T. is well positioned to take advantage of this growing market and to offer its skills to Cardno's broader range of clients.

Cardno S.P.L.A.T. Business Unit Manager Stephen Pate said the landscape architecture firm had been welcomed into the Cardno group since the April merger.

"The experience, environmental commitment and 'edge' of S.P.L.A.T. is now enhanced by the extensive expertise, strength and knowledge of Cardno," Mr Pate said.

"Cardno S.P.L.A.T. offers a range of complementary services that expand on those Cardno already offers.

"We link environmentally sustainable disciplines with engineering services to maximise results for our clients."

The partnership with S.P.L.A.T. in April is aligned with Cardno's strategic focus to acquire businesses which enhance its current infrastructure services.

Cardno S.P.L.A.T.'s clients can now access the resources of the Cardno group and consequently Cardno can offer a complete design service for land development and infrastructure projects.

Established in 1993, S.P.L.A.T. has built an enviable reputation consulting to a broad range of private companies, and state and local governments. Since then, S.P.L.A.T. has delivered a wide range of masterplanning, urban design and environmental management projects.

The firm has also taken a leading role in designing recreational areas and parks as well as residential and commercial developments.

Cardno S.P.L.A.T.'s impressive project portfolio includes Emporium in Brisbane, the Brisbane Airport Landscape Masterplan, 'Aquativity' at Southbank, the multi award winning Ecovillage at Currumbin and Edenbrooke at Sinnamon Park.

Cardno S.P.L.A.T. recently received a number of prestigious awards for their work, including those from local government and national and international professional industry bodies. The Ecovillage at Currumbin has received numerous awards including the 2007 Gold Coast City Council Urban Design Award, and the 2006 Queensland UDIA Best Small Residential Subdivision Award.

Cardno North and West Australia General Manager Paul Gardiner said the Cardno S.P.L.A.T. union was fast proving to be a major success with many exciting projects in the pipeline.

"Through S.P.L.A.T., Cardno has added a partner with new capabilities, enabling Cardno to deliver a more holistic approach," Mr Gardiner said.

"Cardno S.P.L.A.T. can now to deliver services internationally with the identity, reputation and global support of the Cardno group."

**Cardno S.P.L.A.T.'s clients can now access the resources of the Cardno group and consequently Cardno can offer a complete design service for land development and infrastructure projects.**



# A new generation of housing in Dubai

Cardno will manage infrastructure, planning and design services for the Al Anbar Low Cost Housing project in Dubai, one of the first in a new generation of housing facilities in the United Arab Emirates (UAE).

When complete, the complex will house 60,000 construction and hospitality workers employed by one of Dubai's premier development companies, Nakheel.

Al Anbar will be a self-contained city equipped with Western-style amenities such as shops, restaurants, gymnasiums and healthcare facilities, while particular attention has been given to the irrigation systems and landscaping to create a pleasant green environment.

Every aspect of the complex has been designed on a large scale to accommodate the extraordinarily large volume of people expected to call Al Anbar home.

The kitchen for the first stage alone has been designed to serve 20,000 meals in any one sitting.

Cardno's role requires coordinating traffic and transport infrastructure, water and wastewater, electricity, power, gas, irrigation and security services.

Cardno United Arab Emirates Manager Kevin Renshaw said it is incredible how quickly the project was progressing.

"Seven months ago Cardno started the project with a blank piece of paper and now we're constructing a city in the desert for 60,000 people," Mr Renshaw said.

"Nakheel plans to have 10,000 workers living here by early 2008."

Mr Renshaw said because the facility was being built in the desert, Cardno has had to overcome many design challenges. Chief among them is water supply.

"Water supply is a critical factor in the success of this project, because its progression is determined by available water supply," he said.

"There is no existing infrastructure nearby, so the development has to be self-sufficient for all utilities such as sewage treatment and electricity supply."

Cardno has committed 15 staff to work on the project, with a number of Cardno's Australian-based engineers commuting to the UAE to manage and assist with the rapid progression of the project.

Project Manager Tony Pearson said the Al Anbar project was a great example of Cardno's capability to deliver quality infrastructure design.

"The masterplanning and detailed design of the first phase was prepared and delivered in record time," Mr Pearson said.

Cardno's wealth of knowledge and breadth of skills has ensured the project meets Nakheel's high expectations.

It also demonstrates the strength of Cardno's capabilities to the industry in the UAE and greater Middle East region.

Mr Renshaw said while a completion date was yet to be confirmed, like most large construction projects in the UAE, the project was progressing at a phenomenal pace.

"Seven months ago Cardno started the project with a blank piece of paper and now we're constructing a city in the desert for 60,000 people."



**Cardno Buckland's clients and projects are synonymous with the resources sector in Western Australia. World leading companies such as BHP Billiton Iron Ore, Pilbara Iron and Hamersley Iron (part of the RioTinto Group), and OneSteel, are Cardno Buckland clients.**

## **At the forefront of the booming resources industry**

The name Buckland is well known in the Western Australian resources industry for providing innovative, cost-effective civil and structural design solutions to a wide range of clients. In September 2007 the team joined with Cardno to form Cardno Buckland.

Established in Perth in 1996, Buckland Engineers Australia has fast become a supplier of choice when it comes to designing structures for process plants and refineries, marine and offshore structures, lifting and transportation equipment, materials handling plants and industrial buildings for leading companies in the Western Australian resources sector.

Their record of accomplishment demonstrates their extensive experience and ongoing commitment to excellence and structural engineering design.

Cardno Buckland's clients and projects are synonymous with the resources sector in Western Australia. World leading companies such as BHP Billiton Iron Ore, Pilbara Iron and Hamersley Iron (part of the RioTinto Group), and OneSteel, are Cardno Buckland clients.

"Western Australia is the powerhouse of the resources industry in Australia and our projects are helping clients to deliver their products and services to the global market," said Les Wanke Cardno Buckland Manager.

"By joining Cardno we can enhance our representation in the greater Western Australian market and offer our clients an enhanced range of specialist engineering services."

For BHP Billiton Iron Ore, Cardno Buckland is currently providing the structural audit expertise for their overhead travelling crane upgrade project, which involves the re-certification of 34 existing crane support structures. The team has also been appointed to perform structural reviews of most of BHP Billiton's accommodation facilities in the Pilbara region.

In 2006 for Calibre Projects, Buckland provided Hamersley Iron with a complete structural solution for the Yandi Junction South East Expansion Project – 1500t surge bin and the associated structures. The focus of the work was to execute the detailed design of the surge bin, its support structure and the concrete footing.

"The addition of Cardno Buckland in Western Australian will add a new dimension to Cardno's offering in the region and will open up opportunities for staff to experience working in the resources sector," said Andrew Buckley Cardno Managing Director.

"With the ever increasing demand in the region for engineering professionals, the addition of Cardno Buckland to the team will boost numbers in the state to 150."



# Picking up the pieces: rehabilitating Liberia

After decades of civil unrest, Liberia's economy and infrastructure are lying in ruins.

First founded as a colony of the US after setting free slaves in West Africa, Liberia has long experienced political and social instability.

The most recent civil war, which broke out in 1980, has seen an estimated 300,000 lives lost, hundreds of thousands of people flee to neighbouring countries as refugees, and tens of thousands more displaced.

This devastation also led to a collapse of basic services, the destruction of vital civil infrastructure such as roads, water and electricity supply, and widespread loss of traditional livelihoods.

Without access to basic civil infrastructure, government assistance and institutions, rural communities became isolated and marginalised with the northern districts of Lofa, Bong and Nimba bearing the brunt of the conflict.

To help rebuild and rehabilitate Liberia, the European Community (through the European Development Fund of the Cotonou Agreement) has pledged more than US\$500m to improve and rehabilitate Liberia's social and physical infrastructure.

Cardno Agrisystems was awarded a contract to manage the implementation of the community rehabilitation component of the Conflict Rehabilitation and Capacity Building Program.

To carry out the works, Cardno Agrisystems recruited a team of national and international experts to conduct rapid rural appraisal to determine and prioritise the needs of the communities and to ensure the whole community shared the rehabilitation benefits.

Cardno Agrisystems Managing Director Dr Geoff Norman said Cardno Agrisystems engaged a number of community based organisations and non-government organisations to assist with the implementation stages for the improvement projects and programs undertaken.

"It is hoped that communities participating in the programs can learn from the experience and eventually build enough knowledge to manage the ongoing rehabilitation process first-hand," he said.

Dr Norman said the Program Steering Committee determines prioritisation and approval of the projects and programs, based on recommendations from the local technical committees (stakeholders at the county level).

"Decisions are based on a list of criteria to ensure the projects and programs result in income and employment generation, provide

access to basic services and promote re-integration within the communities," he said.

Some of the larger scale infrastructure projects supported by the program involve the rehabilitation of feeder roads and the repair and construction of road infrastructure including bridges and culverts.

Education and healthcare facilities that service the larger communities and a number of villages are also a key component of capacity building and community rehabilitation.

**"It is hoped that communities participating in the programs can learn from the experience and eventually build enough knowledge to manage the ongoing rehabilitation process first-hand."**



# Cardno Low & Hooke: a solid foundation

A vital piece in Cardno's east coast representation was added recently when Cardno merged with well respected Sydney structural engineering firm Low & Hooke Partners.

The formation of Cardno Low & Hooke, combining the resources of Low & Hooke's Leichhardt office and Cardno's structural teams in New South Wales, not only strengthens Cardno's building structures footprint in the vital New South Wales market but also fortifies its eastern seaboard presence.

Cardno Low & Hooke now stands alongside Queensland's Cardno Alexander Browne and Victoria's Cardno Grogan Richards to form an impressive trio of building structures firms covering Australia's east coast.

Cardno South East Australia and New Zealand General Manager Roger Collins-Woolcock said Low & Hooke was a strategic addition to the company and would significantly enhance the skills of Cardno's New South Wales structural team.

"The additional capacity brought by Low & Hooke will enable Cardno to bid and work on a wider range of key infrastructure projects requiring larger teams with diverse skill sets and experience," he said.

Cardno Low & Hooke Business Unit Manager Kevin Leedow said Cardno now has 70 staff dedicated solely to structural engineering in Sydney.

"When combined with the building structures teams at Gordon, Baulkham Hills, Wollongong, Newcastle and the Central Coast, there's no doubt that we are now a major player in the New South Wales market," he said.

Along with Mr Leedow, Directors Peter Waugh and Tom Krapeshlis and Principals Cosmo Farinola, Tony Yu and Garry Myers have all been with Low & Hooke for between 10 and 27 years.

They are now working with Gordon-based Manager Chris Gantt and four-decade Cardno veteran Doug McMillan to ensure the next generation of staff benefit from their experience.

"We've already established a mentoring program between the two offices, with experienced engineers from our Leichhardt office being paired with staff from the Gordon office to assist in their development and education," Mr Leedow said.

Mr Leedow takes pride in his staff, particularly singing the praises of his senior management team.

"Our senior staff members have developed a personal, hands-on approach," he said.

"Our clients have come to appreciate working with one project manager, rather than dealing with a number of people."

Mr Leedow said the firm was focused on capitalising on recent trends in structural engineering, such as an increased demand for aged care accommodation and inner-city dwellings, and higher levels of government and private spending on schools.

Established in 1978, Low & Hooke has provided services to the Shore School North Sydney, including the Smith Auditorium, library and gymnasium.

Recent projects include the design of the Woolooware Shores Retirement Village and high-rise residential tower blocks at Jacksons Landing, Pyrmont, for Lend Lease Developments.

**"The additional capacity brought by Low & Hooke will enable Cardno to bid and work on a wider range of key infrastructure projects requiring larger teams with diverse skill sets and experience."**



# Cardno's plan for the Pilbara

Cardno BSD's Waste Management team based in Western Australia has developed a sustainable waste management plan for the future of the Pilbara region.

Located in the north of WA, the Pilbara covers more than 505,000 square kilometres (194,900 square miles) and is home to approximately 50,000 people across the shires of Roebourne, Ashburton and East Pilbara and the Town of Port Headland. These councils formed the Pilbara Regional Council (PRC) in 2000.

In November 2006, the PRC formally recognised the need to better manage the region's municipal solid waste and to provide the community with recycling and other alternate waste management options.

Cardno BSD was contracted to review the region's waste management practices and to develop an integrated solution to waste management for the four local government authorities.

Cardno BSD Waste Management Discipline Leader John King said a three-phase approach was developed to facilitate improved recycling, minimise the environmental impact and reduce the volume of waste disposed of to landfill, therefore increasing the life of landfill sites in the area.

"Our mission was to improve the region's waste management practices by developing a coordinated plan the PRC and member councils could implement," he said.

**"The implementation of the plan will aid in minimising the risk of environmental damage or pollution, extend the life of landfill sites and reduce the long-term operational and maintenance costs associated with the facilities."**

"To do this we visited all the local government landfill sites and facilitated discussions with and between the WA State Department for the Environment and Conservation, mining companies, waste and recycling professionals, the community and the WA Local Government Association."

Mr King said the practical plan would have a significant positive environmental impact, assist the region with its goal of minimising waste and provide a benchmark document for other WA local governments seeking to comply with the state's 'Towards Zero Waste' Program.

At its core, the plan uses best practice methods, technology and waste minimisation techniques which are appropriate for the Pilbara region. In doing so it takes into consideration some of the unique issues, such as the large distances between communities and waste management facilities.

"The implementation of the plan will aid in minimising the risk of environmental

damage or pollution, extend the life of landfill sites and reduce the long-term operational and maintenance costs associated with the facilities," Mr King said.

Pilbara Regional Council Executive Officer Adrian Ellson said the plan provided a practical approach to waste management in the Pilbara region.

"It is essential when contracting to do so within a framework of partnering. There must be confidence in each others abilities, mutual respect, teamwork and above all preparedness to work together... the Pilbara Regional Waste Management Plan developed by Cardno BSD... truly reflects the capabilities of the Pilbara Regional Council and its Member Councils..." Mr Ellson said.

The PRC's Regional Waste Management Plan was recently finalised and Cardno BSD is looking forward to assisting with its implementation.

Images below provided courtesy of Niels and Suzette Holm



## The path to free elections

In Papua New Guinea (PNG) the new government is in power and the Seventh National Parliament is already well into debates and decision making led by the re-elected Prime Minister Grand Chief Sir Michael Somare. The election is the first since the Electoral Support Program Phase 2 (ESP2) began in 2005.

After the issues surrounding the 2002 elections, the PNG Government, in partnership with the Australian Government through AusAID, is developing a new strategy to support democratic governance in PNG.

Historically, elections in PNG have been complicated. The extreme risk of armed violence, weak transport infrastructure, low levels of literacy and a topography that ranges from coastal towns and villages to mountains and remote rural areas have all impeded democratic elections in PNG.

Since 2005 a team from Cardno Acil has been working with the PNG Electoral Commission to implement ESP2.

ESP2 Program Manager Angela Griffin said the key goals of the program were to support

improvement of the electoral system in PNG through reform and development of electoral policy; increased capacity of the Electoral Commission; increased voter awareness and understanding of the electoral system; and increased organisational capacity of the Electoral Commission.

"We are providing strategic direction in planning and implementing the program and providing critical analysis of the prevailing political, economic and social situation as it relates to electoral reform and development in PNG," Ms Griffin said.

"The Cardno Acil team is responsible for the recruitment and management of personnel and advisers requested by the Program Board, procurement of approved equipment or materials and financial management of program funds."

Funded by AusAID, ESP2 aims to work with the Electoral Commission to help plan and manage elections in PNG.

Fifty-one civil society groups have so far been funded through the program to run community awareness processes on the

electoral system. Their roles include raising community awareness about what kind of person makes a good leader, how the government systems runs, how to vote using the new limited preferential voting system, women's rights within the system and reducing the risk of HIV/AIDS infection during election time.

Following the recent election, reviews undertaken by the Electoral Commission with ESP2 support have identified a series of issues to be addressed before PNG can claim to have free and clear elections.

"There is still much to be done and the focus of ESP2 over the next period will be to continue to work with the Electoral Commission to build its capacity to plan and deliver better elections in the future and support the continuation of a 'whole of government approach'," Ms Griffin said.

"Already the commissioner has plans to test new approaches, including electronic counting."

**"We are providing strategic direction in planning and implementing the program and providing critical analysis of the prevailing political, economic and social situation as it relates to electoral reform and development in PNG."**



# A winning water-wise formula

Cardno is helping to set new standards in sustainable water-saving technology through a range of innovative projects designed to minimise water use.

In the not-too-distant future, Cardno predicts engineering solutions that are less reliant on potable mains water will become commonplace across Australia, as they are in many European and Asian cities.

In the meantime Cardno engineers and designers are leading the way, helping to create tomorrow's buildings and infrastructure projects today.

To do this, Cardno has taken a leading role in incorporating a wide range of innovative water and energy-saving devices in a variety of their projects.

Cardno's Building Hydraulics and Ecologically Sustainable Development (ESD) groups in Melbourne, Canberra and Sydney have been developing innovative techniques and strategies for water-wise infrastructure since the mid 1980s.

Cardno Grogan Richards Hydraulic and ESD Group Manager Lakei Varveris said Cardno's engineers were among the first to recognise that urban development in Australia would not be sustainable unless an integrated strategy to manage all water sources was adopted.

"The Cardno group believes the goal of ESD property and building projects will be achieved only through a re-examination of conventional practices that recognises

"Our teams are multidisciplinary, ensuring access to a broad range of water saving skills, including hydraulic engineers, water resource engineers, water quality specialists, accredited building assessors, ecological and environmental engineers and scientists.

stormwater and wastewater as a resource – not a nuisance to be disposed of as quickly as possible," he said.

"Our teams are multidisciplinary, ensuring access to a broad range of water saving skills, including hydraulic engineers, water resource engineers, water quality specialists, accredited building assessors, ecological and environmental engineers and scientists.

"The Cardno group believes the wider urban development industry has only recently started to sit up and take note of the innovative water and energy-saving concepts that are available."

Mr Varveris said Australia's prolonged drought, combined with the population boom and rapid urban development, had put a strain on the nation's water resources.

"Effective water management is an increasingly relevant issue which the property and building industry needs to embrace," he said.

"State governments and city councils have been forced to secure the future supply of clean drinking water and are constantly reviewing building methods to support clean and green enterprise.

"Tougher government water and energy-saving regulations, water restrictions, Green Star building requirements and local plumbing regulations are all fuelled by dire water shortages across Australia."

Cardno has worked on a number of progressive water and energy-wise projects including Ecolinc Science and Technology Centre in Victoria, Brindabella Business Park in Canberra and the Salt resort and residential precinct development in northern New South Wales.

"These projects have attracted national acclaim and set environmental benchmarks for future development, however we cannot rest on our laurels, we need to be more innovative and stay ahead of the game," Mr Varveris said.



## Planning for the future

For more than 20 years, Gosford City Council has worked with coastal and water engineers Cardno Lawson Treloar to assess, manage and protect the region's coastal, ocean and estuarine environments.

Situated just north of Sydney, the Brisbane Water area covers approximately 170 square kilometres (65 square miles) of water in the growing Gosford area. Bordered by national park and residential areas, the catchment is used by residents, tourists and commercial fisherman.

Recently, Cardno Lawson Treloar was commissioned to undertake the Brisbane Water Foreshore Flood Study to define flood levels within the Brisbane Water Estuary.

While foreshore flood studies are not a new phenomenon, the Brisbane Water Foreshore Flood Study is unique because of its scope and complexity. The study included catchment characterisation, hydrological modelling and ocean process investigations.

Cardno Lawson Treloar conducted numerical modeling of water levels under both ocean

storm and catchment flooding situations using the advanced Defl3D modeling system.

A ground survey was also undertaken in the low-lying areas of Woy Woy and Davistown to assist with the accurate mapping and definition of the extent of any estuary foreshore flooding.

To gain greater historical understanding and information on past flooding events, Cardno Lawson Treloar also surveyed almost 6500 residents around the estuary foreshore area. The information collected in the survey was then used to validate the numerical data and survey results collected.

Doug Treloar Cardno Lawson Treloar Director and Principal Engineer said the results of the study provided information on potential water level and inundation along the foreshore areas of Brisbane Water as a result of elevated estuary levels, due to ocean storm tides, catchment flooding and local wave run-up effects.

"The quantification of such levels enables the definition of flood-prone land along

the foreshore areas, and provides a basis for future decisions regarding foreshore development," Dr Treloar said.

"Flood studies of local creeks that drain into Brisbane Water will also use the results to define their downstream boundary conditions."

The study forms part of a larger estuary management process and provides technical outcomes for the future management study and councils planning policy implementation.

"The management process involves a Data Compilation Study, Estuary Processes Study (which Cardno Lawson Treloar is also completing), Foreshore Flood Study, Estuary Management Study, Estuary Management Plan and Monitor and Review of Management Plan," Dr Treloar said.

"Although our recent study drew conclusions which can be actioned now, the council will be cautious in implementing the study findings until the entire management process is complete."

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# People at Cardno

## Former Australian of the Year joins Cardno

In March 2007, General Peter Cosgrove (Retd) was appointed a Non Executive Director of Cardno.

General Cosgrove served in the Australian Army from 1965 and was Chief of the Australian Defence Force from July 2002 until retiring in July 2005. He was appointed a Companion of the Military Division of the Order of Australia in 2000 and was Australian of the Year in 2001.

Cardno Chairman John Massey in announcing the appointment said General Cosgrove's extensive experience will be invaluable as Cardno

continues its successful growth strategy both in Australia and internationally.

"General Cosgrove has an incredibly broad range of experience, including his demonstrated abilities in leadership, logistics, project management, developing countries and geo-political activities, which are particularly relevant to the growth of both our international development assistance and engineering infrastructure divisions," Mr Massey said.

General Cosgrove said he was pleased to join Cardno while it is growing strongly.

General Cosgrove is a Director of Qantas, Vice

Chairman of the Australian Rugby Union, Consultant to Deloitte Touche Tohmatsu and a Fellow of the Australian Institute of Company Directors. He is also Chairman of the South Australian Defence Industry Advisory Board and a Member of the Australian War Memorial Council.

*Peter Cosgrove enjoying lunch with Cardno staff.*



## The highest honour

In front of more than 600 people at the opening of the International Public Works Conference in Cairns, Cardno BSD's Frank Bryant was awarded the Institute of Public Works Engineering Australia's (IPWEA) highest honour, the Keith H Wood Medal.



The peer-nominated medal recognises an outstanding engineer and is awarded by the Municipal Engineering Foundation in honour of Keith H Wood AM who helped establish what is now known as the IPWEA.

Cardno Managing Director Andrew Buckley said Cardno was extremely proud of Mr Bryant's achievements and contribution to the profession, noting the importance of industry associations.

"Industry associations provide a platform for shared learning, mentoring and importantly

*Frank Bryant at the IPWEA Conference.*

provide a voice for issues affecting the profession," said Mr Buckley.

Mr Bryant has made a significant contribution to the public works industry as founding partner of consulting firm BSD Consulting Engineers (now Cardno BSD).

Among Mr Bryant's achievements for the institute are the formation and ongoing operation of the WA Foundation; the development and support for groundbreaking road management software used by almost all councils in WA (ROMAN); and driving the growth in membership and achieving financial independence for the WA Division of the IPWEA.

## On the move

In July 2007 Michael Renshaw was appointed General Manager for North America and relocated to Portland, Oregon.

*Michael Renshaw.*



Before moving to the US, Mr Renshaw's challenge was to develop new business and markets for Cardno and oversee the operation of Cardno's software subsidiary, XP Software. Mr Renshaw also established Cardno's presence in the United Arab Emirates, opening an office in Abu Dhabi in 2006. In his time in the UAE, Cardno was appointed the government advisor for the world's largest sewerage privatisation project, and to undertake masterplanning for the marinas on the Palm Jebel Ali, the world's largest marina project.

More recently Mr Renshaw has been involved in the development of Cardno's North American growth strategy. He now has responsibility for the recent acquisitions of EMG and WRG and developing ongoing growth opportunities in this market and will also continue to guide Cardno's UAE operation and XP Software.

Mr Renshaw joined Cardno in February 2003 as the Group Business Development Manager in Brisbane.

## Jacinta Holmick named Sydney's young engineer of the year

Cardno Senior Project Manager Jacinta Holmick is a contender for the title of Engineers Australia's top young professional engineer after winning the Sydney section of the coveted award.

Ms Holmick was named Engineers Australia's Sydney Division Young Professional Engineer of the Year at its Awards for Excellence and will now compete against other state and territory winners for the national title.

The Engineers Australia award comes after Ms Holmick recently won Cardno's Richard Kell Scholarship, an annual award presented to an outstanding young engineer in the company.

As part of the scholarship she participated in the prestigious International Federation of Consulting Engineers (FIDIC) Young Professionals Management Training Program, culminating in the annual international FIDIC conference in Singapore in September.

Ms Holmick said winning the Sydney Young Professional Engineer of the Year and the Richard Kell Scholarship has made a real impact on her professional development.

"Both awards have presented many opportunities for me to participate in training and networking," she said.



*Dick Kell (left) and Jacinta Holmick (right).*

# News at Cardno

## Cardno works with Malaysian Government to save every drop

Cardno has been commissioned by the Sarawak State Government to review and implement sustainable water infrastructure networks and procedures.

Cardno will be responsible for assessing and evaluating submissions, and inspecting and assessing existing water infrastructure throughout Sarawak, including the review of water treatment works and associated infrastructure.

Cardno Acil Project Director Ed Vowles said Cardno would work with the Sarawak State Government to develop a sustainable total management approach.

"In this new role our aim is to work with the Sarawak State Government to facilitate and adopt a total management approach to water supply and to assist the government to prepare for future project needs," Mr Vowles said.

Recently, a delegation of Malaysian officials headed by Awang Tengah Bin Ali Hassin, the Second Minister of Planning and Resource Management and the Minister of Public Utilities, and Assistant Minister, Sylvester Entri Anak Muran, with other members of the Sarawak State Government and various Sarawak water boards, spent

time in Australia to view the benefits and efficiencies of centrally controlled water supply networks.

The Malaysian delegates were interested in viewing the improved filtration processes and other procedures for improving the effectiveness of existing facilities implemented by Australian water authorities.

Minister Dato' Sri Awang Tengah (left), Cardno Managing Director Andrew Buckley (middle), Deputy State Secretary Datuk Morshidi (right).



## Another Record Year for Cardno

In August Cardno announced record revenue of \$265.3 million for the 2007 financial year an increase of 42.1% on the previous year.

During the year Cardno consolidated its position as a global provider of physical and social infrastructure services increasing the number of offices worldwide from 26 to 45.

Cardno Managing Director Andrew Buckley said the acquisitions in the United States and New Zealand infrastructure markets as well as EMG, a US based international development assistance company, positions Cardno well for further growth.

"Our financial performance demonstrates our commitment to partnering with businesses that add value and support our corporate vision and growth plans," Mr Buckley said.

Eight acquisitions were undertaken during the year, increasing the group's revenue by \$53.9 million in the period and extending both technical capability and geographic reach.

"On an annualised basis our revenue is now more than \$360 million assuming a full year contribution from our new partners," he said.

"Cardno intends to continue its successful growth strategy and will look for opportunities worldwide while integrating recent acquisitions."

## Acquisitions during the period included:

**Stanwill Consulting Engineers – September 2006:** Cardno acquired the Newcastle based consulting engineers adding representation in New South Wales' second largest city.

**Grogan Richards Consulting Engineers – December 2006:** Cardno acquired this 110 person structural and civil firm consolidating its position in Victoria.

**Saraceni Engineering Group – February 2007:** Cardno added structural capability to its Western Australian operations via the purchase of specialist consultant, Saraceni Engineering Group.

**S.P.L.A.T. – May 2007:** To build on the strength of its established urban development business, Cardno acquired S.P.L.A.T., adding landscape architecture to its capability portfolio.

**Emerging Markets Group (EMG) – May 2007:** With the EMG acquisition, Cardno expanded its international development assistance capabilities and now has access to leading aid agency, USAID.

**WRG Design Inc. – June 2007:** In purchasing WRG Design, Cardno extended its physical infrastructure capability to the US, increasing staff numbers in the region to 480.

**Low & Hooke Partners – June 2007:** Cardno boosted its structural capabilities in New South Wales with the acquisition of Low & Hooke.

**Truebridge Callender Beach (TCB) – June 2007:** Cardno acquired the long established 110 person firm TCB to initiate a presence in New Zealand's engineering, surveying and environmental services market.

## Improving urban stormwater management

With human life and property damage often at risk, engineers and city planners can never be too careful when it comes to urban flood protection.

Recent storm and flooding disasters throughout the world have highlighted the need for governments to prepare for the effects of climate change and extreme weather events in urban environments.

Engineers are currently faced with the growing issue of managing and predicting flood run-off with complicated drainage and pipe systems impacted by continual population growth and ageing infrastructure.

The use of 2D models has become the latest trend in Australia and the US. As a stormwater management tool, 2D models are more hydraulically accurate to real-life overland flows and produce better graphic results, which enable decision makers to

plan better. Cardno's software company, XP Software, has integrated 2D modelling into its existing xpswmm software packages to dynamically link its 1D models with 2D hydrodynamic calculations.

Colby Manwaring President of XP Software said the 1D-2D linked models allow engineers to produce realistic and graphic flooding simulations, which are easily presented to decision makers who may not be well versed with the technical aspects of water models.

"We've made real-life scenario software more affordable and accessible, enabling engineering and planning teams to make informed choices to better manage risks and protect the community," he said.

In the past, assessments of flood risks have been based on hydraulic models that consider flow along major watercourses, open channels and major pipes in the stormwater collection system, but not overland flow.

"Even modelling all of the pipes within a system doesn't allow risk managers to accurately assess localised flooding depths, durations and flow paths in urban areas," Mr Manwaring said.

"With 2D applications, risk managers can identify individual properties and specific locations that will be at risk in major flooding events and quantify the depth of water in these specific areas."

XP Software's xpswmm 2D model.



## Cardno teams blitz SIA NSW Awards for Excellence

Success was in the 'water' when Cardno won four awards at the Stormwater Industry Association NSW 2007 Awards for Excellence. The awards recognise the dedication of community groups, professional organisations and individuals to improving stormwater management practices.

The project winners were diverse, confirming Cardno's leading position in stormwater management.

Cardno's four awards were:

- ▶ Award for Excellence in Stormwater Management for the Darling Harbour Stormwater Harvesting System, awarded jointly to Cardno Willing and the Sydney Harbour Foreshore Authority.
- ▶ Award for Excellence in Stormwater Research for the Penrith Broadscale Overland Flow Flood Study, awarded to Cardno Lawson Treloar.
- ▶ Award for Excellence in Stormwater Software Development for the Hornsby

Integrated Catchment Assessment and Management (HICAM), jointly awarded to Cardno Willing and the Integrated Catchment Assessment and Management Centre (iCAM) at ANU.

- ▶ High Commendation in Stormwater Measure for the William Slim Drive PMF Basin, awarded to Cardno Young.

Dr Brett Phillips, Australasian Discipline Leader for Water Engineering said he was proud of the recognition of the quality of stormwater management services and products which members of the Cardno group have delivered to clients in Australia and internationally.

"The awards are testament to Cardno's multidisciplinary range of services, especially in the area of stormwater management," he said.

"We are focused on delivering the best and most innovative stormwater services and products as part of our commitment to sustainable new development and redevelopment."

## Success was in the 'water' when Cardno won four awards at the Stormwater Industry Association NSW 2007 Awards for Excellence.



Brett Phillips (second right) with award recipients.



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