

# GHD NEWS

ISSUE 131

## REINVIGORATING ECONOMIES

Why integrated transport is the key to stimulating economic activity

## FEATURE: DEER PARK BYPASS

Boosting transport efficiency and regenerating Melbourne west

## OPINION: THE NEW FRONTIER

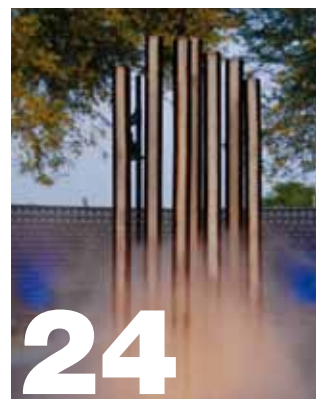
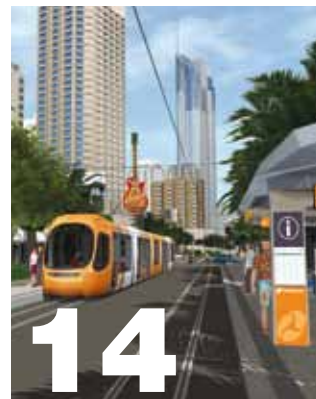
A conversation with Ian Dawson, GHD Global Leader Transport





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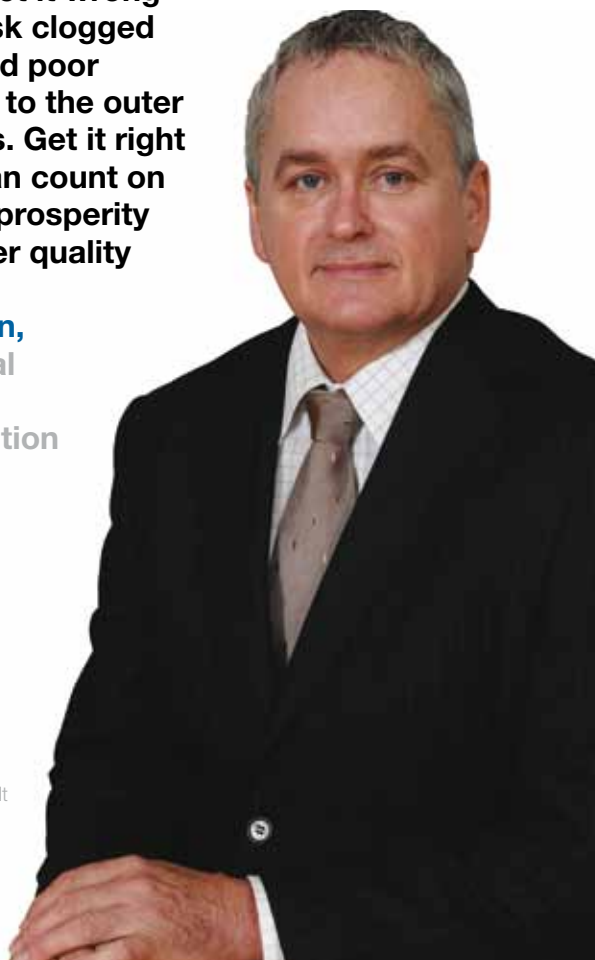
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**"Transport infrastructure can be the life or death of a city. Get it wrong and you risk clogged arteries and poor circulation to the outer extremities. Get it right and you can count on increased prosperity and a better quality of life."**

**Ian Dawson,**  
GHD Global  
Leader,  
Transportation

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## Accomplish more together



**W**elcome to the new format of GHD NEWS. This publication aims to reflect our enduring commitment, to you, our clients, and to the collaborative approach our people adopt towards project delivery.

We are also taking this opportunity to introduce you to our new strategy. **Accomplish More Together** builds on the success of our previous strategy, by expanding the skills and experience of our people into a collaborative, integrated global community with one aim - to better support your needs.

**Accomplish More Together** drives a high level of focus, greater operational flexibility and a deep commitment to relationships, leadership and values, to enable us to deliver an exceptional client experience every time. We are confident that as we continue to work closely with you, more sustained outcomes can be achieved.

This issue of GHD News is themed around the concept of Integrated Transport, a topic that is garnering considerable interest around all corners of the globe. In the pages that follow, we discuss the need for transport infrastructure that is integrated, efficient, people-friendly and sensitive to the environment. We also showcase examples of landmark transport projects including the Deer Park Bypass in Melbourne and the Gold Coast Rapid Transit system, and highlight the findings from some recent studies into intermodal terminals and hubs in Australia.

Other projects of interest include managing potential dust amenity issues in Western Australia and assessing risk for one of the world's largest diversified mining and natural resources group in Brazil. North America continues to be a market of great significance and GHD is involved in an impressive variety of water projects, from the City of Scottsdale booster pump station to desalination for California.

Our long-standing commitment to enhancing the lives of communities around the world is evidenced by our work in Vietnam and China, as well as the involvement of our people in activities ranging from engineering aid to bushfire support, World Environment Day and Funflight.

The GHD Board also notes the passing of Ben Fink, a former Managing Director and Chairman at GHD, as a great loss to the community.

We trust you will enjoy reading this issue and we invite you to comment on the new format and consider submitting your stories directly to [news@ghd.com](mailto:news@ghd.com) ■

*Des Whybird*

**Des Whybird**  
Chairman

*Ian Shepherd*

**Ian Shepherd**  
Chief Executive Officer



## Accomplish **more** with GHD

For clients focused on realising sustainable outcomes, GHD delivers an international professional services network committed to providing the highest standard of multi-disciplinary services. Harnessing the capability of our people and strength of our network, GHD helps clients, accomplish more in the global

markets of water, energy & resources, environment, property & buildings and transportation.

Visit [www.ghd.com](http://www.ghd.com) to find out how we can work with you to address today's issues with solutions that anticipate tomorrow's challenges.

**WATER | ENERGY & RESOURCES | ENVIRONMENT | PROPERTY & BUILDINGS | TRANSPORTATION**





Nick Apostolidis



Warren Traves



Stephen Trainor

## Sharper focus

### GHD is reshaping its business around the client experience.

**O**ur new strategy, launched in April, is aptly titled *Accomplish More Together* because we recognise that the best outcomes going forward will be achieved if we continue to work in partnership with our clients.

We have restructured our business to make it more accessible to clients, focusing on the global markets of water, energy and resources, environment, property and buildings and transportation. Our global leaders (featured here) will provide coordination and direction for these markets. They will be assisted by a number of business leaders that will manage specific market sectors.

We have systems in place and our people are committed to collaborate across our global network of 6000 people so you get the appropriate technical skill for the job, no matter where you are in the world.

And we will be doing a lot more listening (and talking to clients) in our efforts to achieve great results together.

**Nick Apostolidis**  
General Manager  
Client Development

### Warren Traves, Global Leader, Water

As Engineering Manager on the Western Corridor Recycled Water Project in Queensland, Australia – one of the largest recycled water projects – Warren plays a pivotal role in managing strategic water projects for GHD. He has more than 20 years' experience in the water industry.

**What I'm reading:** *A steroid hit the earth* which is a collection of humorous and sometimes unfortunate misprints. Maybe it's just my sense of humour, but I often have to put the book down because I'm laughing so much.

**Greatest personal achievement:** The recent delivery of the Western Corridor project on time and on budget to meet some very tough legislated dates. It was a fantastic collaborative effort working as part of a virtual team drawn from client and consultant resources.

**Greatest challenge facing our industry today:** Convincing governments on the whole that we need to reinvest the profits from water businesses into asset renewals and refurbishment to avoid a crisis in 20 years' time.

**What I'd like to see on the front page in 2020:** Universal endorsement of potable recycling as a preferred source of water in our communities.

### Stephen Trainor, Global Leader, Environment

Stephen is continuing his role as head of our environment business and is our delegate to the World Business Council for Sustainable Development. He is a specialist in environmental management and contaminated site assessment and has acted as a team leader or advisor on projects across a dozen countries.

**What I'm reading:** *Open up and Bleed*, the biography of Iggy Pop. Did you know he has a single figure golf handicap?

**Greatest personal achievement:** GHD's Our Planet Event in 2007. This brought us together with over 800 clients for a thought-provoking discussion on sustainability. Having Al Gore as keynote speaker was also pretty cool.

**Greatest challenge facing our industry today:** Managing the long-term impacts that climate change will have on society.

**What I'd like to see on the front page in 2020:** "Tasmanian Tiger back from extinction" or "Environmental flows in Murray River secured".



Pat O'Dwyer

### Pat O'Dwyer, Global Leader, Energy & Resources

Pat's focus over the past few years has been on winning and delivering major multi-disciplinary projects, with particular emphasis on alliances. He is pulling his industry boots on again, having spent almost 30 years working in mining, metals and energy before joining GHD, including 17 years working for a base metal miner and refiner.

**What I'm reading:** *Skunk Works* – an amazing story about the group that developed the Stealth Fighter technology. The book demonstrates the inventive nature of the human race.

**Greatest personal achievement:** The development of people to realise their often unknown potential. I have been lucky enough to work with teams who have achieved that – whether it is on the football field, in the development of new mines or in training our people.

**Greatest challenge facing our industry today:** The step up in efficiency, innovation and behaviours that our clients face with the change from a carbon-based economy is huge. However, history has shown that our clients have succeeded in leading the way with many other changes and innovations in the past two decades.

**What I'd like to see on the front page in 2020:** As the biggest challenge will be in the energy and efficiency sectors for industry, GHD's aim will be to help clients reduce their reliance on energy and also help society make sure that by 2020 at least 20 percent of our energy is from resources that either are renewable or are not carbon-based.



Ian Dawson

### Ian Dawson, Global Leader, Transportation

Ian has spent the past 20 years looking at better ways to transport people and products. He has overseen the design of some of the most important road and rail projects in Australia's largest city, Sydney, and has managed major port redevelopments on Australia's east coast.

**What I'm reading:** *The Unlikely Voyage of Jack de Crow*, by A.J.MacKinnon – a true life story about an odyssey on an 11-ft mirror dinghy, from North Wales to the Black Sea, through 12 countries and 282 lochs.

**Greatest personal achievement:** Project managing the fast-tracked design, approval and construction of Australia's largest land-based secure disposal of contaminated marine sediment, which then allowed expansion of Australia's largest coal port to be delivered six months ahead of schedule.

**Greatest challenge facing our industry today:** Poorly planned urbanisation and urban consolidation is contributing to traffic congestion in our major cities for both passengers and freight.

**What I'd like to see on the front page in 2020:** "Last car leaves CBD" or "Final link in Cairns to Melbourne Inland Rail Link reaches completion". Or how about "Australia's revolutionary hydrogen plane circumnavigates the globe in 24 hours?"



Barry Potter

### Barry Potter, Global Leader, Property & Buildings

Barry will relocate from New Zealand to Hong Kong in September to be at the heart of the global property industry. He is a project director who brings a wealth of experience in the property and buildings industry and has worked on major projects across the globe including combined cycle power stations, healthcare projects, hotels, and education and commercial facilities.

**What I'm reading:** I am very interested in history and am currently reading two books; *The Middle East – A History of the Last 2000 Years*, which I started reading recently while in Doha, and I'm re-reading Joshua Slocum's autobiography *Sailing Alone Around the World*.

**Most satisfying personal achievement:** Working on projects with clients using a collaborative approach. This occurred in Singapore where I worked closely with a major constructor on the design and build of large, complex hotels, highways and commercial developments, often on very difficult sites and ground conditions. By truly collaborating, we found innovative solutions to many challenges that on first review seemed almost impossible to solve.

**Greatest challenge facing our industry today:** The current and future shortage of skilled technical professionals and technicians. People are essential to our future and we must invest in training and development.

**What I would like to see on the front page in 2020:** GHD reported as one of the top three global professional technical services firms with truly worldwide reach and a reputation for great solutions and outstanding service delivery. We are already well on the way. ■



**Transport infrastructure can be the life or death of a city. Get it wrong and you risk clogged arteries and poor circulation to the outer extremities. Get it right and you can count on increased prosperity and a better quality of life.**

**Ageing infrastructure, urban sprawl and growing populations mean many first world countries are now experiencing significant demands on available funding for transport infrastructure. Decision-makers have much to contemplate – the sustainability and ongoing cost of their transport infrastructure, environmental management, liveability of cities and the commercial payback and efficiency of major infrastructure investments.**

**Ian Dawson talks about the benefits of integrated transport planning.**

### **What do you mean when you talk about “integrated transport planning”?**

Integrated transport planning is about looking at the overall transport task and its interface with its users, its surrounds and the systems that serve it.

At a macro level, it is about assessing our transport and access needs from a multi-modal perspective with a clear focus on what value it can bring to the whole community and how to extract the best overall value from each investment.

When it comes to the detail, integrated solutions start with a range of options that consider how a project will interface and integrate with its surrounds, keeping land use, transport, and environmental and social issues in mind. Integrated solutions also bring together different disciplines to provide a sound outcome.

The connection of land use planning and transport policy is a key element in an integrated transport solution.

**Urban congestion has become a significant problem for cities around the world. What do we have to learn from the leaders in this field?**

The cities that are leading the field in terms of addressing urban congestion are those which recognise the economic, environmental and social benefits that a well-planned and intelligently developed transport system

can bring to the city in terms of moving people, goods and services around more efficiently. They have garnered strong buy-in from government and key stakeholders (including the community) and undertaken robust integrated transport planning processes, resulting in long term land use plans which interface with the strategic transport plans. They have also focused carefully on the true costs and benefits of different options and the necessity for development of strong business cases/funding plans and introduced non-infrastructure solutions like demand pricing and smart technology. These cities have demonstrated a willingness to take the necessary hard decisions and ‘stay the course’, and maintained a strong focus on balancing the needs of different users of their urban transport networks, for example, public transport, private transport and freight.

There are plenty of cities that are achieving great outcomes in this area – not just the large, well-recognised ones like London with its congestion cordon. Many other places are improving rapidly, albeit from a lower base, including Perth in Australia or Vancouver in Canada.

### **How can technology help to improve transport outcomes?**

There has been a lot of attention paid to Intelligent Transport Systems (ITS) around the globe. ITS is an umbrella term for a range of information technology-led systems in transport. For example, integrated ticketing and smart cards have now been implemented in many places to make it easier for people to make their trip on public transport. The implementation of real-time travel information is also helping to increase the popularity of public transport as well as to run transport more safely and efficiently.

The best outcomes result from applying technology that is appropriate to a particular need or situation, rather than approaching a problem with a preconceived solution in mind.

### **What are the benefits of whole-of-life-cycle planning for transport infrastructure?**

Transport infrastructure is inherently expensive and quite a

lot of post-WWII infrastructure now requires significant maintenance and renewal. By using a well-conceived approach to asset management, infrastructure owners can proactively determine a long term strategy that provides certainty in budget management with limited surprises. In some cases, this approach can also save on unnecessary over-design of new infrastructure.

Transport infrastructure is crucial to the success of a country’s economy and the quality of life of its people. Long-life assets shouldn’t be constrained by short-term thinking.

### **How has the economic slowdown affected your industry?**

There has been some slowing in freight-related projects, however a resurgence of urbanisation in China and Asia is being predicted within the next 6 to 18 months, which will lead to a recovery in the resources sector. The recovery of the resources industry and associated expansions will in turn generate the need for quite extensive additional and upgraded transport infrastructure.

Government stimulus packages are helping to accelerate the implementation of transport infrastructure projects around the world, particularly in the public transport sector.

### **We are in challenging times when it comes to funding major projects. What alternatives are there to building from scratch?**

The first step is to implement sound asset management principles to get more out of our existing infrastructure, and to use our available transport networks and corridors more efficiently.

There is a looming issue over private sector funding of transport infrastructure, particularly in terms of patronage risk, following the effective failure of a number of PPPs in Australia recently. There may be greater interest from private investors in funding the more predictable freight sector, although the current plans across government and the private sector to sell transport assets seem to be generating mixed reactions.

There is also currently considerable debate over the development of

single user as opposed to common-user infrastructure in Australia. This debate centres around the efficiencies in single operator systems compared with the better utilisation of costly infrastructure by multiple industry participants and the lowering of barriers to new participants entering the market.

### **What do you see as the most pressing issue for the transport industry globally?**

Transport is a broad sector, but in terms of land freight movement, the major challenge in Australia is to continue to achieve a modal shift from road to rail and to continue to reduce the unit cost per tonne/kilometre across the freight task. This modal shift will also result in a significant reduction in greenhouse gas emissions. To this end, there is already some momentum to electrify heavy-haul freight rail lines and move away from reliance on diesel power.

In the urban transport sector, a key challenge is to improve accessibility while managing urban congestion. This can be achieved by providing effective public transport systems – extensive cycleway networks and an attractive pedestrian environment, along with incentives to reduce the growth in car traffic.

### **If we really embraced the concept of integrated transport solutions, what would cities look like in the future?**

We would have inter-linked city centres within a broader, sustainable city. The transport network would be made up of corridors served by modes appropriate to the surrounding land uses.

Inefficiencies occur when transport is not well matched to the surrounding land use, and can be seen in results such as congestion or infrastructure that sits empty for most of the time. This leads to poor social outcomes.

If we really embraced integrated transport solutions, the real evidence would be in the improved prosperity and quality of life within our urban areas. ■

An interview with  
**Ian Dawson, GHD Global Leader, Transportation**





**“GHD exceeded our expectation in terms of customer service, responsiveness and in providing clever solutions to an ever changing engineering environment.”**

**Lee Arasu, Strategic Development Manager, Leighton Contractors**

## New Melbourne freeway boosts transport efficiency

**Melbourne’s brand new Deer Park Bypass, in the city’s west, is delivering significant economic, safety and environmental benefits to the community and motorists.**

**G**HD has played a pivotal role in a new AUD209 million freeway that is expected to cut peak journey times by 15 minutes. The 9.3km freeway replaces a 7km stretch of the Western Highway that contains speed restrictions and 20 intersections. The new freeway connects to the Western Highway at Caroline Springs to the Western Ring Road at Ardeer, relieving congestion in one of Melbourne’s major growth corridors.

GHD was commissioned by Leighton Contractors to design the freeway

and 14 bridges. We assembled a multi-disciplinary team that adopted a collaborative approach to undertake the design of all road, drainage and structural work, delivering over 1200 detailed design drawings within very tight deadlines. We also prepared the Environmental Management Plan and sourced groundwater on site, which was used during construction.

Tom Brock, Design Manager said, “GHD is proud to have contributed to developing the Deer Park Bypass, which is supporting the planned

regeneration of the city’s west. The freeway will improve freight efficiency and increase access to employment opportunities. But more importantly, it benefits the community by providing an efficient transport link that is fast, effective, and sensitive to the environment.”

The project presented some unique challenges, such as needing to maintain access to an existing freeway interchange at Fitzgerald Road on the Western Ring Road. The site space was limited due to existing service centres. To overcome this, our team developed a three-level structure with Fitzgerald Road at the bottom, the Western Ring Road on the second tier and an eastbound ramp passing over the top.

Another challenge was presented when the original brief requested an eastbound ramp with an angle of over 60 degrees, making design and construction difficult. We created a circular concrete column that was cast into the super structure of composite steel box girders, and post tensioned diagonally to reduce reinforcement needs and make construction easier. The bridge was subsequently constructed without major disruption to traffic.

In addition to meeting design challenges, GHD was able to help deliver the project eight months ahead of schedule and in accordance with leading environmental and sustainability criteria. To achieve this, GHD worked in close partnership with Leighton Contractors and

VicRoads to consider all stakeholder requirements and develop enhanced outcomes. Further demonstrating our collaborative approach to project delivery, we engaged a VicRoads engineer to provide input into the design.

Commenting on our performance, Lee Arasu, Strategic Development Manager, Leighton Contractors said, “GHD exceeded our expectations in terms of customer service, responsiveness and in providing clever solutions to an ever changing engineering environment.”

The Deer Park Bypass was officially opened by Victorian Premier John Brumby on Sunday 5 April 2009. ■





## The Australian infrastructure imperative

Suggested Reading



**“Infrastructure is certainly a hot topic... The community is now well aware of Australia’s infrastructure needs and its importance to stimulating economic growth.”**

**Tom Pinzone, GHD**

Organised by the Australian Financial Review (AFR), the inaugural National Infrastructure Conference was held in Sydney recently, at a time when Australia’s infrastructure deficiencies and lack of long term planning and investment have been highlighted as governments take action to deal with the current economic downturn.

GHD was the principal sponsor of the event that attracted more than 100 high level attendees including Australian federal and state ministers, industry leaders, and academics all looking for insight and direction.

The Hon Senator Stephen Conroy MP, Australian Minister for Broadband, Communications and the Digital Economy, spoke about Australia’s priorities and how the government will deliver on its infrastructure demands given the financial crisis.

GHD’s Tom Pinzone spoke about our continued involvement with projects and plans to help move Australia forward. He said, “Infrastructure is certainly a hot topic and on a daily basis, we read yet another headline. The community is now well aware of Australia’s infrastructure needs and its importance in stimulating economic growth.

“This is a major change from ten years ago when GHD started working with Engineers Australia to produce the first of the Australian and State and Territory Infrastructure Report Cards. At the time, the Report Cards joined a growing volume of opinion calling for urgent action to redress Australia’s declining infrastructure, and over the past few years there has been a significant expansion in infrastructure investment.

“The increased involvement of the Australian Government is also a major improvement and we are now seeing a much better planned, integrated and sustainable approach to infrastructure development.”

Other speakers at the conference echoed Tom’s sentiments and called for immediate infrastructure investment to keep Australia competitive in a global economy. They also spoke about the need for more efficiency in procurement to achieve lower costs. Tom says, “Long term planning is essential and making the hard decisions and commitments up-front is imperative.

“With the reduction of available private and public finance, we face a greater challenge to make sure that our limited

funds are used effectively. Positive steps have been taken and now that Infrastructure Australia’s priority list has been announced, the coordinated work must begin.

“Australia is not alone in this infrastructure imperative. Many countries have announced increased infrastructure investment as part of a range of economic stimuli. As well as the positive economic impact, this investment will help redress decades of deterioration of infrastructure, as has been highlighted by the USA, UK and Australian engineering associations in recent years. Whether part of the USD825 billion stimulus package or the proposed AUD42 billion nation building plan, we see a return to global consistency in productive capital investment with long term sustainable outcomes.” ■



## Collaboration drives unique traffic solution

Dun Laoghaire Rathdown County Council and Dublin City Council selected Clonskeagh Road, a transport corridor known to be impacted by traffic congestion and unreliable journey times, as the corridor for GHD to undertake a route optimisation pilot study.

To complete this project, GHD assembled a team of transport specialists from Ireland and New Zealand with specialist knowledge in Intelligent Traffic Systems (ITS) and Sydney Co-ordinated Adaptive Traffic System (SCATS) urban traffic control systems.

According to Gordon Hughes, Job Manager: “Our proven track-record in assisting clients use current infrastructure more efficiently through a route optimisation process was of interest to Dun Laoghaire-Rathdown and Dublin City Councils. In addition, private consultancy knowledge using SCATS is currently limited in Ireland, so our team’s capabilities in this area was particularly advantageous.”

The route optimisation approach used by GHD is essentially an

appraisal technique that aims to optimise signal and bus fleet operations, remove barriers to walking and cycling and improve standards based on current flows, functionalities, needs and priorities. GHD engineered a solution to mitigate bottlenecks and operation of traffic signals, while providing safer and more efficient vehicular and pedestrian flow.

Gordon adds: “The solution modeled by GHD provides the councils with tangible benefits from low cost investment and refinement of existing applications. More specifically, it delivers community and environmental benefits in terms of emission reductions, travel time savings and fuel efficiencies. It also presents quantifiable measures that can assist the councils to meet both European and Irish Government sustainability objectives.”

Key benefits of the study include:

- A high financial rate of return on investment for this project (Benefit Cost Ratio of 18 over 3 years).

A recent study has identified ways to **reduce traffic congestion**, improve safety and assist governments minimise greenhouse gas emissions and energy consumption in a suburb of Dublin.

- A 32% reduction in greenhouse gas emissions (665 tonnes per annum).
- A 32% reduction in energy consumption (over 250,000 litres of fuel).
- Potential improvements in economic competitiveness through a reduction in vehicle operating costs, improvements in transport network reliability and reducing journey travel times (33% average time saving).

The study findings and the process is typically used by regional authorities and councils to apply for and prioritise funding as part of an overall network management strategy.

“This project was a great example of GHD’s collaborative approach which connected the councils with our international network of professional and technical consultants to deliver advanced results,” concludes Gordon. ■





## Where the freight challenge meets the sea

A shift in thinking has signalled a **cooperation** between road and rail in Australia.

*At a time of unprecedented prosperity and in the midst of an international resources boom, there could be no more potent images of lost opportunity than the sight of queues of up to 50 vessels off three of our major ports – Australian House of Representatives Standing Committee on Transport and Regional Services, July 2007.*

A picture is worth a thousand words, or in this case, potentially thousands of millions of dollars.

Since this declaration, made at the conclusion of a landmark inquiry into Australia's freight transport network, billions of dollars have been committed to improving the movement of freight around Australia and the relationship between the country's road, rail and port networks.

There has been a revival of interest in the country's rail systems, highlighted by more than AUD4 billion in funding for rail in the May Australian budget, and the country's transport ministers have agreed to develop a national transport policy to address productivity impediments.

According to GHD's Steve Meyrick, a major shift is underway that is likely to result in a recasting of the role of government in infrastructure development in Australia – a shift of which the recent move to increase rail's share of the freight task is just one manifestation.

The 2007 inquiry by the Australian Government was preceded by a national study led by Meyrick on the role of intermodal terminals or hubs – places where freight can be easily transferred from one transport mode to another.

The study foresaw that increasing community concern at the impact of rising truck numbers on road congestion, residential amenity and the environment would drive the push for a greater use of rail in freight transport and an increasing need for intermodal hubs – social pressures that have since come to fruition.

There is also an increasing recognition that the existing approach has not worked Meyrick says.

"What's become clear is that there was something missing from that picture in terms of the overall planning and policy structure that make the bits work together," he says.

"The broader social and environmental agenda tends to favour more active leadership from government. What we have seen is governments beginning the task of trying to give effect to those aspirations and engineer the sort of modal outcomes that are acceptable to broad society."

While deficits in policy and planning were still highlighted by the National Transport Commission (NTC) as major impediments in a recent review of freight rail in Australia, Meyrick says the situation is improving, with most Australian governments developing long term strategies to deal with freight movement.

The Victorian Government's Freight Futures strategy is a good example, Meyrick says.

The strategy builds on the government's aspiration to increase the share of freight transported to Victoria's ports by rail by committing it encouraging the growth of a relatively small number of key freight activity centres, dispersed strategically around the periphery of the metropolitan area and in regional Victoria.

GHD is working on two regional intermodal terminals identified in the strategy, at Dooen, near Horsham in the state's west, and Shepparton in central Victoria.

The Wimmera Regional Intermodal Freight Hub at Dooen will improve access to ports and processing plants for western Victoria's grains industry. GHD is assisting the Horsham Rural City Council with project development and will oversee the construction of the new facility.

GHD is also working with the Greater Shepparton City Council on planning and design for the Goulburn Valley Freight and Logistics Centre, which will link producers in Victoria's food bowl to the Port of Melbourne by rail.

Government investment and market structure have also moved up the NTC agenda, and Meyrick says this will be a space to watch.

"The global financial crisis is transforming the relationship between government and the private sector in the infrastructure space," he says.

"The failure of capital markets to adequately price risk, demonstrated by recent financial events, and the private sector's waning appetite for demand-side risk, will put further pressure on governments to play an active role."

"I don't think it is back to the future in talking about wholly government-controlled and operated systems but there is a broad recognition that neither government nor the private sector can deal with infrastructure alone." ■



## UK rail footprint assessment



GHD has partnered with CenSA to give UK railways a **better picture** of their greenhouse gas emissions.

Greenhouse gas management is an essential part of any organisation's sustainability and corporate responsibility agenda. In December 2008, the United Kingdom made a commitment to reduce its national carbon dioxide emissions by at least 26 per cent by 2020 and 80 per cent by 2050, in comparison to 1990 levels. In anticipation of tough regulatory and other policy drivers, the rail sector sought to better understand its contribution to the national greenhouse gas footprint and the ways in which this can be reduced.

While rail is seen by many as the low emissions way to travel (comparing favourably against air and road on an emissions per passenger kilometre basis), there is still plenty of room for improvement. For its part, the UK Rail system comprises 15,795 route kilometres and in 2007/08 was used by a total of 49 billion passengers, an increase of 41.2% compared to the 34.7 billion of a decade earlier.

In late 2008/early 2009, GHD, in partnership with the Centre for Sustainability Accounting (CenSA), calculated the greenhouse gas footprints of RSSB and Northern Rail. Footprinting is a critical precursor to setting up any cost-effective, greenhouse gas management program. But looking 'within' to identify which emissions an organisation owns is only half the story. Some of the most cost effective reduction opportunities are to be found in the supply chain. These are emissions made by immediate suppliers and their extended supply chains in the delivery of products and services.

Until now, supply chain emissions have been difficult to measure because of the sheer number of organisations and emission sources involved. GHD and CenSA overcame this problem by employing the latest technique developed by the University of Sydney and, in the UK, by CenSA at the University of York. The technique is based on environmental input-output analysis, which uses financial data and national economic and environmental statistics to model whole-of-supply-chain emissions quickly and cost-effectively. Because it involves using pre-existing data from

financial accounts, it eliminates any need to generate and collate new data.

GHD and CenSA combined this new technique with conventional 'bottom-up' methods focused on areas such as gas and electricity consumption where primary data were readily available. The 'hybrid' assessment delivered the most advanced footprint assessment method available today. Its advantages are that it is cost-effective, incorporates the entire supply-chain, identifies the most greenhouse gas intensive activities, provides a powerful screening assessment to direct future, more detailed studies, and can easily be updated with data from other sources.

As a result, the organisations were able to get a clear and complete picture of their footprints. The importance of some of the emission sources (e.g. supply chain in relation to direct emissions) was greater than first expected, proving the value of incorporating the whole supply chain. The two UK rail organisations are introducing tailored emissions reduction programs that, thanks to GHD and CenSA, are able to incorporate a wider range of opportunities where the greatest reductions can be made for the least cost. ■





## Gold Coast to take 40,000 cars per day off the road

**“Our team was selected for its capacity to provide multi-disciplinary services and prior experience with the Sydney light rail and Melbourne tram projects.”**  
**Martin Peelgrane,**  
GHD Project Director

**GHD has been commissioned by Translink to undertake the planning and design for the Gold Coast Rapid Transit system, a project that will connect the Gold Coast Railway, currently servicing major population centres, with popular tourist destinations.**

**T**he Gold Coast is one of the fastest growing cities in Australia, with travel demands exceeding population growth. In order to tackle congestion effectively, there is a need to squeeze much more capacity from existing corridors. This new system is expected to encourage visitors and residents to use public transport in preference to cars.

The aim of the new Rapid Transit system will be to provide a quality journey from doorstep to destination. This will be the only light rail system in

operation in Queensland. The project recently received Australian government funding of AUD365 million.

Martin Peelgrane, GHD's Project Director, explains: “The Rapid Transit project will provide a frequent and reliable public transport spine, running north-south and connecting major activity hubs within the Gold Coast. It will allow existing buses to be redirected to additional services running east-west feeding the Rapid Transit system.

He adds, “GHD has provided a considerable component of the works on this project from 2006 to early 2009. Our team was selected for its capacity to provide multi-disciplinary services and prior experience with the Sydney light rail and Melbourne tram projects.”

Services provided include transport planning, traffic analysis, light rail design, social impact assessment, air quality, noise and vibration modelling, land use planning and urban design, terrestrial and aquatic ecology,

hydrology and hydraulic analysis as well as transport network integration and intelligent transport system.

The project will be developed in stages, with the route from Griffith University to Broadbeach, a total of 13 kilometres, and future extensions will be investigated.

The alignment generally runs within existing road reserves and will contain approximately 1400m of bridges including a new crossing of the Nerang River at Southport. The system is designed to run 24 hours a day 7 day a week, with 30 minute intervals during off peak times, down to 3 to 5 minute intervals during peak periods and will carry up to 5000 people per hour in a single direction.

The vehicles and the stations will incorporate a real time passenger information system (RTPIS) to provide up to date details of vehicle timetables and locations, ticketing, performance and security to both the operators and the public. The RTPIS will also have the capability to provide users with web based dynamic travel information to plan their trip prior to arriving at a Rapid Transit station.

GHD has provided innovative solutions in developing the modelling processes and methodologies for the strategic sizing of public transport vehicles and the scheduling and operation of the transport system. This objective was underpinned by the requirement to develop a model that would deliver outputs including details about the number of seats and seated passenger area requirements, total vehicle patron capacity, standing passenger density, vehicle transit type and vehicle economic life to name a few.

Ultimately the project will result in taking approximately 40,000 cars per day off the Gold Coast's road network and boost public transport utilisation from 4% to 10%. All vehicles to be used in the system will either be electric or hybrid engines to drastically reduce emissions. In the concept design, stations were designed to have solar panels on top to generate electricity that may be used in the Rapid Transit system.

The design for the system will be integrated within the road network as the major part of Gold Coast's public transport network for the next 50 years. Construction on the first stage of the Rapid Transit system is planned to be up and running in 2011. ■



**“The collaboration on this effort made the design and later construction an outstanding result.”**

**Geoff Wooden,**  
Design Delivery Manager, RailCorp

## Infrastructure design for Sydney's rail network

**A**n extensive upgrade to electric power infrastructure is underway throughout the Sydney rail network to support the introduction of new passenger trains.

RailCorp is undertaking a traction supply upgrade to consolidate and strengthen the supply network to cater for new air-conditioned passenger rolling stock currently being introduced.

GHD has been engaged to design a large number of new traction substations to be built at various locations around the network, as part of this major capital investment.

The design of the Waverton substation, which was completed in 2008, is an example of the challenges involved when addressing public transport infrastructure.

This complex assignment, adjacent to the Waverton railway station, is located on a difficult site near a major stormwater culvert and required a comprehensive range of GHD's multi-disciplinary services.

The successful completion of this project involved great teamwork between GHD and the RailCorp Traction Supplies Upgrade Group. Geoff Wooden, Design Delivery Manager for RailCorp, comments: “The collaboration on this effort made the design and later construction an outstanding result.”

These services included concept design, surveying, environmental and geotechnical investigation, along with architectural design, civil, structural, electrical and building services engineering.

“The design minimised the loss of nearby green space and provided improved landscaping of the public area. The project generated a strong level of local community interest. GHD's advice included the dissemination of ecology reports and noise assessment studies,” explains GHD's Mike Nelson.

GHD had completed the design and documentation of three other traction substations prior to Waverton and is currently completing the design of a further eight substations. ■





## CO<sub>2</sub>: Getting there sustainably

By Bill Grace,  
GHD's Manager - Sustainability

In order to be truly sustainable, transport must meet three basic criteria – it needs to safely meet our needs without compromising our health or that of the planet; it must be affordable and efficient; and it should not generate more emissions or waste than the earth has the ability to absorb.

GHD is well known for major road and rail engineering projects, and in line with our commitment to sustainable development we are helping our clients to achieve more sustainable outcomes in transport. For example, we worked with the Roads and Traffic Authority in New South Wales to develop a biodiversity offsetting strategy for the Hume Highway Duplication. The strategy aims to measure the impact of the project and

offset it through initiatives such as revegetation, research, and protection, through covenants, of existing native vegetation.

An innovative approach to community engagement on one of our most significant alliance projects, the Perth-Bunbury Highway in Western Australia, is also reaping benefits on the sustainability front. Initiatives there have included biodiesel trials for construction vehicles, recycled crushed concrete trials and a public art legacy project.

But we recognise that to achieve truly sustainable outcomes in transport, we need more than just community will. That's why GHD is a founding member and sponsor of the Australian Green

Infrastructure Council which, under the management of GHD's Antony Sprigg, is developing a rating scheme that will establish sustainability benchmarks and reward those who exceed them.

The scheme will assess energy use, greenhouse emissions, water efficiency, resource use and waste, land use and biodiversity across a broad range of infrastructure projects, from roads and bridges to major public transport projects.

Like the star-rating scheme that has been successful in the building industry, it aims to encourage developers of major projects to deliver the best possible outcome – and to educate the community to expect it. ■

## Getting there smartly

By Jeremy Stone, GHD's Manager - Innovation

It has become apparent in these tough economic times that companies are innovating not only to survive, but also to establish themselves as leaders of the future. Nowhere is this more apparent than in the transport sector, which is facing the challenges of balancing infrastructure investment with increasing demand for fast, efficient, people-friendly and sustainable transport links.

Since establishing our innovation program, GHD has collaborated closely with clients and business partners by firstly providing innovation consulting services, and secondly, inviting them to tap into our global communities of innovation.

Our range of innovation consulting services assists clients establish a

more formal approach for identifying opportunities and challenges related to their business. The framework enables solutions to be sought and developed through open innovation with their people. It also provides a whole of business platform to connect, collaborate and share experiences.

Our global communities of innovation provide an opportunity for our clients and business partners committed to innovation, to connect globally, to share innovation experiences and to identify significant challenges and opportunities and through open innovation, partner to solve and deliver.

Contact us today at  
[innovations@ghd.com.au](mailto:innovations@ghd.com.au) ■



## Dust emission study

**“By using innovative techniques, Alcoa has been provided with a calibrated, predictive model for the Kwinana residue disposal area.” James Forrest, GHD**

A dust emissions study at Kwinana, which showcased a number of innovative techniques to estimate and model dust lift-off and dispersion, will help in managing potential dust amenity issues for the neighbouring communities.

In March 2008, GHD was engaged by Alcoa World Alumina Australia to conduct the Kwinana Residue Dust Emissions Study 2008.

GHD investigated processes affecting dust lift-off and dispersion to ensure the critical processes at this site were addressed in an improved, calibrated and predictive model. This required ambient dust monitoring, micro-meteorological monitoring, data mining of historical near source and ambient dust and meteorological measurements and computational fluid dynamics (CFD) modelling.

Micro-meteorological monitoring, CFD modelling and incorporation of these techniques with extensive data analysis have not previously been used for estimation of dust emissions from the residue disposal area in Kwinana.

The study was highly detailed requiring dust and meteorology data collation and data mining from a database containing 4.6 million independent data points from 14 locations and 12 parameters over as many as 4.5 years. In addition, the modelling had to allow for local aerodynamic effects, the presence of numerous non-residue dust sources and factors such as variable wind erosion, along with mechanical and background dust components.

“By using innovative techniques, Alcoa has been provided with a calibrated, predictive model for the Kwinana residue disposal area,” says GHD's James Forrest. Our team has also provided an approach which can be refined, based on additional dust and micro-meteorological monitoring, to provide further enhancement of the model and for use in predicting the effects of future residue development scenarios.” ■







## Sustainable water management for coal seam gas production

**“We had our oil and gas people working together with our water people because together they could understand the field and how the water comes about.”**

**Nick Hudson,**  
Advanced Water  
Manager for GHD in  
Queensland

It's an incongruous sight – water being left to literally vanish in an area suffering through one of the worst droughts in history.

Every day in south-west Queensland, indeed around the world, tens of millions of litres of water are pumped to the surface by coal seam gas producers and left to dry in evaporation ponds.

It has been the most economic way for the burgeoning coal seam gas industry to dispose of the salty wastewater that is extracted in order to produce the gas.

But Australian company Santos is setting a new standard in responsible water management at its Fairview project, near Roma, by adapting water technologies from other industries

to irrigate a 2200-hectare forestry plantation.

Two million native hardwood trees are being planted at Fairview, supported by 1300km of irrigation pipeline in what will be the first large scale plantation project in the world supported by water produced from the extraction of coal seam gas.

Santos Queensland President Rick Wilkinson said, “Gas producers around the world, and particularly here in Queensland, have been working to find a way to beneficially use up to tens of megalitres of water produced each day in the extraction of gas from coal seams.

“This project delivers an innovative Australian solution to a global challenge.”

The Fairview forestry project was seeded by Santos’ desire to find a sustainable use for the water that it will produce at Fairview as it develops the multi-billion Gladstone LNG project – the first in the world to convert coal seam gas to liquefied natural gas.

GHD’s water specialists helped Santos to evaluate sustainable options for the project, drawing on 80 years’ experience in water projects across a range of industries.

Nick Hudson, Advanced Water Manager for GHD in Queensland, said the team drew inspiration from water treatment in industries such as food processing and brewing, and other intensive agricultural processes.

Extensive water quality testing found the water extracted at Fairview to have qualities that could be matched to the agro forestry application – a boon for the project because it reduced the reliance on more expensive traditional desalination.

“We had our oil and gas people working together with our water people because together they could understand the field and how the water comes about,” Hudson said.

“The water is pumped to the surface and it makes its way through a spider’s web of pipes to the plantation area. We do a minor amount of treatment, depending on the specific quality received, and then pump it out – it’s very minor treatment, really.”

Some water will be desalinated to irrigate a Leucaena crop that has the potential to significantly increase beef production in the area. Strict monitoring has been put in place to assess any impacts to groundwater, surface runoff and stream flow throughout the life of the scheme.

Growing concern over the sustainability of the coal seam gas industry’s management of water has seen the Queensland Government move to end the use of evaporation ponds as the primary means for disposing of coal seam gas water, and impose strict new environmental conditions on coal seam gas producers.

The plantation at Fairview not only puts Santos ahead of the curve, it also has the potential to deliver economic benefits through opportunities for commercial timber harvesting or carbon sequestration, or both.

Mr Wilkinson said the project also offered significant sustainable benefits to the environment and the Queensland community. ■



## Risk assessment in Brazil

GHD has won a significant project to undertake a major risk assessment project with Anglo Ferrous Brazil, a division of Anglo American, one of the world’s largest diversified mining and natural resources groups.

Our team has been commissioned to take on a Semi-Quantitative Risk Assessment (SQRATM) for the Minas Rio Project Phase 1, located in Minas Gerais State.

The project is a greenfield development with an estimated capex of USD3.5billion with production planned to start in 2011. It is expected to produce 26.5 Mtpa of pellet feed (wet base) and 3 Mtpa of lump iron ore. As one of Anglo’s largest developments, the project consists of a mine and beneficiation plant producing pellet feed which will be transported by a 500km slurry pipeline to a port, which is being constructed for export.

According to Henry Reynolds, Service Line Leader, Risk Management: “The program will be a systematic risk assessment of the major risks for the project and subsequent operational phase. We will leverage the SQRATM methodology, a GHD process that emphasises personnel engagement, identification of critical controls and assessment of the adequacy of critical controls. Today, many organisations apply SQRATM, including Rio Tinto, BHP Billiton, Exxon-Mobil, Xstrata, Newcrest, Melbourne Water, Utilities, Ports, Regulators and Major Hazard Facilities.” ■

**Above:** Santos Queensland President Rick Wilkinson at the plantation.





## Shaping the **Doha** skyline



### Lessons of the **past** are tipping the scales towards history in Doha.

**T**he 12km stretch of landscaped shoreline that is Doha's Al Corniche is a contradiction.

At one end the skyline is dominated by the futuristic towers of the West Bay business and diplomatic area, including the tornado-like Al Bidaa Tower designed by GHD.

At the other end the 80m-high minaret of the Kassem Darwish Fakhroo (Islamic Cultural Centre) overlooks the high walls and twisting alleys of Souk Waqif, a re-creation of the Standing Markets of Doha's past.

The balance between history and progress has been a delicate one in this fast-growing city, with the scales generally tipped toward the latter.

"What has been happening up until recently in the commercial sector is that developers have been looking for something iconic," says GHD's Martin Hay.

"However, this has been difficult to achieve without impacting the surroundings. There has also been a tendency to want to maximise the built structures on a piece of land. This is fine, but consideration to infrastructure such as roads needs to be given.

"As a result, there is growing recognition that a more holistic approach to developments in the region is needed. In fact, we are now seeing this evolution occurring."

Hotel developers recognised early the benefits of designing the new with the old in mind.

GHD designed the 249-room Grand Hyatt Doha in the West Bay area to meet its client's vision of something traditionally Arabic – and its guests' expectations that they'll experience something of old Qatar when they visit.

"Hotels are touristic. People like to have a feel for the country when they come to a hotel," says GHD architect Pri de Fonseca, who worked on the project.

The new Taj Exotica Golf and Spa Resort incorporates mashrabiya (carved, wooden screens) and domes in its contemporary Arabic design, but the resort's developers had more than just aesthetics in mind.

"Their brief was for something that was compatible with the region but in response to the climate as well," de Fonseca says.

"The hotel is air conditioned but the timber screening is there to help block the sun."

GHD has been similarly inspired by the practical nature of traditional Qatari architecture in its work on the Heart of Rayan residential project.

The 60 ha redevelopment features courtyard houses with internal gardens for privacy and cooling. And while it maintains the random street structure that is synonymous with the area, the design caters for sheltered car parking and more orderly traffic flow.

One of the most promising developments to date, according to Hay, is the Qatar Foundation's Heart of Doha, which aims to bridge the gap between the Doha of the past and the global city of the present.

The foundation is aiming to reverse the pattern of isolated development and urban sprawl that has led to heavy reliance on car transport in Doha.

"A great deal of effort has gone into studying historic street patterns and urban morphology to create a mixed use development that is predominantly pedestrian with increased density, compared with the typical developments in Qatar," Hay says.

"The scheme has highly integrated infrastructure and transport connections and is aiming to set new standards in sustainable development."

Hay says developers are also taking retrospective measures at ground level in some of the more developed parts of Doha.

There has been a recognition that critical infrastructure was overlooked during the recent development boom, with work now underway to improve the situation, including in the West Bay area.

"It is going to be a very spectacular skyline," Hay says of the assembly of skyscrapers on the corniche.

"It will be recognisable as Doha." ■



## Partnership helps a grand vision take shape

**A** grand vision is taking shape on the banks of the Dong Nai River in Vietnam. What is now a swampy floodplain will one day be home to close to 100,000 people.

Capitalising on its proximity to Ho Chi Minh City, three developers have acquired land in Dong Nai province with ambitions to build suburbs with modern houses and apartments, and amenities to rival those found in the west.

For now those dreams – and the successful integration of the three developments into one city – are in the hands of GHD's urban planning teams in Ho Chi Minh City and Melbourne.

Contracted to carry out masterplanning by the developers of each of the adjoining projects – Waterfront City, Aquacity and Long Hung Urban – GHD has gone beyond its consulting role to act as a coordinator between the three developers.

Andre Vanderputt, Buildings and Urban Development Manager in Vietnam, said GHD was in a unique position and had the opportunity to bring its clients together for meetings to make sure their interests were aligned.

Vietnam is experiencing a boom in the development of new suburbs and apartment buildings, driven by strong economic growth and rising home ownership aspirations.

Andre said the urban planning team has also encouraged the developers to adopt a more aspirational approach to sustainability, suggesting they carry out additional studies relating to environmental, geomorphologic, waterway and flooding issues. He said the advice had been welcomed and GHD has submitted a proposal to undertake these additional investigations.

"We have tried to push the boundaries here to encourage the investors to do more than is currently required," he said.

Watch future editions of GHD News for more information on how this project comes to life. ■





## Desalination for California

**G**HD has been selected by Poseidon Resources, in collaboration with Butier Engineers, to provide Owner's Engineers services for the development, construction, and commissioning of the USD300 million Carlsbad Seawater Desalination Project.

The Carlsbad Desalination Project consists of a 50 million gallon (approximately 200 MI) per day seawater desalination plant and associated water delivery pipelines. The facility will be a model for other desalination projects needed by the State of California in its search to diversify drinking water supplies.

As Owner's Engineers, GHD and Butier will provide general oversight and independent assessment of the performance of the Engineering Procurement Construction (EPC) Contractor relative to the delivery of the Carlsbad project. Poseidon selected the team based on a combination of their technical capabilities and past experience in regard to seawater

desalination and intimate knowledge of the Southern California water infrastructure market.

Public water agencies serving the cities of Carlsbad - Oceanside, San Marcos, San Diego, Encinitas, Solana Beach, Rancho Santa Fe, Escondido, Chula Vista, National City and unincorporated areas of the county - will be the direct beneficiaries of a new, affordable and reliable water supply developed.

According to Jason Gianquinto: "We are delighted to have the opportunity to assist the cities of San Diego County harness new water sources. We will leverage our extensive experience in water treatment and desalination around the world to provide specialist knowledge, technical skill and leading sustainable water management practices to this project."

Butier Engineering, Inc. is a construction management firm that has served public agencies, special districts, and the private sector in the delivery of heavy civil infrastructure for 32 years. The company is experienced in water/wastewater treatment facilities, large diameter pipelines, and commercial and industrial facility construction.

Poseidon Resources specialises in developing and financing water infrastructure projects, primarily seawater desalination and water treatment plants. These projects are implemented through innovative public-private partnerships in which private enterprise assumes the developmental and financial risks. ■

### Coming soon

GHD will launch a brand new website soon. Visit [www.ghd.com](http://www.ghd.com) in August to see our full range of services, news and recent projects. ■

## Benchmarking project showcases GHD's leadership in asset management



**G**HD led an international consortium to deliver the 2008 Asset Management Process Benchmarking Project for the project sponsors, Water Services Association of Australia Inc (WSAA) and the International Water Association (IWA).

A total of 42 water utilities participated in the project across Australia, New Zealand, United States, Canada, Sultanate of Oman, United Arab Emirates and Hong Kong.

This process benchmarking project is believed to be unique and unparalleled on the world stage, given the international participation and the depth of analysis and insights brought to the participating utilities.

The project, through identifying and sharing leading practices across the whole participant group, was intended to improve asset management practice across the water industry.

This exercise revealed the external and internal factors driving good asset management and

business practice, such as the level of regulatory or legislative oversight, or the corporate structure of the sector.

The participating water utilities gained considerable benefit from the guidance provided on better decision-making on asset investments. The outcomes focused specifically on delivering effective services to customers, managing risk, and understanding costs and achieving sustainable utility management.

The project culminated in a three-day Best Practices Conference in Sydney, designed to showcase leading asset management practices worldwide, and it attracted over 150 attendees.

GHD Project Director, Don Vincent said: "Many of the participants commented that this the best conference they had attended. This was because of the practical and informative presentations, the engaging and interesting program, and the networking opportunities it provided." ■





## City of Scottsdale gets a boost

The City of Scottsdale in Arizona had reason to celebrate recently when it opened the Downtown booster pump station with a commemorative ceremony.

As a part of ongoing revitalisation of the downtown area, the new booster pump station is the primary source of pressurised water to this part of the city. It also serves to supplement the existing system and provides valuable fire protection.

Designed by GHD and DWL Architects, the new booster pump station is capable of pumping up to 8,000 gallons per minute (11.5 mgd) and serves as a landmark connecting the city's local arts districts. It also creates a focal point for the Horseshoe Falls public art installation and provides a small stage area designed to accommodate art and craft exhibits, small dances or gatherings, small musical performances, and a variety of public events.

According to GHD Job Manager, Peter Chan: "This landmark project is a great example of GHD's technical experience and global leadership in the water sector. It also highlights our commitment to partnering with clients for the long term and delivering sustainable outcomes to the community. Since 2004, GHD has been involved in the Downtown Scottsdale Water Infrastructure

Revitalization Program and we have delivered a range of services including master planning, large diameter water mains and the design and construction of the pump station."

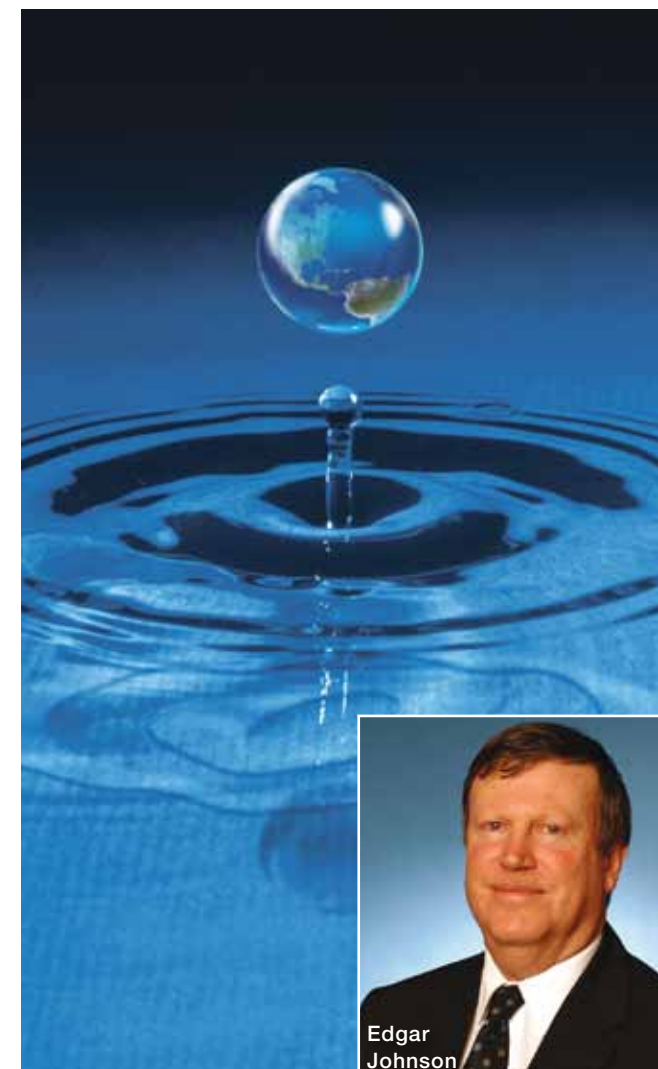
Technically, the pump consists of four vertical turbine pumps that operate on variable frequency drives in order to minimise power usage and hydraulic surges in the distribution system. The station is also equipped with flow metering, chlorine feed capabilities, backup power generator, and a SCADA communication system as well as a pressure relief valve to allow high pressure in the system back into the low pressure suction manifold.

GHD is now designing improvements and retro-fits at the old downtown pump station. Upon completion of the improvement project, the old pump station will serve as a backup.

Peter adds: "Overall, the community is pleased with the outcome of this project, particularly as the pump is located in the heart of Downtown Scottsdale, and a usable and aesthetically pleasing public space has been created serving as a link between the local arts districts." ■



**Top left:** L-R City Project Manager, Vivek Galav, GHD subconsultant (Architect), Jeremy Jones, City of Scottsdale Councilman, Wayne Ecton, and GHD Job Manager Peter Chan during the dedication ceremony.



## Water efficiency knowledge drives industry change

### Suggested Reading



## Management of Non-Revenue and Revenue Water Data

Sustainable management of water is a key issue confronting society. While there is a considerable body of knowledge on rainwater harvesting, wastewater treatment, desalination and even smart metering, little has been said or written about the management of the data on which water organisations base their decisions.

The aim of this book is to develop a comprehensive approach to data management applicable to both urban and rural water organisations. It provides valuable insight into implementing new and application of existing techniques, methods, procedures or models that consistently limit apparent water losses.

To obtain a copy of the book, visit:  
<http://www.eabooks.com.au/> ■

With a rise in water shortages around the world, sustainable management of this important resource is becoming a key issue. Traditional methods for the augmentation of water resources are well known, yet little recognition has been given to data management, upon which water organisations base their decisions.

The variability in water supplies caused by climate change and our response requires a more flexible and innovative approach to the management of water. A greater emphasis on water utilities to improve their effectiveness and efficiencies in water accounting, as well as the custody transfer of water, has motivated the requirement for guidelines in the management of water data.

GHD has been acknowledged to be at the vanguard of this field through:

- The publication by Engineers Media of 'Management of Non-revenue and Revenue Water Data', a book authored by GHD's Edgar Johnson, Service Line Leader, Water Efficiency. It outlines a comprehensive approach to data management that is applicable to water organisations, and provides valuable insight into new and existing techniques, methods, procedures and models that consistently limit apparent water losses. The originality, innovation and ingenuity of this text is borne from the fact it is the first book dealing with this subject in such a comprehensive manner.
- Edgar's appointment as Leader of the International Water Association (IWA) Apparent Loss Initiative committee of 25 international members tasked with the development of Guidance Notes on Apparent Losses. Apparent water losses are the components of non-revenue water that generally account for most revenue and efficiency losses in water management.

Most recently, Edgar was invited to provide his valuable insight at the IWA Water Loss 2009 Conference in Cape Town and at a Sensus Metering sponsored seminar in Johannesburg, South Africa. These presentations dealt with case studies that provided details into the development of our work as well as the theoretical basis to determine the economic threshold of apparent water losses. An in-depth study was also described detailing the technical requirements of an in situ calibration laboratory for large water meters. ■





## Community building from the ground up



**The Three Delta Towns (3DT) Water Supply and Sanitation Project has greatly enhanced the wellbeing of more than 280,000 people in the Mekong Delta region of Vietnam, providing clean water supply and sanitation facilities.**

In the Tochau commune, a 'suburb' of remote Ha Tien in southern Vietnam, Tran Kim Hien smiles broadly as she watches clean water spill from a solitary tap at the rear of her house.

The simple act of turning on a tap is something most of us take for granted, but access to clean, running water has significantly altered Ms Hien's life.

Before taps came to Tochau, the only source of water was a polluted well shared by the commune. Long queues and a walk laden with heavy buckets meant it would sometimes take Ms Hien, who has five children, up to four hours to get water for her family.

Since taps came to Tochau, Ms Hien has been able to spend more time selling seafood with her husband. The family has more money and Ms Hien's children are healthier and attend school more regularly.

Ha Tien is one of three towns in southern Vietnam to have benefited from the Three Delta Towns Water Supply and Sanitation Project. The project is an AUD\$80 million program jointly funded by Australia – through the Australian Agency for International Development (AusAID) – and the Vietnamese Government, and managed by GHD.

Over the past seven years, more than AUD60 million has been spent on the construction of water treatment plants in Ha Tien, Sa Dec and Bac Lieu, and associated infrastructure to deliver safe drinking water directly to homes. More than 140,000 people in the three towns now have direct access to potable water 24 hours a day.

In low-lying Bac Lieu and Sa Dec, inadequate and dirty drains have been rehabilitated or replaced to facilitate adequate evacuation of storm water after heavy rainfall. In Bac Lieu, where flooding affects almost half of the town's occupants for five months a year, the estimated economic benefit of the improvements is more than AUD2 million a year.

Uncontrolled waste dumps are being replaced with sanitary

landfills that will set a new standard for Vietnam and towns have been provided with compactor trucks and pushcarts to enable them to offer better waste collection services.

Tong Kim Quang, Chairman of the Sa Dec Town Peoples Committee, says the project has had a significant impact on the town's prosperity, enabling it to meet the demands of a growing industrial sector.

A gleaming new industrial zone on the edge of town is already fully occupied, thanks to the availability of adequate infrastructure, and Mr Quang expects the designated economic hub to grow even further with the population expected to increase from 110,000 to 150,000 by 2020.

But he and others associated with the project agree that the true impact has been felt at the most basic levels of the community – in homes and communes where dirty water and fish pond toilets are now a thing of the past.

One of the most successful, and lasting, aspects of the project has been a micro-credit loans scheme set up to enable households – particularly those in poor areas – to construct septic tank toilets.

Established with less than AUD100,000, the Sanitation Credit Scheme has resulted in the installation of more than 4400 toilets in households across the three towns.

Le Thi Hao, 3DT Community Development Project Officer, says one of the most enduring impressions she has of the project was of a Khmer woman who built a toilet in her wooden hut, funded by a loan from the scheme.

"I looked around the house and I asked her what she liked the best and she said the toilet. She said it was the most beautiful thing in her house," explained Le Thi Hao.

The benefits of clean water, good hygiene and sanitation play out in health statistics. In Ha Tien alone, the number of reported cases of diarrhoea fell by 270 percent between 2005 and 2007, and the incidence of diseases such as Typhoid, Cholera and Malaria fell by more than five times.

But there have been less obvious returns to the community, too, demonstrated by the increased capability and confidence of the Township Women's Union representatives who manage the scheme.

They have benefited from training in administration and finance and the delivery of health education programs to the benefit of the broader community. ■

## Helping people to help themselves

International development assistance (IDA) is not just about providing money. Often the most successful outcomes of IDA projects come from helping people to help themselves.

Drawing on its experience working with impoverished communities in Vietnam, GHD is providing guidance in the central coastal province of Quang Ngai to strengthen the skills and capacity of local government authorities and people to plan, manage and implement programs to reduce poverty.

The technical advisory role is part of a broader program by the Vietnamese Government to improve the lives of people living in remote, mountainous communities and ethnic minorities.

With funding from AusAID (the Australian Agency for International Development) and five other donors, the program aims to eradicate hunger by 2010 and reduce the poverty rate in more than 40 communities to below 30 percent.

GHD's community development specialists are doing similar work in China's Henan Province, funded by the Asian Development Bank (ADB).

Our team is providing advice to the Sanmenxia Municipality Government on sustainable agricultural development. Sanmenxia is one of the largest apple-growing regions in China and has become a hub for juice and concentrate production.

The technical assistance funded by the ADB aims to help farmers and processors increase their productivity in a sustainable way through training in the China Good Agricultural Practices guidelines, a feasibility assessment of the provision of agricultural insurance to participating farmers, and helping them design and develop better computerised monitoring systems. ■



**"I looked around the house and I asked her what she liked the best and she said the toilet. She said it was the most beautiful thing in her house."**

**Le Thi Hao, 3DT Community Development Project Officer**





## Duncan Rose

**D**uncan Rose has been appointed to the Board of Directors of the prestigious Buried Asset Management Institute – International (BAMI-I) in the USA. As a director, Duncan will be responsible for providing oversight and guidance to the organisation.

Duncan is a Principal Consultant and Technical Director for asset management for GHD in North America. Having served as a CEO in both local government and business, Duncan is highly experienced in local governmental management. Duncan has served as a county manager, is a co-author of WEF's best selling textbook Managing the Water and Wastewater Utility, and taught graduate level governmental financial management at Florida State for 9 years as adjunct faculty. ■

## Award for customer care

**I**mproving customer relationships through alliancing was the focus of an award winning paper by Justin Connolly from our Auckland office.

Entitled 'Better Customer Care through Alliancing', the paper was authored by Justin Connolly in collaboration with alliance colleague Tania Darby from Opus. It was presented at the INGENIUM Conference in 2008 and received the 'Best Technical Paper' award.

The paper focuses on the challenges faced by the Clear Harbour Alliance when improving customer care for client Metrowater in Auckland, and the solutions implemented. To view a copy of the paper, visit: <http://www.ghd.com.au/pages/JustinConnollyBetterCustomerCareThroughAlliancingGHD.pdf>

The Clear Harbour Alliance has recently won a New Zealand Planning Institute 'Best Practice Award', recognising the project's excellence in community engagement. ■



## Designs on the top job

**G**HD architect Melinda Dodson has become the national president of the Australian Institute of Architects.

She is the youngest person and only the second woman ever to be elected to the position.

The new role gives her a platform from which to tackle an issue she is passionate about – better communication between architects and their clients.

"When you first graduate as an architect, you think it's about the architecture but what you don't realise is the importance of the partnership between you, the client and the rest of the team," she said.

Melinda said a major communication breakdown on a large building project taught her the value of taking a step back from the design process, and her attachment to it, and really listening to the needs of her clients. ■



Photo: Melinda pictured in the centre, flanked by GHD Architecture Leaders, Gavan Ranger on her left and Paul Thatcher on her right.

## Community wins – GHD wins

**C**ongratulations to the Planning team in our Canberra office for winning the Social and Community Based Planning Award for their project, 'Future Use of Former School Sites', in conjunction with Purdon Associates.

PIA judges combined GHD's project, 'Redeveloping Community Sites (Former ACT Schools - Community Consultation)' with another nominated project, 'Further Use of Former ACT School Sites - Community Consultation' by Purdon Associates, under a new project title, 'Future Use of Former School Sites'.

According to the PIA: "These two projects, which followed each other, demonstrate a most effective consultation process dealing with one of the most challenging issues facing many cities, the closure of schools. It was politically and emotionally charged, but was successfully navigated in the end through a combination of excellent consultation processes, and skilled political management."

As a result of the project, the government benefited through a better understanding of community values and expectations for the sites, the community benefited through an improved communication process during which time the government and the community laid out parameters for a range of potential future uses. A number of community interests was represented through non-



GHD's Viv Straw pictured with the award.

confrontational communication processes that were interactive and iterative. Some of these were web-based, while others were community meeting-based processes. Ultimately it was the mixture of web and face-to-face processes that added value to the overall consultation outcome. ■



## Future leaders

**K**atja de Guzman (pictured right) and **Jem Baldisimo** (pictured left) from our Philippines office are making their presence felt in the business arena.

**Katja de Guzman** was selected as one of two delegates in a talent pool of 100 to represent the Philippines in the project management and leadership training programme, 'Developing Climate Solutions' in Kanagawa, Japan.

**Jem Baldisimo**, also a member of our Environment Group, is currently in Melbourne, as one of ten awardees of the prestigious Australian Leadership Award (ALA) scholarship for 2009. The ALA Scholarship is one of five Australian government scholarship programs managed by the Australian Agency for International Development (AusAID). ■

## Gerry Hook's Dashers (GHD) Win Calgary Marathon

**A**A team of people affectionately known as the 'Gerry Hook's Dashers (GHD)' have won first place in their division for the 4x10,000m course of the HSBC Calgary Marathon in Canada.

Demonstrating the collaborative spirit of our recently integrated US business, the team consisted of Tim Taber from Cazenovia, NY, Marcia Medina, Seattle, WA, Karl Tobin, Flagstaff, AZ and Peter Chan, from Phoenix, AZ.

The race was a fundraiser for the Canadian Diabetes Society and the team coined its name – the Gerry Hook's Dashers – as a mark of respect for Gerald Hook, President of GHD Inc. Gerald's brother, Paul Hook, passed away recently from diabetes-related complications.

While Gerald Hook usually shortens his name to Jerry – the team used the name 'Gerry' in this instance to form an acronym for GHD. ■



(From L to R): Marcia Medina, Peter Chan, Tim Taber, and Karl Tobin





## Taking to the **skies**

**A**s part of the GHD in the Community program, we are supporting the National Funflight day in 2009.

Funflight is an Australian not-for-profit organisation that offers children and teenagers with a life-changing illness or disadvantage, a day of flying fun together with their families. GHD's Amanda Dorhout-Mees is involved in the organisation.

Funflight works closely with local aero clubs and partner charities including the Starlight Children's

Foundation, Camp Quality, Ronald McDonald House and HeartKids to take the children and their families on a joy flight and to provide an afternoon of fun at a local airport. The pilots are all volunteers drawn from around the country who provide their aircraft, skill and time, free of charge.

Established in 2004, GHD in the Community is a corporate social responsibility initiative aimed at supporting staff involvement in not-for-profit organisations. ■

## GHD unites to support the **Victorian** community



GHD's Ed Tiplady helping with the clean-up at Lysterfield National Park.

**G**HD people have united to help the community, following Australia's worst natural disaster, the Victorian bushfires.

In addition to donations to the Victorian Bushfire Relief Fund, we provided pro-bono assistance to Victorian water authorities and the Victorian Bushfire Reconstruction and Recovery Authority to assess the extent of damage to water infrastructure and help secure water supplies. We also supported our people who fought the fires as volunteers and a team of GHD young professionals has helped with bush regeneration.

More recently, GHD's Phil Baker has become involved in the Victorian Bushfire Reconstruction and Recovery Authority infrastructure redevelopment guidance roundtable. He is also representing GHD on a working group formed by the Association of Consulting Engineers Australia and Engineers Australia in support of the reconstruction effort.

GHD has a long history of encouraging its people to be involved in the communities in which they work and live. In June, a team of GHD young professionals from Victoria joined people from Conservation Volunteers Australia at the Lysterfield National Park, one hour south of Melbourne. With much of the park having been destroyed by the bushfires, the team spent the day building natural retaining walls to better manage the soil and natural habitat erosion of the 'Trust for Nature' property. The GHD team included Trent Gibson, Don Sirikhanth, Jade Williams, Ed Tiplady and Francis Slattery. ■



Vale  
**Ben Fink**  
1924 - 2009

**O**ne of GHD's post-World War II 'founding fathers', Ben Fink passed away on 2 June 2009 at the age of 85, after a long illness. Ben joined GHD in 1948, soon after graduating in Civil Engineering from the University of Melbourne and he remained with the firm until his retirement in 1990, after a period of 42 years.

Ben served as a GHD Partner/Director from 1965, was Managing Director from 1978 to 1986 and Chairman from 1986 until his retirement in 1990.

During his long career with GHD, Ben was responsible for numerous innovations in water and wastewater engineering throughout Victoria (and overseas) and as a consequence the delivery of healthy water supplies and sewerage systems to many hundreds of thousands of Victorians.

Ben was an active member of numerous professional societies and was a dedicated mentor to many young engineers at GHD. He will be remembered as a brilliant and perceptive problem-solver, a caring manager of his staff, and a highly ethical professional practitioner.

Ben's passing is a sad loss to the consulting engineering profession. ■

## Running on **pedal power**



**N**ew Zealand's Orewa and Christchurch offices have put sustainability talk into action with GHD branded bicycles for staff use.

Orewa was the first office to purchase a bicycle around six months ago after manager, Russell Hawken, did some lateral thinking when the office hybrid vehicle was delayed.

"Ours is a smallish office, close to our clients and stakeholders," Russell said. "It is also one of the first GHD offices to achieve a Green Star rating. So we wanted to adopt a sustainability approach to moving our people around town without using cars."

Today, Orewa and Christchurch people use the bicycles for client visits and to see consultants. ■

## Community **engagement**

**O**ur people in Sydney have worked together to develop a landscape design for Northcott Disability Service's Beverley Park residential facility.

Our Sydney office provides ongoing community support to Northcott and undertook this latest pro-bono project using in-house skills.

Beverley Park houses approximately 30 physically disabled people who will directly benefit from the enhancements to their living environment including the outdoor area, water savings and improved wheelchair access to the separate buildings and outdoor areas.

Led by job manager Andres Munoz and architect Joseph Saliba, the team worked on producing design solutions to address the issues and needs of the residents.

Sydney Operating Centre Manager, David Kinniburgh said: "Making contributions to the community is something that is very important to GHD. We have a strong relationship with Northcott and are pleased that we could assist them with this project. Congratulations to the GHD team for their efforts including Andres Munoz, Joseph Saliba, Katherine Karlikoff, Katie Lodge and our Centres of Capability." ■

## Going green globally



**G**HD people revealed their green hearts when they participated in international celebrations for World Environment Day (WED) and Earth Hour.

WED is an annual event organised by the United Nations on 5 June to stimulate awareness of the environment and enhance political attention and action.

Many of GHD's operations around the world participated in WED with a range of activities including tree plantings, client functions, fundraisers, recycling programs, new micro websites and awareness raising events.

Stephen Trainor, Global Leader, Environment, used the day to launch a video highlighting GHD's global achievements since 2007, when the company instigated its strategic sustainability initiative.

"Our clients know that GHD delivers integrated sustainable services and designs. On 5 June, our people showed that commitment which stretches beyond our business to take in our local communities and the environment," Stephen said.

GHD offices in 20 global locations also supported Earth Hour on Saturday 28 March 2009, symbolically switching off their lights and cutting power to non-essential items for an hour.

Earth Hour organisers say the campaign rolled out across 25 time zones in over 4000 cities and towns in 88 countries.

Bill Grace, Corporate Manager, Sustainability said: "Participation in Earth Hour is a symbol of GHD's commitment to reducing our greenhouse gas emissions and being energy and financially 'smart'." ■

## Inviting client **contributions**

**D**o you have a story to tell about the outcomes of your work with GHD?

We invite you to be part of our flagship publication by emailing us your news and ideas at [news@ghd.com](mailto:news@ghd.com) ■





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