BREAKING NEW GROUND

GHD 1988 – 2016
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Edited by Michael Sweet
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After graduating in Brisbane with a degree in civil engineering, I received two job offers on the same day. When I rang the other company to advise I was accepting the offer from GHD, their manager thanked me but said he thought I was making a mistake. Some forty years later, as I am about to retire from this remarkable company, how wrong that proved to be. GHD provided an empowering environment where I was able to learn from others, grow and have the freedom to innovate and deliver for our clients. It proved to be an experience way beyond any expectations I had when joining. My personal experience is something which is shared by many who have had the good fortune to spend part or all of their careers with GHD.

Much earlier in my career, GHD published A Firm Foundation written by Stan Arneil, published in conjunction with Australia’s bicentenary in 1988. It is beautifully written and tells the story of our first 60 years. It brought the history alive, and provided context. In the twenty-nine years since, GHD has grown and evolved enormously. Like the immigrant countries of Australia, New Zealand, the USA and Canada, we have welcomed many people into the firm through recruitment, mergers and acquisitions, each bringing their unique culture, skills, and experience, and making us richer as a consequence. Underpinning all this was a solid foundation inherited from those who came before, along with strong values and a supportive culture.

This update of our history Breaking New Ground is intended to help explain how we evolved to where we are today. It does this through a series of discrete essays, written by those who were on a similar journey. Whilst some may choose to read the entire account, others may prefer to read those chapters which they find more relevant, and the book is set out to enable this. Just as different parts of the business have their own unique character, so do these chapters. As we empower our people to do what they need to for our clients, so have we empowered our authors to take an approach which they think works best.
Interspersed between these chapters are pen portraits of a selection of GHD people across the business. They cover a range of roles and backgrounds, but each in its own way connects with what we are today as a company. When asked what they like most about GHD, our employees invariably reply “our people”. Reading these brief biographies you can see why, and for each one we could have provided a hundred more.

I would like to thank all those who have contributed to the preparation of this book, our editor and pen portrait writer Michael Sweet, our chapter authors and those who assisted them in this task; our team in Marketing & Communication Services, including Katrina Lamaro, Kirill Reztsov, Cat Turville, Murielle Paviet-Fanolliet, Ben Mann, Tyrown Waigana; and my executive assistant Joyce Darmanin.

One thing I am acutely aware of, is that in assembling a history such as this, there will be many who have contributed strongly to the business who have not been mentioned by name, and many important stories overlooked. Any account of history is captured through the eye of the observer, and may be recalled differently by others. For such omissions I apologise in advance and request your understanding. As they say, it is better to have tried and failed than never to have tried at all.

GHD has allowed me to have achieved way beyond what I could have achieved on my own account, and for this I will be forever grateful to those I worked with and those who came before. My fervent wish is that this be the experience of all our people. I hope that this update of our history helps in some way bring this to life. Happy reading!

Russell Board
Chapter 1.

One of the great corporate stories of the 20th century, and now the 21st century, GHD’s narrative is a tale of huge ambition, leadership, imagination and the application of values.
The First Sixty Years

Michael Sweet / Russell Board

This collection of essays and portraits, largely written by GHD people past and present, is a record of accomplishment over more than a quarter of a century, and a celebration of achievement. It illustrates a period from the late 1980s until 2017 in GHD’s story; it is a snapshot of the company as it grew, prospered, and re-imagined itself. The timespan in question witnessed the company’s transformation from a dynamic Australian civil engineering business of fewer than 700 employees to a global company with more than 8500 people operating around the world. The period reviewed saw the fastest growth and the most profound change the company has ever experienced - a transformation built on a set of fundamental values instilled generations before by GHD’s founding fathers.

GHD’s 20th century story up until the mid-1980s was told in Stan Arneil’s book *A Firm Foundation*, originally published in 1988 – a richly detailed record of the company’s beginnings in 1928, and the 60 years that followed. It was a literary work of its time, and as an introduction to the firm in its first half century and beyond, it is likely to remain the seminal work on the subject – a study of the company’s conception and the journey its founders made, continued by the generation of GHD leaders who followed. This book, a collection of essays and portraits, continues that journey, relating the company’s path from a high-achieving Australian civil engineering consultancy, responsible for helping deliver much of Australia’s infrastructure from the Second World War onwards, to the international company we see today.

One of the great corporate stories of the 20th century, and now the 21st century, GHD’s narrative is a tale of huge ambition, leadership, imagination and the application of values. This book reminds us, that beyond the tens of thousands of projects great and small across the globe, beyond the figures, the technical minutiae of the work of one of the world’s most respected professional services companies, above all, GHD’s story is, and always will be, a story about people: our people, our clients, and the communities we serve.
GHD’s pre-war founders – Gordon Gutteridge, Geoffrey Davey and Gerald Haskins – saw an opportunity - a chance to better not just their own lives, but the lives of their fellow citizens. That philosophy remains as true in the second decade of this century as it was in 1928, when Gutteridge left the security of his senior government post to form a private practice. More than three-quarters of a century after its founding, GHD’s mission has never been more clearly defined: to connect, collaborate and communicate with its clients to meet their challenges, and in so doing so, quite simply, to make the world a better place.

GHD is a company built on vision, values and partnerships. Its journey began some 90 years before this book was published, at a time when the world was recovering from the devastation of the First World War; and the Great Depression stalked western economies. In this environment, in September 1928 – four months after aviator Charles Kingsford Smith completed the first flight from the United States to Australia – another Australian pioneer, Gordon Gutteridge, founded a civil engineering practice in Melbourne.

Born in 1892, Gutteridge, the son of a Tasmanian doctor, was schooled in Melbourne. One of three brothers, his engineering studies at Melbourne University, begun in 1910, were interrupted by the Great War. He was on vacation in the United States when war was declared on 4 August 1914 and travelled across the border to Calgary to enlist with the Canadian Expeditionary Force – the nearest British Dominion force he could find. Like most young Australian men of his generation, his answer to the mother country’s call was unquestioned and immediate.

Promoted to the rank of corporal, he saw action at the Battle of Ypres before being wounded and captured. He tried to escape twice. His wartime experiences took their toll.
In pain from his injuries for the rest of his life, there is little doubt that a capacity for sternness grew from those wounds – both physical and mental. At the end of the war he returned to Australia to complete his engineering studies and in 1921 he graduated. After postgraduate studies in the United States at Harvard, he was appointed as assistant to the Director of the Australian Government's Division of Public Health Engineering. Talented and industrious, his mettle was noted and promotion was swift.

In 1923, at the age of 31, he was appointed as the Division's director. As a senior public works manager, he travelled widely in Australia, advising councils on the development of the most efficient water supply and sewerage infrastructure. Known for “his zeal, knowledge, learning, industry, discretion and ability”, colleagues would later remark that his charisma overshadowed his tremendous technical ability. He had a way of keeping listeners engaged. In the early 1920s, he married Annabel Syme of The Melbourne Age newspaper family, but the union was not to last. He would have little contact with his two children for the rest of his life.

In September 1928, eager for a new challenge and with a network of contacts and potential clients, he resigned from the government position he had held for five years and set up in private practice. Specialising in water and sewerage schemes in rural Victoria and Tasmania, his obsession with the highest standards of workmanship, meticulous presentation, and a passion for solving problems was at the heart of his early success. But Gutteridge knew the essence of long-term commercial achievement depended on nurturing a team.

In the early 1930s, he enlisted the services of John Keays and Bernard Callinan, two graduate engineers also from Melbourne – men who would go on to play a seminal role in the development of the company. By 1937, with a second office opened in Hobart, and an ever-expanding joint venture with the like-minded Sydney partnership Haskins & Davey (driven by commissions in Queensland and New South Wales), Gutteridge’s business was fast becoming one of the most respected practices of its kind in Australia. The same year an ambitious surveyor called Jim Trench joined the team and the foundation to deliver GHD’s first chapter of achievement was in place.

Anecdotes of Gutteridge paint a vivid picture of a man with a complex personality. Reputedly austere, aloof, and frugal, there are legendary tales of him sweeping along the roads of rural Victoria at night (to attend a meeting in some far flung shire the next day) in a Rolls Royce which he had converted to a two-seater sports car. Here was a man who did things differently – a man of passion, at work and at play. By 1938, through joint venture projects, Gutteridge’s practice and Haskins & Davey had become almost indistinguishable from each other, and on New Year's Day 1939, the Gutteridge, Haskins & Davey partnership was formally established. The perfect foil for Gutteridge, in Haskins and Davey he had partners with an established network of clients, a host of complementary skills, and two men who shared his vision.
A New Zealander from Christchurch, Gerald Haskins, in his fifties by 1939, had worked as a civil engineer for the Sydney Water Board until teaming up with the younger Geoffrey Davey. Renowned for his charm and keen attention to detail, beyond his engineering prowess, Haskins had a particular skill in solving disputes – with clients, authorities, contractors and employees. He had the common touch and his sensitive approach to industrial relations was a mark of the man. Going out of his way to ensure the highest safety standards on worksites came naturally, part of his inherent ethical nature and his firm belief in an employer’s responsibilities to its workers.

Geoffrey Davey, a master of improvisation and ingenuity, and the younger partner by some 20 years, had a confidence born of a career that, by the age of 30, had included overseas adventure and no little responsibility. Working for a gold mining company in New Guinea in his early twenties had been a formative experience – stretching his skills beyond the water board work in Sydney where he cut his teeth on sewerage and drainage projects. Boisterously enthusiastic, Davey’s work ethic was contagious. He was a motivator in ways quite different to Gutteridge and Haskins. He also had a profound spiritual side. With a deep Catholic belief, in his teenage years he had wanted to take up the priesthood until his father intervened. Late in life he would answer that calling, but not before a lifetime of service to engineering.

On the same day as Gutteridge, Haskins & Davey was founded – 1 January 1939, in a garage in Palo Alto, California, two ambitious young Americans – Bill Hewlett and Dave Packard, formed an electronics company. The same month, in Chile an earthquake killed around 30,000 people, and in the Australian state of Victoria, 71 people died in one of the country’s worst ever bushfires. Meanwhile in Europe, the prospect of war loomed ever closer. When it came, the war had a profound effect on Gutteridge, Haskins & Davey, as it did on every other industrial enterprise in Australia.
The resources of GHD, like thousands of other businesses, were channelled into assisting the country’s war effort. In September 1939, GHD had a staff of fewer than 50, based in offices in Brisbane, Hobart, Melbourne and Sydney. With civic works scaled back in 1940, the company rose valiantly to the immense challenges the war brought, offering technical knowledge and applying ingenious civil engineering processes to military requirements and hundreds of defence projects.

All the male employees in the Hobart and Melbourne offices enlisted, along with most in Brisbane and Sydney. These young, ambitious engineers came of age in the services, as their characters, resilience and fortitude were tested in ways that only war can. It is no coincidence that the key individuals who took the torch from Gutteridge, Haskins and Davey in the post-war years, men like Bernard Callinan, John Keays, Ken Inglis, Jim Trench and others, served with distinction. They were a generation of engineers whose values were forged in theatres of battle from the Pacific to Europe and the Middle East – leaving them forever marked. Their values have underpinned GHD’s story ever since.

It was in the war years that Gutteridge, the company’s founder and the architect of its first phase of diversification, became the first to leave the stage. Rarely had he enjoyed good health and on 21 February 1942, he collapsed at his desk and died shortly after. He was 50 years old.

Later the same year Gerald Haskins, in his sixties, retired. He and wife Dorothy moved to a farm in the Blue Mountains west of Sydney. He had only a few years to live – years that would be blighted by the knowledge that his beloved first-born son John was a prisoner of war of the Japanese. Haskins died on 21 November 1946, thankfully comforted by the fact that by then he knew John had survived his incarceration.
The first, seminal chapter in GHD’s story was over. Geoffrey Davey, as governing principal, was alone, but supported by a highly motivated team who would become the first generational change of the GHD guard – men ready to take the baton from the company’s founders, in full knowledge of their responsibility for the legacy bequeathed to them.

**Building Australia**

The effort of GHD during the Second World War had been total. Geoffrey Davey, writing to his depleted staff in 1944, thanked them for their extraordinary effort. His letter tells of the selfless approach the company took, with much of the war work involving considerable financial loss.

“I remind you that it has been for the good of achieving the job and not for monetary gain... few groups of similar size and character can point to so much achieved,” he wrote.

As Australia emerged from the darkness of global conflict, it was a different country, and GHD a different company. Of the many legacies left by Geoffrey Davey, the company’s ownership policy is perhaps the most precious. Today GHD is one of the top six 100 percent employee-owned companies in the professional services industry worldwide – one in four employees is a shareholder. With no external ownership, its growth, direction and success are matters in its own hands.

In the immediate post-war years, Davey found he had a young workforce led by a team of experienced and dedicated senior engineers. But he also knew that to keep these skilled, ambitious men (beyond the offer of stimulating work and competitive salaries), another level of loyalty had to be engineered. What was needed was a way to involve them in the engine room of the company’s very being - to give them a chance to be investors in their own future. So began the journey towards the employee-owned status we know today. In 1946 Davey offered associate status (senior and junior) to his seven most trusted employees who were given the right to share in surpluses. Within two years he elevated those associates to partner status. The changes he began to implement those years ago left an indelible mark. At the beginning of the 21st century, GHD’s employee-ownership impacts every facet of its behaviour: interactions with clients, internal systems, and ultimately how the company pursues growth and opportunities.

By the end of the 1940s, Australia’s relationship with its mother country Britain had changed forever. The sun was setting on the British Empire and London’s imperial control across the world was waning. As it did so, the bonds forged in war between the United States and Australia, had begun a process of ever-closer relations – political, social and economic.

The post-war period saw unprecedented economic growth in Australia. High employment levels, growing foreign investment, and the development of new markets,
ensured Australians enjoyed a high level of economic prosperity. The services of consulting engineers were in high demand, in regional parts of the country as much as the expanding cities. Australia was growing and its communities, whether in the rapidly developing suburbs of the nation’s eastern seaboard cities, regional towns, or rural shires, needed infrastructure like never before. Meanwhile, the people who made up those communities were about to be joined by a legion of ‘new Australians’ in one of the most remarkable acts of population management in global history.

After the war, the Australian Government embarked on a vast immigration program, targeting a one percent annual increase in population for the purposes of development and defence - a target that remained in place until the 1970s. Under the slogan “populate or perish”, between 1945 and 1960, 1.6 million migrant arrivals were welcomed, most from the UK, and southern and central Europe. Another two million, mostly Europeans, migrated to Australia in the 1960s and 1970s. Following the dismantling of the restrictive White Australia Policy (between 1949 and 1973), refugees from east Asia, particularly Vietnam, Cambodia and southern China, came in the 1970s and 1980s, along with many Lebanese displaced by the Middle East conflicts. As Australia’s population rose – from 7.3 million in 1945 to 12.5 million in 1970 - the impact of this growth on infrastructure needs was far-reaching, and GHD was to play a pivotal role in delivering this infrastructure.

In the 1950s, with its already established reputation across Australia in water infrastructure, GHD began its expansion into transportation, manufacturing plants, building and civil works, energy, mining and dams. As GHD diversified, population growth and record government spending saw Australia develop into an affluent society in the late 1950s and 1960s, and GHD’s growth in this period ran parallel. In 1952, GHD’s total workforce stood at 100, working out of Brisbane, Cairns, Hobart, Launceston, Melbourne and Sydney. Darwin joined the fold in 1956 and within a decade the workforce had quadrupled.

One illustrious member of staff bade farewell in this heady period of expansion. In 1964, at the age of 58, Geoffrey Davey retired. Awarded the Order of Commander of the British Empire (CBE) for his services to engineering, and grieving the loss of his wife Nancy, he turned his energies to his deeply held Catholic faith. He was ordained as a priest in 1971, the vocation he had been passionate about as a boy. Geoffrey Davey died in Sydney four years later, leaving “a legacy of strength and joy behind him”. The last of the founders was gone.

The 1960s had seen GHD expand in every state and territory in Australia, but by the end of the decade, the favourable economic conditions that Australia had enjoyed, and which the company had benefitted from, began to change. Australia’s privileged access to the British market was coming to an end as the UK developed ever-closer economic ties to the European Economic Community, the forerunner of ties to the European Union. As the US economy slowed during the late 1960s, so did the rate of US investment into Australia.
The Australian economy felt the downturn keenly, and from 1966 onwards the government found managing the rising expectations of consumers and industry increasingly difficult.

By 1970 the total number of people at GHD had risen to 500, but the following years would see the company’s bottom line and growth targets hit by the country’s economic woes. As GHD continued to open regional offices, ensuring clients were supported close to their projects, in 1972 Australia began to experience the beginnings of ‘stagflation’ – persistent high inflation combined with high unemployment and stagnant demand. This was largely the result of developments in the international economy, the oil crisis in the Middle East, and growing economic competition in Australia’s traditional export markets. By mid-1974, the Australian economy was officially in recession and GHD felt the effects.

Between 1974 and 1978 people numbers dropped, from more than 650 down to 1970 levels, as the company steered a course through the slowdown. Despite this, the mid to late 1970s would see the company engage in a swathe of pioneering projects. With organic expansion limited, GHD’s formation of a joint company with US firm Parsons Brinkerhoff in 1974, to target urban transport contracts in South Australia, Tasmania and Queensland, was an early example of what would later become GHD’s transformative international alliance and acquisitions strategy.

GHD’s gaze now went beyond the great southern continent. In 1969, the company had undertaken its first contracts outside Australia, building commissions in Papua New Guinea and Korea, and shortly after, survey work and flood mitigation planning in Malaysia. Projects in Sarawak on the island of Borneo in the early 1970s, involving bridge construction and water treatment, and the joint venture that followed, became footholds for later expansion in south-east Asia.

By 1979, after further amalgamations, more than 550 people worked at GHD out of 25 offices in Australia, and one in Kuala Lumpur, Malaysia. In the immediate years that followed, the company began to widen its international reach, providing services to projects in Fiji, Sri Lanka and Thailand.

In 1981, after establishing a joint venture with US firm Black & Veatch, one of the largest consulting engineering firms in the world at the time, GHD recorded the highest total staff number to that date - 820, largely the result of work related to an Australian resources boom driven by the energy sector. With investment in mining picking up in the late 1970s, increasing sharply in 1981 and 1982, the boom led to a sense of euphoria about Australia’s future, though a resurgence of inflation would soon temper that optimism. Meanwhile liberalisation and deregulation of the Australian economy, to make it more diversified and resilient, began under the Hawke Labor government.
GHD's experience of recession in the 1970s and early 1980s was salutary; another recession would hit Australia in the early 1990s. All would have a far-reaching influence on, and directly impact, the company's strategic thinking for the 21st century. The cyclical nature of the booms and busts of the Australian economy had affected GHD significantly, often negatively. To mitigate such factors, the company's response a decade later, would be to set a global course driven by a dynamic mergers and acquisitions policy. As Australia moved from being a heavily protected economy to a free trading one in the 1990s, GHD evolved in parallel, taking advantage of government deregulation and privatisation. The handover of what were previously government responsibilities for utility and asset management to the private sector, offered GHD many opportunities which the company grasped.

GHD generations

GHD's story from the post-war period to the 1980s could not be told without paying tribute in some detail to the cohort of leaders who followed in the footsteps of the company's founders. Bernard Callinan, John Keays, Ken Inglis, Fred Machin, Jim Trench, and Philip Scott were there at the beginning. They form an illustrious group – the first associates appointed in 1946, who had joined in the pre-war years, and who played crucial roles in the development of the company through until the 1970s and 1980s. These leaders laid the foundations for the GHD we know today – none more so than John Keays and Bernard Callinan, whose involvement with Gordon Gutteridge went back to the early 1930s.

John Keays (1908-1985) put his skills to good use in the construction of airfields in northern Australia and Borneo during the war. Charged with leading the company's post-war growth in Queensland, he pioneered town planning in the vast state that is today, home to 10 of Australia's 30 largest cities. Keays' propensity for technical innovation, particularly through his work in Brisbane and Cairns, brought sewerage systems into the modern age. With a reputation as an engineering arbitrator, Keays went on to become a cornerstone of GHD's expansion from the 1950s onward.

No post-war GHD leader deserves more accolades, or left a greater legacy, than Sir Bernard Callinan. His story deserves a book in itself. A distinguished soldier in the Second World War, Callinan retired as chairman of GHD in 1978 after an illustrious 44-year career. Born in Melbourne in 1913, after attending St Kevin's College, Callinan's alma mater, like Gordon Gutteridge, was the University of Melbourne, where he completed his Bachelor of Civil Engineering in 1935. On graduating he joined Gordon Gutteridge's embryonic consulting practice; the young, high-achieving Callinan was the perfect recruit and he was initially appointed to head up the Tasmanian practice.

While the war would interrupt his trajectory in becoming arguably Australia's most influential civil engineer of his generation, Callinan's mettle as a leader surfaced dramatically in wartime. Commissioned as a lieutenant in Australia's Citizens' Military
Force in 1940, Callinan joined the Second Australian Imperial Force a year later, like tens of thousands of other young Australian men eager to heed the call of duty. Promoted to captain, he became second-in-command to the 2/2nd Independent Company, deploying to Timor as part of Sparrow Force – the Australian Army’s famed fighting unit that went on to contain the Japanese advance in the Dutch East Indies. For his wartime service Callinan was awarded the Distinguished Service Order and the Military Cross for outstanding leadership and gallantry. He was also mentioned in dispatches.

Returning to GHD, he channelled his leadership skills into developing the practice in Victoria and Tasmania, and in doing so created a vibrant and enthusiastic team with a reputation for efficiency and integrity. Callinan was appointed chairman and managing director in 1971. Awarded a host of honours, he received a CBE for his services to GHD and Australian engineering and a year later in 1977 he was knitted.

Callinan enjoyed a high profile in public life and was chosen by the governments of the day for important roles. He served as chairman on the Parliament House Construction Authority, which was responsible for delivery of Australia’s new Parliament House in Canberra, and also the West Gate Bridge Authority, responsible for reconstruction of the West Gate Bridge in Melbourne, following its disastrous collapse. Callinan’s towering presence in GHD’s 20th century story cannot be overstated. Under his guidance – delivered with his hallmark charm and firmness – GHD established itself as one of Australia’s pre-eminent engineering practices.
Ben Fink (1924-2009) joined the company in 1948 after Callinan had recruited him to help rebuild the company's Victorian operations after the war. Having arrived in Australia 15 years before, as a nine-year-old refugee from Poland, Fink would become another legendary figure in the GHD story. Rising rapidly in the Melbourne office, Fink became office manager in 1960 at the age of 35. He served as a GHD partner/director from 1965, before taking on the mantle of managing director from 1978 to 1986, and chairman until his retirement in 1990.

Fink's early career was marked by his aptitude for technical innovation, particularly in water and wastewater engineering. Today he is remembered fondly as a perceptive problem solver, a caring manager and a highly ethical professional practitioner. Under his leadership some of GHD's most iconic projects of the late 20th century were completed, including the reconstruction of the West Gate Bridge (1970) and the construction of the Melbourne Cricket Ground's lighting towers (1985). During the 30 years he managed GHD's Victorian practice, Fink was a mentor by example – nurturing the generation who were to follow.

Bob Rivett joined GHD in 1955 and was a successful engineer, consultant, and project manager. Recognising the importance of technical services in a business like GHD, Rivett was instrumental in setting up the technical committee in 1967 which, amongst its other duties, produced technical bulletins to share best practice across the business. Quick to recognise changes in practice conditions, and with a strong business acumen, he was instrumental in transitioning GHD to an incorporated entity in 1971.
GHD played a key role in the construction of Skyrail Rainforest Cableway Cairns, Australia, a world first in environmental tourism.

Appointed chairman in 1978, in 1986, he asked to step down from the role, to return to project direction for a number of years. Subsequently, Ben Fink was appointed chairman and Henry Adcock managing director. *A Firm Foundation* tells the stories of many other important leaders of the business through this period, including Roger Smith, Norm Traves, John Phillips, Trevor Saunders, John Planner, Don Dwyer, Peter Manger, Ray Rose, and others too numerous to repeat here. Their period of exemplary service leads us to the timespan covered by this new chronicle.

**Back to the future**

What would Gordon Gutteridge, Gerald Haskins and Geoffrey Davey make of the company today? Despite its size and global reach, some things would be very familiar: tenacious employees with a passion for innovation; a driven, commercially ambitious organisation, and one that understands implicitly, and meets its corporate social responsibilities; a company that goes beyond clients’ and communities’ expectations; a company whose core values – safety, teamwork, respect and integrity – underpin every project and every decision it makes. Those values would be instantly recognisable.

Other aspects of GHD’s progress might perhaps be less immediately recognisable: a commitment to diversity and inclusion, and gender equality; the embedding of sustainable practice in all that we do; and our 21st century take on the nature of taking responsibility – for ourselves, for our clients, and for the present and future communities who use the resources we help create.
The ‘culture’ of an organisation can mean a lot of things. It can mean the way a senior staff member talks to the most junior recruit; the way gender diversity and inclusivity goals are not just embraced as a philosophy, but realised in the everyday acts of our people in every office across our global network.

GHD’s culture has been, and remains, one of dedicated professional services, of going the extra mile for clients, of striving to realise the potential of its people. That culture is embedded in our DNA, but like society, our culture has changed over the decades, and continues to do so. It is a process that can be driven by any and every employee – from an office in Santiago, Chile, to Fort McMurray in Canada; from Eureka in California, to London; from Hobart to Beijing. What is clear is that the culture of GHD in the first decades of the 21st century has never been more progressive or forward thinking, allowing the company to sustain and develop its global commercial competitive edge, and in doing so, achieve more for our clients and the communities we serve.
Born in 1948, Clive grew up on his family’s sheep and wheat farm near Elmore in country Victoria north of Melbourne. The third son of Methodist parents, their values, discipline, and above all, their work ethic guided him from his earliest days.

“It was an austere childhood,” remembers Clive, who can trace his family’s roots back to 19th century England. “It was a treat to go to the nearby town to buy sausages.”

His appetite for science and commerce was whetted first at high school after he observed the roles of the local shire engineer and bank manager. The decision to follow a technical career was made when he (barely!) passed the required maths exam at intermediate level (year 10) at Rochester High School.

After completing a Diploma in Civil Engineering in 1966, Clive gained his Bachelor of Engineering and Master of Engineering Science at Monash University. In 1974 he joined GHD, but what he thought would be a temporary assignment before a career in academia was anything but. So began a career that lasted over 36 years.

“I had such fun from the day I joined GHD I thought I’d better stay,” says Clive. “The place always had a family feel. There was a fine culture in the organisation back in those days too. You were given a job, you got on with it, and there was plenty of help on hand if needed.”

By the early 1990s Clive’s work involved managing major projects in Victoria including project-directing the redevelopment of the Southern Stand of the Melbourne Cricket Ground. Between 1993 and 1999 he led the Victorian Operating Centre, and also led GHD’s relationship with the Melbourne CityLink Authority.

As CEO and then Chairman between 2002 and 2008, under Clive’s leadership GHD grew faster than at any time before or since. Over those years the company expanded from 2000 people, most of whom were based in Australia, to more than 6000, with over a third of those based overseas. In the same period, the company’s annual revenue grew from about AUD190 million to AUD939 million.
As Chairman, Clive oversaw this remarkable chapter in GHD’s evolution, a period where the board pushed through a raft of ambitious strategic policies including the separation of governance and operations, greater unification in the management of the company and a rapid increase in the number of staff who were invited to become shareholders. As a result, a larger global company emerged, fuelled by mergers and acquisitions and dynamic organic growth.

While GHD’s transformation during Clive’s terms as CEO and Chairman was unprecedented, he’s the first to acknowledge that the company’s fortunes in the 2000s were a result of the vision of his predecessors, the application of colleagues, and the efforts of GHD’s people throughout the business.

“We had a fantastic team and we’d set a path we believed in,” says Clive. “With the foundations in place, a strong Australian economy, and government which had outsourced their own technical capabilities and were hungry for infrastructure, we were in a perfect position.”

Reflecting on the qualities that differentiate the company from its competitors, Clive believes ‘the GHD way’ is at the core of the company’s achievements.

“We always had a different culture to most of our competitors. We never lowered our standards or values to win work. And that recognition of our culture has strengthened us. It’s the cornerstone of our success.

“It defines how we go about our business, guides how our people operate professionally, and steers our corporate environment; one that is defined by our care for clients, our ability to realise personal potential, and our efforts to build cultural diversity and inclusivity alongside commercial success.”

After his retirement in 2009 Clive was awarded an Officer of the Order of Australia in 2013 for his services to engineering and his contribution to engineering education.
The period from 1988 through to 2000 saw implementation of a number of reforms in GHD which established a platform to enable subsequent growth. Rather than significant expansion in the size of the business, this was a time of important internal changes, which positioned GHD well for the future.
2. 1988 – 2000
John Phillips / Clive Weeks

GHD in Australia's Bicentennial

Australia’s Bicentennial in 1988 saw GHD (then Gutteridge Haskins & Davey Pty Ltd) celebrate its diamond anniversary. Sixty years after its formation, the company enjoyed a strong reputation in Australia, and was seen as a successful and substantial player in the consulting engineering industry. Annual gross revenue was AUD50 million, generated by some 700 people, spread predominantly across Australia, complemented by a partially owned venture in Malaysia established a decade earlier, and individual projects being undertaken outside Australia.

Reflecting on the past 60 years and the reasons for GHD’s continued success, the then Chairman Ben Fink, identified the following success factors:

• 100 percent ownership by working principals

• development and retention of capability, be it technical, experience and “general wisdom” in order to offer a proper service

• the recruitment and continuing development of smart and qualified people capable of adjusting to rapid economic, social and technological change

• the application of “effective management methods”

Ben concluded that “our form of practice will remain appropriate for the future despite changing attitudes and competition. The reason is that objective advice and competent service will always be in demand, especially in a more complex world of increasing expectations.”
The period from 1988 through to 2000 saw implementation of a number of reforms in GHD, which established a platform to enable subsequent growth. Rather than significant expansion in the size of the business, this was a time of important internal changes, which positioned GHD well for the future. The company transformed from a federation of regional businesses under common ownership to a single commercially focused organisation. This involved broadening and deepening services beyond engineering, continuing the extension of share ownership beyond a small number of principals, simplifying its corporate structure, further developing technical services across the business, and unifying branding and business systems, including an externally accredited quality management system. During this period, GHD also started ramping up its involvement outside Australia, particularly in the rapidly developing South East Asia region.

In many ways, leading this change was Henry Adcock, a relatively young Managing Director at the time of his appointment in 1986, who went on to serve as Executive Chairman from 1993 through to his retirement in 1999. Henry initially served with Chairman Ben Fink (to 1989) then Roger Smith (1989 to 1993), and as Executive Chairman with Managing Director Peter Manger (1993 to 1999). Whilst the Australian business climate in the latter part of this period was conducive to strong growth, the early part was marked by high inflation, followed by a period of high interest rates and a deep recession in the early 1990s - not easy times for a business such as GHD. The latter 1990s were also impacted by the Asian Financial Crisis.

Transformation to a national business

GHD had grown up as a business focusing primarily on local clients. It was also managed locally. Whilst the business as a whole was under common ownership, and strong personal bonds existed across regions, it was essentially a federation of businesses, each with their own processes.

By the late 1980s, a number of changes were occurring in its marketplace. Projects were becoming larger and more complex, and GHD was increasingly targeting clients who were either national or global and had an expectation of a consistent corporate approach to delivering projects. There was also increasing competition from foreign consultants broadening their businesses around the world.

Until the early 1990s, GHD had no cohesive broad-scale strategic plan, although some regions and technical groups had prepared their own plans. The company, which had been the largest of the Australian consultants in the 1980s, had lost that mantle, and was losing market share to overseas companies. Clearly change was required, and this
occurred largely organically. Initially through this period, the business was managed by a number of regional boards – Queensland/Northern Territory, New South Wales/Australian Capital Territory, Victoria/Tasmania/South Australia, and Western Australia.

In 1990, a management committee of the Board of Directors was established with responsibility for overseeing management of the business. Importantly, the committee rotated its meeting location each month around the business, ensuring that GHD did not develop a ‘head office’. The National Marketing Services team was established to lift the quality of external communications and build the brand, overseen by the Director for Marketing. In addition, director portfolios were established for technical services, information technology and personnel.

In 1991, a decision was taken to adopt a quality management system across the business, and eventually to seek third-party certification to both the Australian and international standards. Lloyd’s Register was selected for this certification, reflecting the importance of an international reputation and brand. Lloyd’s Register certification of GHD’s quality management system for all major offices was achieved by June 1994.

However, it would be new workflow management and the change of technological services disciplines that would lead much of the change. GHD’s introduction of a management information system to unify its accounting procedures would be the game-changer. One vital outcome was that the unified system made it simpler to call on expertise from interstate in order to present a more competitive and attractive bid.

Improved computer-based communications and dedicated landlines led to a better sharing of technology. A national Wide Area Network (WAN) was achieved by 1996. In addition, technical groups were strengthened across the practice with biannual seminars. Ownership of the business was also widening over this period. As the business grew through the 1990s, so did the number of principals. There was also a desire to further broaden ownership to others who were contributing strongly to the business, whilst at the same time protecting Private Company status. Initially this was achieved from the early 1990s through a series of equity companies, but this structure became cumbersome and not sufficiently scalable.

The decision was made in 1998 to carry out a major restructure whereby Gutteridge Haskins & Davey Pty Ltd became both the Group holding company for all shareholders’ equity, and the ownership vehicle for all associated subsidiary and joint venture companies. The result was a much more conventional consolidated structure providing the company with the necessary flexibility for the future. With the ownership consolidation, the opportunity was taken to project the company name as simply “GHD” – which is how it was already known by much of the industry.
Broadening our services

These years saw the expansion and deepening of GHD’s traditional engineering and planning services, but also the further development of management and architectural services. Project management was always part of what GHD did, but through this period it built on the skills developed earlier, for example on the Mount Arthur coal mine and other coal related infrastructure in the Hunter Valley, NSW, and developed project management as a service in its own right, in line with changes taking place in the market. As projects grew and became more complex, so did the importance of project management.

Early landmark projects managed by GHD, included a new AUD170 million Royal Australian Air Forcebase on Cape York Peninsula for the Department of Defence, the AUD285 million Rouse Hill Infrastructure Project in Sydney, the Sydney Monorail Project, and relocation of three branches of manufacturing company Yorkshire Australia to a new site in Dandenong, Victoria. One of the highest profile projects of the time was acting as project manager for the Olympic site infrastructure at Homebush Bay for the 2000 Sydney Olympics, linking GHD to “the best Games ever”.

Management consulting was established as a service in its own right in 1991, although the timing in the midst of a recession was challenging. Asset management however was a very different story. Led by Roger Byrne, GHD became a global leader in asset management.
management services associated with community infrastructure. GHD’s services were given impetus by the release of a new Australian Accounting Standard for financial reporting for local government. Such was GHD’s standing in this area that it went on to produce the National Asset Management Manual for the Institute of Municipal Engineers Australia in 1994. The following year it produced the equivalent National Asset Management Manual for the Local Government Engineers, New Zealand; the New Zealand Local Government Association; and Audit New Zealand.

Thanks to a competitive edge, commissions were obtained for major infrastructure works: project management of Stage 2 of the Cairns International Airport and a AUD300 million upgrade of Kooragang Coal Terminal Ship Receival Facility in Newcastle. Among Defence commissions were HMAS Stirling in Perth, RAAF Base Scherger in Weipa, RAAF Base Tindal, the Darwin Naval Base and HMAS Coonawarra. At the MCG in Melbourne, Australia’s most famous sporting arena, the AUD140 million Great Southern Stand was completed to a critical deadline under the company’s supervision.

GHD was also leading the way with environmental consulting, providing environmental impact statements for projects by Australian Newsprint Mill, Associated Pulp and Paper Mills, the Forestry Commission of NSW and for land developments. Associated companies were active, with GHD-Transmark securing project management services for a AUD60 million train radio system for the NSW State Rail Authority; GHD-Black & Veatch work on the Loy Yang B power station in Victoria’s La Trobe Valley with Mission Energy, the AUD150 million BP Kwinana Oil Refinery Cogeneration Plant and Wastewater Treatment Plant in Western Australia; and marine design services in Indonesia, Malaysia and Pakistan through GHD Macknight.

GHD’s growing expertise in asset management led to a review of Sydney Water’s Asset Management Plan and a review of maintenance on Royal Australian Navy ships - the destroyer HMAS Brisbane and flagship HMAS Success. A two-year maintenance management contract with Queensland Transport for Brisbane metropolitan roads exceeded reform strategy objectives. Moreover, a contract in Western Australia delivered traffic signal maintenance services “ahead of their time”.

New build-own-operate and transfer/design and construct schemes included the Torumbarry Weir on the Murray River in Victoria, the Gateway Arterial Motorway Extension in south-east Queensland, and the Pyrmont Light Rail System and M2 Motorway in Sydney.

By the mid-1990s, a number of state government departments were outsourcing their engineering services, a process which involved the transfer of people as part of the agreement. Despite several submissions, GHD was not successful with these, while other consultancies were advancing ahead. A significant turning point came in 1995 when the Water Corporation of Western Australia awarded its engineering to GHD. GHD was running second before the final interview, but made a local and personal
presentation to the Corporation's staff who were to be outsourced, as compared to GHD's main competitor adopting a 'head office' approach. The overwhelming staff vote led to this success which gave a significant boost to morale across the entire company.

Success in WA was followed by a successful bid to the Commonwealth Department of Works for outsourcing Works Australia in 1997. Works Australia significantly bolstered GHD's consulting capacity and offered the opportunity to pursue new Australian Government business, especially with the Department of Defence. Amongst other benefits the deal introduced a stronger architectural and interior design capability. These and other local wins and mergers with smaller consulting firms added strength of numbers and expanded the diversity of work being undertaken. Good examples included the mergers with LongMac Associates in 1997, a specialist geotechnical group based in NSW, GB Hill in Western Australia (transport and urban development), Corcoran Shepherd in Melbourne (bridge design and remedial engineering), and Flack & Kurtz (building communications and hydraulic services).

A key issue in all mergers was to ensure that the GHD culture remained strong. This philosophy continues and mergers have involved much mentoring, encouragement, and sensitive placement of people in key positions – all the while recognising, rewarding and integrating the abilities and experiences of those who joined the company.
Reaching outside Australia

Whilst GHD had undertaken work outside Australia for over 20 years, it was in many ways ancillary to the main business. However, around the time of its diamond anniversary, GHD started ramping up its engagement in South East Asia in particular. Under the guidance of the then Managing Director Henry Adcock, Robin Povey was appointed as Manager, Overseas Projects, and a Singapore office established in 1989, with Robin appointed General Manager of GHD International. The new operation set out to complement the existing partially-owned operations based in Malaysia. Ultimately the operation in Singapore did not prove successful, but it was a precursor for GHD’s high-performing Philippines business. GHD went on to become active across South East Asia and the Pacific region.

In August 1997, a feature published in GHD News 97 reflecting on international work, reported on projects in Brunei, Cambodia, Chile, China, India, Indonesia, Italy, Laos, Malaysia, Papua New Guinea, the Philippines, Tonga, Vietnam and Western Samoa.

Commissions included geotechnical investigations for the giant Freeport gold and copper mine in Irian Jaya and a master plan for Timika Airport serving the mine; the Da Nang Water Supply Feasibility Study in Vietnam; the XeKaman Hydroelectric Project in Laos; and the Satok Bridge widening project in Sarawak, Malaysia. Expert advice was provided on major dam projects in China, Chile, Colombia and Malaysia; and mining infrastructure projects in the Philippines, Papua New Guinea and Sardinia.
The Asian Financial Crisis certainly had an impact on GHD’s overseas business from the 1997/98 financial year, with many projects either delayed or cancelled. Nevertheless, in 1998 a decision was made to re-establish a regional headquarters in South East Asia, under the leadership of Jeremy Stone, but this time in Manila. The new venture in the Philippines was almost immediately successful and has subsequently gone from strength to strength. At the end of 1999, GHD was successful in its offer to acquire Manukau Consultants from Manukau City Council in New Zealand, and as the company entered the new millennium, it now had two wholly-owned subsidiaries outside Australia.

**Preparation for the next phase**

In mid-1999, Executive Chairman Henry Adcock, Managing Director Peter Manger, and Chief Financial Officer and Company Secretary Trevor Saunders retired, resulting in a number of changes to the board of directors. John Phillips became Chairman, Ken Conway Managing Director and five new directors – Russell Board, Tom Fricke, Neil Rowlands, Ian Shepherd and Des Whybird joined existing directors Brian Mahoney, Mike Polin and Clive Weeks. Richard Holliday became CFO and Company Secretary. The renewed board inherited a business that was in good shape fundamentally and performing strongly. By this stage, the business had gross annual turnover of AUD138 million following the successful integration of the Works Australia business.

The new Chairman introduced a number of governance reforms and board meeting procedures were transformed. Previously these were mainly management meetings with some aspects of corporate governance. The agenda was changed to concentrate on strategic issues and governance, with a clearly defined part of every meeting spent on
practice management. In order to give due attention to good practice management, the Managing Director met separately with the regional business managers and technical leaders. In keeping with this new boardroom culture, meeting locations shifted from the most convenient location for directors to a wider range of office locations, making the board more visible to everyone within GHD.

The constitution was reviewed to create greater accountability for shareholders, including the election of directors, and directors serving a maximum of three years without re-election by shareholders. It also anchored employee ownership of the company, as this was considered essential for a successful consulting organisation. At the same time, the number of portfolios was expanded, with each director required to take responsibility for a specific portfolio and encouraged to undertake ongoing training related to directorships.

Peer assessments of directors’ contributions to the board were instigated. Board appointments would now be on the basis of skills appropriate to corporate governance, rather than geographic representations or technical leadership. These were important steps in the direction of best practice governance. Importantly, a new strategy was developed, aligned with a desire to grow the company to meet global competition head-on and position GHD as a truly international company, rather than being a potential takeover target. This strategy and its outcomes are the subject of the next chapter.
As CEO for five years from 2003, and Chairman from 2008 to 2011, Des Whybird led the company through a period of huge growth with GHD’s annual revenue surpassing AUD1 billion, and by 2011, GHD’s people exceeded 6000 in number and were spread across fifteen countries.

Des grew up in Ipswich, Queensland, the third youngest of four brothers. He traces his paternal ancestors back to Hertfordshire, England, where his great grand father was born and who immigrated to Australia in the 1850s. Des’s father, an infantry officer in World War 2 and a carriage builder for Queensland Railways, was a straight-talker, a trait Des inherited from his dad.

“What was instilled in me was a very practical, down-to-earth attitude to life, very direct.” he says.

“With a tradesman’s wage and four sons, and then putting us through grammar school and university, for my parents it was a pretty big achievement, so we had a lot to live up to.”

The science and analysis at the heart of engineering solutions first appealed to Des at school, and then as a student who won a Commonwealth scholarship to the University of Queensland, where he graduated as a Bachelor of Engineering with Honours in 1973.

He says, “It was the discovering and learning and then the sense of achievement, seeing something designed and built. It was only later that I really became aware of how much the profession contributes to society, and how a modern society can’t exist without it.”

Des started with GHD in 1973. His first job was designing steel girders for a bridge at BHP’s manganese ore mine on Groote Island in Australia’s tropical north. At a time when even electronic calculators were scarce, you could do a lot with a pencil and a slide-rule.
Reflecting on GHD’s expansion during his years as CEO, he turns the focus to others, “Nothing could have been done unless we had inherited a fine company, which had been led by Henry Adcock for 11 years. 2000 was also a seminal year, when a strategy for the company’s future was developed and huge credit goes to John Phillips, our Chairman at the time – he initiated that.”

Des says what occurred in the mid to late 2000s is “a phenomenal example of teamwork” and the result of “achieving audacious goals. It’s also about principles, handed down through generations.

“The values which were communicated to me when I joined GHD were very powerful; teamwork, integrity and respect.

“Over the years, as I’ve reflected on my time with the company, the last of these values is the key, in the sense that people need to be acknowledged and understood. If they are, they feel a great connection and there are enormous benefits for a company when they feel that way.”

After a 38-year career with GHD Des retired in 2011. He is involved in a number of roles as President of Tattersall’s Club in Brisbane, Deputy Chairman of the Ipswich Grammar School Board of Trustees, a Director of Rural and Remote Mental Health, and Chairman of Ultra Aquatic Technology Pty Ltd. His philanthropic activities include support for medical research, the arts and education.
GHD was committed to determine its own future, and opted to aggressively expand overseas as a mechanism to avoid a takeover, and to demonstrate to the world it could compete with and outperform global peers.
3. Post 2000

Clive Weeks / Russell Board

In 2000, GHD entered a period of great expansion, building on a platform which had been established by the contributions of many people over the previous decades. It also saw the introduction of some important changes in governance arrangements which would help guide the company to ongoing success.

Although GHD had operated under senior staff ownership until 2000, it could have been considered as a confederation of regions rather than a unified business. During the previous decade, steps had been taken to break down internal barriers, particularly in technical services. However, a major organisational change was introduced at the commencement of 2000 by a new Management Committee comprising Executive Chairman – John Phillips; Managing Director – Ken Conway; Michael Polin, Clive Weeks and Des Whybird (as shown below from left to right).

All had an understanding that strong co-operation between the regions and offices was a necessity if the full potential of GHD was to be realised. This was emphasised by a change in the operating structure from the beginning of 2000, with the managers of the 14 largest offices (later renamed operating centres) reporting to the managing director rather than to regional managers.
Another important consideration, was that up until this time the GHD Board had effectively endorsed the management decisions of the executive, and had a role in policy setting, personnel management, technical services, information technology, and marketing and communication. It operated more as a board of management than for the broader governance of the organisation.

In 2000 the board’s responsibilities changed, taking the helm for developing the company’s strategy, and providing policy leadership across business sectors and guidance in the areas of finance, risk, audit, environmental performance, branding, safety, and social responsibility.

The board realised that to develop a sound overarching strategy for the new millennium it needed a better understanding of what GHD “was”; what were its core values, its culture, its drivers, and its strengths and weaknesses. The strategy also needed to identify key future markets, to improve market share in these territories, and the range of services the company should be offering.

Fundamental questions were asked: Should GHD branch out and move from only providing consulting services, to a broader offering, taking project risk as a contractor? Should GHD commit to becoming a significant international business? How could it improve its ability to attract and retain people? What targets should be set for its corporate growth overall, and for each part of the business?

The explosion of GHD’s growth in Australia in the 2000s occurred as a direct result of an infrastructure backlog created by the stifling economic rationalist policies of federal and state governments in the 1980s and 1990s. During the first decade of the new millennium, infrastructure spending increased significantly.

Limited spending in the 1980s and 1990s also saw government departments downsize their own technical capability and rely increasingly on external consultants. This phenomenon provided GHD with significant opportunities, enabling it to compete for a full range of services, and acquire people experienced in infrastructure projects and other service offerings.

The scene was set for GHD to build on the strong business, technical and financial foundation established over the previous seven decades, and grasp the opportunities before it.

Solutions and Delivery

To develop a sound strategy a number of fundamental decisions were made, and in 2000, the board laid down five imperatives for GHD to:

- remain a professional services provider – it would not take construction risk
- remain owned by its people in the strong belief that employee ownership is the best model for professional services companies
- continue to expand its range of technical services offered to clients
- increase its focus on and understanding of the markets served, and improve how it was perceived by clients in those markets
- build stronger client relationships

As the board laid down these keystones, a number of international consulting firms were looking to break into the Australian market and locally-owned consultants were vulnerable to takeover. Early in the new millennium, there was still a perception amongst the larger Australian clients that only international consultants could meet their needs on significant projects, because Australian firms were perceived as lacking sufficient skills, resources or experience to meet the complex requirements of large projects.

GHD was committed to determine its own future, and opted to aggressively expand overseas as a mechanism to avoid a takeover, and to demonstrate to the world it could compete with and outperform international peers. Importantly, it wanted to develop global operations, rather than be an Australian company operating internationally.

If GHD was to win the larger infrastructure projects it had to be able to demonstrate it could provide equal or better skilled people, experience and services than its international competitors. The strategy to achieve this was to expand its business outside Australia and win large projects against international competition. The perception that GHD was not an ‘international player’ was not an issue for clients outside Australia, due to the many significant projects the company had undertaken in Asia and New Zealand in the previous decades. However, it was still necessary to show that projects could be adequately resourced with skilled people. To overcome these hurdles, it was clear all GHD offices would need to collaborate more effectively, making key people available for
international work, while strategic acquisitions in the target markets were vital to gain local acceptance and demonstrate capability.

By 2000, GHD had an established business in New Zealand and was developing offices in Malaysia and the Philippines. A detailed market analysis was undertaken to determine countries where business indicators were favourable. This analysis then guided the search for acquisition targets. Chile, Spain and Ireland were ranked highly, and the search for partners and acquisitions in these countries began in earnest in 2000, led initially by Neil Rowlands.

Against this background, the board established a Strategy Committee to develop what became Strategy 2000 – Solutions and Delivery. The key elements of this strategic plan were:

- ‘Strategic planks’ – to streamline delivery of services to suit client needs, expansion to become global and employee ownership
- Tagline – Engineering Management Environment
- Core business – consulting services with an expanding number of service offerings
- Structure – managers of 14 major offices (operating centres) reporting to the managing director
- Strong recognition of the need for business development with the creation of eight Demand Streams – Community Infrastructure, Environment, Water, Defence and Security, Transportation, Energy, Mining and Industry, and Information
- Core values – Teamwork, Respect, Integrity, Innovation, Inspiration, Ethical, Distinction
- Strategic positioning – GHD is an international consultant, entering into alliances where this had the potential to benefit both parties and acquisitions to expand services and gain entry to markets
- Growth – an aggressive growth target – from a turnover of AUD152 million in 2000 to AUD340 million in 2005

Work proceeded immediately on delivering our strategy. The opportunistic acquisition of the business MME Consultants in the Middle East was achieved in 2001, along with the business of Smith and Wood in Wellington, New Zealand, bringing world-class experience in food processing.

GHD’s operations in the Middle East were further expanded the following year by acquiring Taywood Engineering in Dubai. At the same time the Taywood business in Australia joined GHD, providing expertise in materials technology.
GHD’s foothold in South America was established in Santiago, Chile, with the acquisition of Promina Consultants.

2002 saw two transformational mergers in Australia with Geo-Eng and the business of Egis Consulting Australia (formerly CMPS&F), the former adding two offices in China, the latter adding more than 500 new people and an operation in Indonesia.

The Egis business boosted GHD’s business in mineral processing, oil and gas, as well as contaminated site assessment and remediation. Importantly, Egis expanded our presence on the east coast of Australia, particularly in Melbourne and Brisbane.

The approach taken by GHD in integrating people during mergers was that there was no "them and us”. Everyone was considered equal with respect to allocation of roles, salary and conditions, and consideration for becoming shareholders and opportunity for advancement. This created enormous goodwill and underpinned the values leading to a high retention rate of key people.

In 2002 John Phillips retired. Ken Conway was elected Chairman and Clive Weeks appointed Chief Executive Officer (CEO). Brian Mahony and Neil Rowlands stepped down as directors at the same time with Tom Pinzone, Nick Apostolidis, and Peter Wood appointed to the Board. With the subsequent growth in Asia, the Middle East and the Americas, the operating structure was changed to provide more focus on these areas, with General Managers (GMs) appointed for Australia and New Zealand (Des Whybird), Development (Ian Shepherd), and International (Michael Polin). These three GMs – along with the CEO and CFO (Richard Holliday) constituted the newly-formed Practice Management Group (PMG), with the Chairman ex officio.

In 2003, Strategy 2000 – Solutions and Delivery was updated to refresh it through to 2005. With Ken Conway’s retirement the same year, Clive Weeks was elected Chairman and Des Whybird appointed CEO. Richard Holliday was appointed a director. The PMG was augmented with the addition of Russell Board (South-East Asia and New Zealand/Pacific). Ian Shepherd became the General Manager for Australia and later in 2005 added the Middle East to his responsibilities.

Acquisitions continued with City Design significantly increasing the size of GHD’s New Zealand business, Qest bringing specialist risk management capability in Australia, and Allied Consultants in Egypt. Most growth however was occurring organically.

In 2004, a new Strategy Committee with a broader geographical and technical spread was formed led by Ian Shepherd to develop GHD’s Strategy Towards 2010.

Fundamental considerations were that the strategy needed to be simply understood and embraced throughout the organisation, that flexibility must be maintained to meet changing circumstances, and targets set must be stretch goals but not ones that could
be disheartening if not achieved. It was agreed that progress against the targets had to be measurable, easy to implement and not be a distraction to everyday business. Later in 2004, Sherif Seleem was appointed to the GHD Board, based in the Middle East.

By the time Strategy Towards 2010 was launched in May 2005, GHD had already achieved the aggressive targets set in Strategy 2000 – Solutions and Delivery. It had built on its domestic base. New Zealand and the Middle East were developing well, and there was strong recognition of business development through the Demand Streams. GHD as a brand was better known, its image and reputation had improved, and it was recognised as a significant international consultant as evidenced by success on some major projects in Qatar, Abu Dhabi and Dubai. In 2005, GHD employed 3200 people across more than 60 service lines. Offices increasingly collaborated, client relationships had been strengthened, and annual turnover was around AUD400 million. GHD was ranked in the top 50 of the world’s engineering and environmental firms.

Realising Opportunities

Key features of the Towards 2010 strategy, later renamed Realising Opportunities were:

- Strategic drivers – continued employee ownership, consulting services only, keep the business simple (win work, do it well, on time and within budget and get paid), extend and defend core business, strengthen high-potential areas whilst identifying new opportunities, control growth (growth to allow people to grow and realise their potential and aspirations, not growth for growth’s sake), and build on global operations.

- Core purpose – the central mission of GHD is to realise opportunities that deliver results for its clients and its people through outstanding performance. This is why GHD exists.
• Strategic focal points/tag line – Clients People Performance – to emphasise the centrality of developing and maintaining client relationships (through client alliances, delivering results using technical expertise and innovation, improved delivery systems and major project capability resulting in being wanted by clients); the need to attract people (to be a place where people want to work, develop their skills, share knowledge, demonstrate leadership, and realise individual potential); and the importance of performance to realise opportunities and yield strong triple bottom line results. To achieve the desired results it would be necessary to deliver excellent service to clients, develop the company, and capture and share knowledge.

• A major initiative was the development of the GHD Business School that defined career paths, initiated in-house and external training modules and helped train successors so that individuals could grasp their next career opportunity.

• Business Development – five key market segments were targeted (Infrastructure, Property and Buildings, Defence, Environment, Mining and Energy), underpinned by 16 Business Streams (Aviation, Buildings, Defence, Energy, Environment, International Development Assistance, Manufacturing, Marine, Mining and Resources, Oil and Gas, Rail, Roads, Telecommunications, Transportation and Logistics, Urban Development and Water).

• Values – simplified down to three core values:
  - Teamwork – we cooperate with our colleagues and clients to deliver results, accept responsibility, remain positive, share knowledge and remain progressive and creative
  - Respect – we act with humility and courtesy, have consideration for others and value individual differences, whilst enjoying self-respect
  - Integrity – we behave professionally and ethically, honour stakeholder commitments and uphold trust and honesty
• Growth target – in 2005, the target annual turnover for 2010 was AUD750 million. This comprised organic growth in existing businesses to AUD500 million, AUD50 million of new business, and AUD150 million of opportunistic but yet to be defined, additional business. To help define our business goals, the ‘Three Horizons’ concept was used:

- Core Business (Horizon 1, well-understood, well-executed, today’s profit generator)
- Developing Business (Horizon 2, picks up on lead indicators to provide accelerated growth and medium to long-term revenue growth)
- Embryonic Business (Horizon 3, evaluating and creating viable options, new areas of business and investing in initiatives with potential)

Recognition of our culture strengthened us as a company and was the cornerstone of GHD’s success. It defined how GHD went about its business, guided how its people operated professionally, and steered its unique corporate environment; one that is defined by its care for clients, its ability to realise personal potential, and its efforts to build cultural diversity and inclusivity alongside commercial success.

Revenue reached over AUD400 million in 2004-05 and growth continued, driven by the resource and infrastructure sectors (e.g. drought-proofing) in Australia, reaching AUD675 million in 2006-2007. By 2007-2008 the 2010 target (AUD750 million) was surpassed with revenue of AUD939 million.

GHD’s business in the Middle East was accelerating with many iconic projects. In Malaysia, the business of AJP, owned by our original Malaysian joint venture partner from 1978, was acquired.

Board membership continued to change in 2006 as the firm sought to expand the skills and experience available to it. Pat O’Dwyer and David Ryan (both from Egis) were appointed directors, along with Derek Crombie from New Zealand bringing South East Asia and USA experience.

In 2006, GHD opened a United Kingdom (UK) office in York and followed up with new offices in Dublin (Ireland) and Bristol. Elsewhere, a business was acquired in Hong Kong and new offices opened in USA, Malaysia, China, New Zealand as well as Australia.

Recognising the need to readily deploy resources onto clients’ projects around the world, Centres of Capability were established in Manila (The Philippines) and Kuala Lumpur (Malaysia).

GHD made a major statement about its commitment to environmental sustainability with a major forum hosted in Melbourne in 2007, known as “Our Planet – Leaving a Legacy”.
The mid-2000s were exciting times, with huge demand for the technical services GHD was providing, and in particular, mining, and oil and gas. Whilst continuing to grow these businesses, GHD was careful to continue to look after its existing long-term clients. Even though the margins with these clients were not as great, it was recognised the market would turn at some point.

In 2008, a new business in Toronto, Canada, was commenced and GHD undertook a number of small acquisitions in the USA, Australia and New Zealand. Hassall and Associates joined GHD, leading to significant growth in its International Development Assistance business.

By mid-2008, GHD was permanently located in 15 countries around the globe. As an indication of the pace of change, the annual report for the 2007-08 financial year noted a staggering 39 percent year on year growth in gross turnover.

Clive Weeks retired as Chairman in September 2008, with Des Whybird being elected Chairman and Ian Shepherd appointed CEO, immediately before the onset of the Global Financial Crisis (GFC) in late 2008. John Baird was appointed as a director.

The development of GHD’s governance arrangements continued with clear operational responsibilities being transferred by the board to the PMG. Diversity of the PMG was seen as important with the appointment of David Beech Jones as the General Manager – People joining Michael Brouwer as General Manager – Operational Support, Pat O’Dwyer as General Manager – Major Projects & Risk, and Nick Apostolidis as General Manager – Client Development through late 2008 and 2009.

Other operational general managers that were resident in their country/region of responsibility included Don Graf (Americas), David Ryan (Middle East), Peter Wood (China & South East Asia), and Russell Board (Australia & New Zealand). Executive and board meetings continued to be rotated, thus avoiding a head office mentality developing.

The market uncertainty that enveloped the world in the early stages of the GFC were seen in the broad infrastructure sector with clients either cancelling or deferring projects. Particularly hard hit was the Middle East, which experienced severe debt crises when the property bubble burst.

In early 2009 GHD responded with business rationalisation and people numbers were reduced (approximately 10 percent in Australia alone). Decisive analysis and decision-making became the norm, with immediate closure of operations in Egypt and Ireland. Whilst unpaid invoices were a major concern at the time, GHD's senior people accepted the responsibility for chasing them down. Invoices were not forgotten and in some cases payments were still received up to five years later.

During this period it became clear that the energy and resources sector was recovering quickly. Although GHD had been a player in this sector for decades, strategic positioning...
with major clients became a priority and gains were made quickly. In at least one case, a major iron ore client encouraged GHD to grow its service offering, recognising its stability and commitment to project teams.

Following Richard Holliday’s retirement, Phil Bradley was appointed as General Manager Finance in mid-2009. The board continued to evolve with Rob Knott and May Ngui being appointed as directors in 2009, along with Don Graf from USA.

Meanwhile, GHD’s USA business in 2009 grew to more than 300 people through strategic mergers with Stearns & Wheler, Rosewater Engineering, Arizona Engineering Company and CSA Engineering. This was considered by some to be counter intuitive given the GFC, but GHD’s strong financial position enabled it to plan and act for the long-term. The merger with Meyrick and Associates in Australia further strengthened GHD’s position in transportation economics and planning.

**Accomplish More Together**

Following the unprecedented boom years, a new strategy – Accomplish More Together - was brought forward to 2009. As it turned out, it also provided a chance to refocus after the GFC. It built on ‘Realising Opportunities’, but did not make bold predictions with respect to growth and performance. This was a consolidation strategy, following the significant and rapid growth experienced over the prior five years. Despite the adverse conditions, the strategy document confidently predicted that “the quality and speed of our collaborative thinking, relationship building and knowledge sharing will create competitive advantage for GHD”.

Meyrick and Associates staff who joined GHD in Sydney, Wollongong, Melbourne and Canberra
Accomplish More Together drove a high level of focus, greater operational flexibility and a deep commitment to relationships, leadership and values to continue the journey of growth and opportunity for GHD and its people.

It succinctly defined the company as follows:

“GHD is an international network of professional and technical consultants. We connect clients to our recognised architects, engineers, scientists, economists, planners and other specialists to deliver sustainable outcomes. GHD is wholly-owned by staff, ensuring strong alignment of long-term business and people objectives.”

The number of service offerings had grown to over 80 with a common goal “to position GHD as a leader in each of our global market sectors – Water, Energy & Resources, Environment, Property & Buildings, and Transportation, based on a strategy “to promote a client-centred culture that will actively nurture and maintain industry networks, develop a comprehensive understanding of our clients’ businesses, cultivate long-term partnerships and ensure we work together to accomplish more for our clients”.

GHD’s values of Teamwork, Respect and Integrity, were also expressed as:

- “We are connected.”
- “We care.”
- “We keep our word.”

Accomplish More Together was circumspect with respect to growth but stated: “We will adapt, respond and grow.”
Our goal is to achieve sustained growth in the following areas:

- The number of clients who choose GHD as their preferred provider and advisor
- The quality of outcomes we achieve on our client’s projects
- The collective skills of our people
- The establishment of new Horizon 3 initiatives and Horizon 2 growth engines
- The speed with which Horizon 2 and Horizon 3 initiatives mature to Horizon 1

By achieving these goals, GHD will continue to expand its global coverage, maintain steady and manageable growth in clients, people and revenue, and strengthen its position as a leading international professional services company.”

The strategy was often encapsulated by the expression “One GHD”.

A rewarding outcome was a clear lift in client service with a key component being a KPI around ‘client care’ visits. It was also clear from anecdotal comments from employees who joined GHD from other organisations, that its work-sharing culture was more advanced than most.

In late 2009/early 2010 it became clear that GHD’s resilient and diverse business model had allowed it to bounce back and positive momentum was again evident, particularly in Australia. The international business in China and North America continued to develop. The Middle East business continued to battle with people numbers reducing 50 percent from the highs of 800 in 2008. GHD focused on its operations in Abu Dhabi and Qatar, with the former delivering particularly strong results to GHD under Alan Lindberg’s stewardship. In 2010, John Baird became General Manager – Middle East/Europe. Annual revenue overall recovered to about AUD1 billion.

In early 2010, GHD was to be tested by a matter which went to the core of its values. Its Indonesian operation working in joint venture with another local company had been the subject of a complaint to the World Bank. An inspection of the project records was conducted by the World Bank which identified inconsistencies in the substantiation of disbursements for accommodation and vehicle expenses. The conduct of a subcontractor and a few individuals in a remote and challenging environment had consequences that impacted GHD’s business around the globe.

GHD, committed to doing the right thing, arranged to rectify the discrepancies, however the World Bank was determined to commence sanction proceedings. GHD fully cooperated throughout the World Bank processes and sought to reach a fair outcome. Keith Christiansen and Rob Knott spent significant time in Washington DC to represent GHD, and also engaged with its global clients and the Australian Government to be
fully transparent with regard to the issue. After appeal to the Sanctions Board, GHD was subject to a 12-month sanction in 2013.

Through this process, GHD significantly upgraded its Integrity Management Policies, and communicated openly about its experiences at a range of forums, effectively taking on a leadership role.

In order to continue placing an emphasis on risk and systems, John Gersekowski was appointed General Manager – Operational Support.

During a period of reflection in late 2010, it became evident that some of the operations in Asia were not sustainable. Following 10 years of international expansion and exploration, which was necessary to gain an understanding of what it takes to run a global business, a number of criteria were evaluated in assessing the sustainability of an operation. For instance, being able to have people stay with GHD for 10 to 20 years, have a leadership pipeline, have a trajectory towards commercial viability, and have clients who were respectful of and valued GHD.

Realising that some of its operations in Asia were not going to progress to viable businesses, GHD made a decision to close businesses in Hong Kong, Vietnam, Malaysia and Indonesia. One of the learnings through this period was that it is easier to open a new operation than to close it! This brought greater discipline to strategic decision-making.

Other markets were continuing to develop, particularly in mining and energy through 2011 and into 2012, and in relation to our accelerated growth with the Engineering Procurement and Construction Management (EPCM) business.

In 2011 Des Whybird retired as Chairman and Russell Board was elected. Coinciding with this change, Mike Muntisov and Warren Traves were appointed directors, along with GHD’s first independent non-executive director Peter Wasow. Mary Ann Hynes, an attorney from Chicago, was appointed as a second non-executive director the following year.

On the PMG, John Baird became General Manager – Australia, Phil Duthie General Manager – UK & Middle East, and Stephen Trainor General Manager – Strategy and Clients.

In continuing to achieve diversification and new growth engines GHD turned to Mergers and Acquisitions (M&A) again to complement organic growth. To gain a clear line of sight, Peter Wood was appointed as M&A Leader. As demonstrated in the past, when dedicated people were applied to a challenge, the results follow, and M&A quickly gained traction. Through its robust financial position and banking support, GHD was able to achieve M&A success with its culture being a key driver for many companies as they sought to consider their future. Barry Potter was appointed General Manager – Asia, followed in 2012 by Jin Zhang Zou as General Manager – China.
GHD also made an opportunistic hire in 2011 with Richard Wankmuller joining, later that year being appointed as the General Manager – Americas. With a strong bent to strategy Richard, with his USA background and experience, was able to provide further insight into GHD’s emerging North American business.

Recognising the importance of organic growth, Rob Knott was appointed General Manager – Organic Growth.


GHD’s UK business also grew following a merger with Collinson Dutton Ltd in 2011. In Australia, mergers included Water Sciences Group (2012) and Hill Michael Engineering (2013).

Since the delivery of our strategy Realising Opportunities in 2005, improving occupational health and safety performance was front and centre of GHD’s objectives. Year after year, forward indicators improved and GHD achieved a safety record of 12.6 million consecutive hours (as at April 2015) Lost Time Injury free.

After enjoying a few positive years following the GFC, the infrastructure sector in Australia was seriously impacted in mid-2012 by the collapse of commodity prices. This sent shockwaves through all companies in the sector, particularly those that had focused their business entirely on the mining sector. Again GHD’s diverse business model allowed it to navigate through those times, with many clients commenting that GHD’s long-term loyalty with clients was an asset when thinking about who they would select for projects. Through this period Phil Duthie was appointed General Manager – Australia & New Zealand.
A two-year transformation plan was needed across most of GHD’s business operations. Australia needed to reduce numbers to align with the reduced revenues; China was scaled back to focus on water and environment, as well as outbound investment; Chile was restructured; Qatar and Abu Dhabi contracted to what were seen as longer term sustainable businesses. The Philippines continued to perform well, as did New Zealand.

This was a stressful period for all GHD people, particularly those that had never experienced an industry downturn. Counter-intuitively GHD continued to employ graduates when most organisations did not. GHD has a long memory and can remember the value of renewal following the recession in the 1980s and 1990s.

In late 2012, GHD and the North American business of Conestoga Rovers and Associated (CRA) started exploring merger discussions. CRA was looking for mergers with like-minded firms to further grow its business, but was really looking at smaller firms than itself. GHD was looking for potential partners who would help grow its North American business and further diversify and expand the business. Importantly both businesses were passionate about remaining 100 percent owned by their people. It quickly became evident that the two businesses had much to offer one another, had relatively small overlap, and similar heritages.

CRA was a 3000-person engineering and environmental business across Canada and the USA, with a small office in the UK. During the period from early 2013 to mid-2014 the two companies considered and evaluated the potential. On 2 July 2014, GHD and CRA joined, creating an 8500-person business with an estimated annual turnover of AUD1.6 billion. CRA had Ed Roberts and Diane Lundquist join the GHD Board and Tony Ying the Executive Management Group (EMG), formerly known as the PMG.
The EMG was strengthened in 2014 with Ashley Wright being appointed as General Manager – Middle East / UK and Rob Knott as General Manager – Asia Pacific. Phil Duthie continued as General Manager – Australia. Stephen Quigley was appointed General Manager – North America in 2015.

Through all of this change, GHD continued to pursue opportunities as they arose. Of particular note at this time was the outsourcing of the Horizon Power’s Engineering Group in Western Australia and acquiring the business of Woodhead Architecture in Australia, creating an integrated design practice GHDWoodhead.

**Strategy to 2020**

In 2014, GHD launched its Strategy to 2020. This saw GHD’s future as a global organisation providing professional services to clients in its five global markets, and characterised by a proud history of success and an ability to adapt and outperform its industry through agility and technical leadership.

The intent was to develop a balanced business across the three economic regions of Australia / New Zealand / Asia, The Americas, and Europe / Africa / Middle East, responding to the global demands of water, energy and urbanisation.

Stephen Trainor as General Manager – Strategy & Clients led the development team for the strategy, which identified GHD’s core purpose as: “Together with our clients we create lasting community benefit”.

The strategy sets out GHD’s vision to be renowned for client service, delivered by talented and empowered people committed to improving the lives of communities around the world.

The strategy is being realised through five strategic imperatives:

- **Client service** – Becoming an industry leader for client service excellence
- **Empowered people** – Empowering and growing talented, career-oriented people
- **Connected global network** – Achieving balance, resilience and reach across three connected economic regions
- **Sustainable growth** – Creating new opportunities and experiences
- **High performance** – Tackling challenges with clarity and imaginative thinking
The strategy identified the defining attributes of GHD in 2020 as being:

- Recognised by its clients and partners as leaders in **client service**
- Where **talented people** thrive and develop their careers
- **One brand** renowned across three connected economic regions
- A **top five** employee-owned company in its industry
- A **high performing** organisation with a culture of safety

Building on previous strategies, most importantly, Strategy to 2020 was client-service driven.

Subsequent to the launch of the strategy, Safety was added to the existing company values of Teamwork, Respect and Integrity. Whilst always valued, it was the feedback from GHD’s people in a people engagement survey that convinced the board that this was indeed a value of the firm.

In China, GHD has continued to work successfully with Chinese outbound investment into other parts of the world, most notably Australia and the Middle East, building on two decades of experience in China. However, GHD’s domestic business in China was not commercially viable and it was concluded that it would be better under other ownership and was divested, whilst the company maintained an important presence in country.

In May 2015, GHD acquired the 150-person GHA Livigunn engineering business in the UK and the following year Mark Ingram became General Manager Europe and Middle East. With a network of more than 200 offices, GHD now had 8500 people,
including approximately 4000 in North America, and more than 250 in the UK. GHD has made substantial progress towards its strategic vision of a balanced global footprint.

Over a number of years, GHD had developed a niche array of services which included asset management, logistics, risk management and infrastructure economics. It became apparent that the amalgamation of these services within a new value proposition, could provide distinct competitive advantages. This led to the creation of a new Advisory business launched mid-2016 with Mark Read leading an experienced team.

After seven and a half years as CEO, Ian Shepherd retired in early 2016, with Ashley Wright being appointed as the new CEO. One year following that transition, Rob Knott will replace Russell Board as Chairman of GHD.

Gross turnover for 2015-16 financial year was AUD1.7 billion, compared with AUD138 million for 1998-1999, a compound growth rate of more than 16 percent per annum.

Upon reflection on this, the strategic steps taken over the period since 2000 have been significant. This is underpinned by a culture within GHD which reflects the previous generations of leaders and the critical nature of strategy. At the same time, remaining an employee-owned company clearly is a differentiator in the industry today.

The larger GHD of 2016 is an outcome of the 2000 strategy aspiration of being a global company. To achieve such a significant company and remain employee owned is testament to the generations of leaders who have contributed selflessly. It is a legacy that will live on for future generations.

Shareholders and funding

One factor in GHD’s success since 2000 has been its ability to fund the rapid growth of the business. Working capital requirements for professional service firms are very significant – the funding of salaries, office accommodation and provision of IT facilities and support teams, and the cost of submitting proposals, marketing and insurances – must all be funded before fee income starts to flow. GHD was able to meet these costs and strengthen its balance sheet with funding coming from retained profit and its shareholders, as well as modest borrowings to meet working capital requirements.

Employee ownership is very important and makes a substantial contribution. Shareholders have a tangible commitment to the success of GHD. They work in the business, understand clients, and have a direct stake in the company’s achievements through the flow of dividends.

GHD’s policy is that shareholders must be employees, and that when a shareholder retires or otherwise leaves the company, shares must be transferred to other staff. Each retirement makes a pool of shares available for distribution. GHD rigorously pursues its
policy of sharing the rewards from the business with an increasing number of employee shareholders. The number of people who hold shares has increased from around 100 in 2000, to more than 2200 in 2016, with shareholding being allocated to those making a strong contribution to the business. This approach has also been applied to people joining GHD through mergers and acquisitions by recognising their service prior to joining GHD.

With growing turnover, profit, and assets, GHD’s share price has trended positively over the medium term. It is determined by independent valuation twice a year to support the issue and transfer of shares.

Governance evolution

As GHD entered the 21st century the corporate world was changing rapidly, with a growing focus on improved corporate governance.

In addition to overseeing sound management, giving rigorous attention to shareholder interests, driving strategy, and setting standards for triple bottom-line performance (environmental and social performance, as well as financial performance), corporate governance also covers duties relating to performance, health and safety, training, risk management, diversity, equal opportunity, business ethics, company values and culture.

GHD began strengthening its governance significantly in 1999. This developed until 2009 when a formal governance model was introduced, which defines the various responsibilities and provides a framework around compliance and risk.

The board now exercises its role quite independently of senior management, with an overlap between the two generally kept to less than two people. The board also has two independent non-executive directors, while its subcommittees each have external representation, bringing in additional independence and expertise. The most recent appointment as non-executive director was Jan Babiak in 2016. Governance has been modelled on OECD standards of best practice. Where GHD diverges from these standards, it publishes the reasons why, befitting an organisation with more than 2000 shareholders.
After 30 years with GHD and almost eight years as Chief Executive Officer, Ian Shepherd retired in March 2016. Under Ian’s watch as CEO, the company experienced one of the most exciting periods of growth in its history including its substantial expansion in North America and the UK.

Ian was born in 1956 in the small town of Manjimup 300 km south of Perth in Western Australia (WA). A civil engineering graduate, he began his career with GHD at the age of 28 working as a structural engineer. His recollection of those early times reflects an aspect of the company’s DNA that holds true to this day.

He says, “Soon after joining GHD, I realised the company offered something different. In other firms control rested with senior, older people. Junior staff weren’t encouraged to become involved in client relationships. But at GHD, there was an ability to do things yourself, if you had the passion and desire. It was a culture of empowerment, right from the start.”

Much of his early career involved designing and project managing client infrastructure projects primarily in WA. Appointed a Director in 1999, he was immediately asked to chair the Strategy Committee which was instrumental in GHD raising its sights – expanding its footprint in Australia and paving the way for the company’s global growth in the 2000s. Central to the 2000 Strategy conceived by the committee, was the plan to build a business that would rise above the ‘boom and bust’ economic cycles of one country or one market, and to grow a global business that could robustly protect GHD’s precious employee-owned status.

Appointed Operating Centre Manager for Perth in 2000 and General Manager Australia three years later, Ian went on to become CEO in 2008. A hallmark of his time at the helm was his passion for GHD’s culture of staff empowerment and building what he describes as ‘a community of leaders’.
In a business where asset management has been a touchstone for success, Ian’s belief that ‘our people are our most important asset’ has never been more true. “We have people that stay for 10, 20, 30 years, and clients can rely on that,” he says. “25 percent of our people are shareholders; they live GHD.”

Reflecting on his journey, Ian says his advice to a GHD graduate recruit today, wherever they might be in the world, is simple: “Our culture is about empowerment and that is why we don’t have a headquarter. Make decisions locally, and make things happen.”

During Ian’s time at the helm, GHD’s annual revenue nearly doubled to AUD1.6 billion, and on the eve of his retirement he paid tribute to the company’s global transformation.

“When I became CEO we had fewer than 100 people in the US and none at all in Canada. Today nearly half our revenue is generated in North America.

“We have grown the proportion of our private sector clients, including multinational companies that operate assets around the world.

“At a time when some economies are stagnant, and with commodity prices trending down, having a diversified business is helping us adapt, grow, and add value for our clients.”
Chapter 4.

Today, our Property & Buildings teams operate across a global network, leading in the design and delivery of complex facilities across the built environment.
With GHD offering its services globally to clients across five market sectors, Property and Buildings (P&B) has grown as a key sector for us since the mid-1990s. At times contributing up to 20 percent of our business revenue year on year, today GHD provides clients with innovative solutions for their property and buildings portfolios, helping them break down the complexity of project requirements to deliver seamless outcomes.

GHD has always listened to its clients, and throughout the growth of our P&B business over the past quarter of a century, we have continually sought feedback and responded to the changing dynamics of our markets. As a consequence, GHD created a strategic brand extension for P&B, (particularly for use in the Australian and New Zealand markets), in response to a client base which often procures facility design services using different criteria to GHD’s traditional core offerings in infrastructure and environmental engineering.

In 2014, following more than a decade of close collaboration between GHD and the award-winning Australian architecture practice Woodhead, the integration of GHD’s architecture practice and the team from Woodhead cemented this move, reinforcing GHD’s position as a leading architectural and engineering integrated design practice. Michael Hegarty was appointed GHDWoodhead practice leader across Australia and New Zealand.

Described by Phil Duthie, GHD’s General Manager - Australia, as “a key development in our targeted P&B growth strategy”, the Woodhead integration combined the significant design experience and skills of both firms in architecture, interior design and masterplanning services, while drawing on GHD’s global network of engineers, scientists, environmental consultants, project managers and economists.

Angelo Di Marco, Sydney Market Leader, Property & Buildings, says the union reinforces “a shared vision that design is a collaborative and integrated process, at its heart”
and “enriches the firm's long history in the delivery of complex global projects.” As an aside, this collaboration of architecture and engineering goes back many years; GHD co-founder, Geoffrey Davey, and his architect wife Nancy, were known to spend many hours discussing projects being undertaken by the firm. Architects were first employed at GHD in 1972 when Tony Lewis and Gary Stanley joined, providing integrated architectural and landscape architectural input into our projects.

Today our P&B teams operate throughout our global network, leading in the design and delivery of complex facilities across the built environment. Our growth in architecture has seen GHDWoodhead ranked in the top 100 global architecture practices, and in 2017 named as Australia's fourth-largest architectural firm.

“GHD began diversification long before most people could spell it,” wrote Stan Arneil, in the first company history A Firm Foundation, originally published in 1988. GHD's founding fathers, Gutteridge, Haskins and Davey, were known for taking a progressive approach to the engineering issues of their time; they were constantly asking, “How can we do this better?” and then designing solutions to meet the need. That mindset continues in the 21st century. From the concrete technology design and construction of the world's tallest building - the 160-storey Burj Dubai Tower, to project managing the creation of counter-terrorism training facilities for the Australian Government's Department of Defence, GHD's property and buildings projects reflect a remarkable and diverse portfolio. The company's many industry awards include major commercial building developments in China, (designed for a government-private enterprise joint venture) which underpinned masterplanning for entire cities in the world's most populous nation.

Responding to an ever greater industry focus on sustainability and energy, in the mid-2000s, GHD became a leader in building research, developing spectacular concepts for buildings of the future, such as the Zero project in Melbourne, which demonstrated what can be achieved in an energy- and resource-efficient building.

Unveiled at GHD's Our Planet – Leaving a Legacy sustainability forum in 2007, the Zero building ran on energy generated onsite using only renewable sources with the goal of zero net annual external power consumption, and zero operating carbon dioxide emissions. Paul Thatcher, Principal, Architecture, describes the legacy of Zero as being deeper than a pioneering sustainable building concept: “It was experiencing the real-world challenges and possibilities of truly integrated multidisciplinary design,” says Paul, “and learning that intuition is trumped by the power of modelling and simulation.”

Technology and its application has been the game changer. Where building plans were once drawn by hand on vellum, computers now create 3D data-rich models that can be shared online and edited from any corner of the globe. Intelligent design management is now one of GHD's key differentiators from its competitors; architects collaborating in studios in Perth, Manila, or Auckland, can use building information modelling (BIM)
for an apartment development intended for construction in the Middle East. Colleagues across our global network, and our clients, are able to take a virtual tour of the building, and review the design in the digital environment, long before the first section of concrete is poured on site.

Our use of digital technology has made 3D fly-through an interactive design tool that allows clients to participate in the design of their facilities. This approach is well ahead of many of our competitors, who use fly-through software largely for display of pre-determined design outcomes. This technology is currently being used by our globally connected network, with a GHD team in Irvine, California, working on the Doheny Desalination Plant (South Orange Coastal Ocean Desalination Project), and engaging our Adelaide studio to assist with 3D fly-through visualisations.

GHD has gained global recognition for the quality and scale of the P&B projects it delivers. Our unique market position is strengthened by our ability to deliver complex and diverse facilities: hospitals, airports, urban precincts, residential and educational buildings, along with research and defence infrastructure. But GHD doesn’t just take on large-scale jobs; some of our most successful and satisfying projects have been relatively modest, but all have a common thread – delivering innovative and exciting solutions to clients.

GHD’s involvement in the 2000 Sydney Olympics involved project managing the design and delivery of the Olympic site infrastructure and temporary works. On September 26, 2000, when a record crowd of more than 112,000 flocked to Olympic Park to watch Australian athletics champion Cathy Freeman win gold in the women’s 400 metres
event, they were able to get into the venue because of logistical support provided by GHD.

The company played a critical role from masterplanning through to construction for the Palm Islands project, a landmark development rising from the waters off Dubai which began construction in the early 2000s. Referred to as the “eighth wonder of the world”, the project comprised three artificial island developments that will support around 20 luxury hotels and resorts, 2000 residential villas and 27,000 apartments. Office buildings, marinas, theme parks, restaurants, shopping malls, cinemas, community facilities and large areas of public open space also feature. For this project, GHD provided concept designs, environmental analysis, transport planning, maritime infrastructure assessments and coastal analysis as well as 3D modelling and GIS (Geographical Information Systems) implementation.

The 1990s – a quantum change

By the mid-1990s, GHD employed around 860 people. The company had always sought smart solutions to the challenges encountered in its P&B work, but now it had diversified its scope of projects. Three projects from this period illustrate the breadth of work being undertaken.
In far north Queensland, GHD managed the delivery of a AUD12 million infrastructure program for the region’s Aboriginal and Torres Strait Islander communities. Generating jobs and training opportunities for local people was part of the multi-layered contract that entailed project management, designing the necessary works and managing the construction.

A decade after the Western Australian city of Fremantle was put on the map for hosting the America’s Cup in 1987, a private developer embarked upon the state’s most ambitious renewal project - to transform a decaying industrial estate on the banks of the Swan River into a dynamic hub of residential apartments, boardwalks, jetties and public spaces. GHD provided detailed surveying and planning services, as well as helping secure government agency approvals. The transformation was a huge success and the location is now a much-in-demand residential and recreational site. Meanwhile, in Canberra, GHD received plaudits for its renewal of the National Film and Sound Archive in 1999.

Such projects reflect the transformation that occurred at GHD from 1997 with the company’s acquisition of Works Australia, the Australian Government’s architectural, engineering and project management business. This acquisition formalised the already strong working relationships between GHD and the government, and fueled the company’s expansion with Defence projects. During this period, providing security consulting services using our global network of in-house infrastructure professionals, security management and security technology teams, GHD was one of the few companies to attain Type 1 security accreditation to undertake work for the Australian Government’s Department of Defence.
The start of a new chapter in the GHD story, the Works Australia network of offices in Adelaide, Brisbane, Canberra, Melbourne, Sydney, and Perth brought a new approach to client management. With Works Australia architects integrated into GHD, P&B projects included the refurbishment of Australian embassies in China, India, Malaysia, Singapore and Vietnam.

Familiar with managing national clients such as Defence, the Bureau of Metrology, and Air Services Australia, many of today’s P&B leadership team joined the business with the acquisition of Works Australia, including David Bell, David Alm, Rob Knott, David Pinnock and Craig Brown.

This was followed by the acquisition of Flack + Kurtz in 1999 which increased GHD’s capacity in sustainable building design. GB Hill & Partners in Western Australia, specialising in environmental management, urban design and residential, joined the fold soon after.

A new millennium – growth through acquisition

The early 2000s saw our P&B business undergo rapid global growth, through strategic acquisitions overseas and organic internal growth. GHD acquired Meinhardt Middle East (MME), an Australian-owned practice with offices in Doha, Qatar, Dubai and Abu Dhabi. MME employed 47 local staff, mainly in the building sector, providing architectural, structural, mechanical and electrical consulting engineering services. In the same year, the structural and civil engineering consultancy of Graham and Tasker in South Australia joined GHD.

In 2002, GHD acquired Taywood Engineering, the consulting arm of Taylor Woodrow. Taywood’s presence in the Middle East comprised structural and geotechnical engineers, along with a facades testing laboratory. The same year saw the acquisition of Egis Consulting, with its very significant civil, structural, building services engineering and environmental capabilities.

Overnight the Egis merger saw GHD grow by some 500 people, with P&B benefitting particularly through the addition of new skills.

City Design, previously the Auckland City Council works division, was acquired in 2004, bringing new skills into our New Zealand operations, including structural, building services, surveying and architecture, plus related road and water engineering. In 2006, Muir Architects joined GHD in Western Australia, with the practice bringing strong residential and commercial design experience, and capability in 3D design and the fledgling application of BIM. Overseas, in 2006 GHD broadened its P&B reach in Hong Kong and China, completing acquisitions of consulting engineering company Rankine & Hill and Archispace, a provider of urban planning, architectural and landscape design services throughout China.
Back in Australia, in 2007 GHD boosted its capacity in the delivery of design services in New South Wales with the architectural business of Cameron Chisholm & Nicol (CCN) joining the firm.

In 2011 GHD acquired building US services company RobsonWoese Inc. with offices in Buffalo and Syracuse, NY, and the following year merged with The Sernas Group, a 220-person firm with offices in Canada and the United States. In 2014, also in the US, GHD acquired The Protection Engineering Group to boost its fire, life safety, security and technology practices.

The same year GHD significantly expanded its architecture and interior design business with the acquisition of the team from Woodhead Australia, and the rebranding of GHD’s existing affiliated architectural practice into GHDWoodhead. The creation of GHDWoodhead has been a game changer for our P&B offering, with its 90-year pedigree as one of Australia’s top architectural practices. Since 2014, GHDWoodhead has continued to grow and become increasingly recognised as a potent brand extension of GHD.

Recent major projects include the Curtin University Building 410, Perth; Modbury Hospital, South Australia and Victoria; Grange Retirement Living Victoria. New projects, including multi-residential towers in Adelaide and a large oversite development in Sydney CBD, will be among the future landmarks of our business. In late 2016, Creative Spaces, an architecture, interior design and fit out consultancy with studios in Auckland, Wellington and Whangarei, joined GHD in New Zealand, significantly raising our profile across the Tasman.
Key markets

Over the past 25 years, ten sub-sectors have evolved which represent the key markets for P&B:

- Defence and national security
- Civic, community and justice
- Commercial and workplace
- Education and science
- Healthcare
- Industrial and utilities
- Residential, retirement living and aged care
- Retail and hospitality
- Transport
- Urban development

What follows is a small selection of projects across each of these sub-sectors:

Defence and national security

The Defence sector has become one of GHD’s largest markets with projects across Australia, New Zealand and South East Asia. The acquisition of Works Australia in 1997 enabled GHD to significantly broaden its service offerings to this market. Major Defence projects include:

**Twofold Bay**

Following the closure of ammunition facilities in Sydney Harbour in 1999, the Department of Defence sought to establish a new facility at Twofold Bay, near Eden in New South Wales, to provide a long-term solution for the Royal Australian Navy’s ammunitioning requirements on the east coast. GHD’s involvement in the project spanned more than nine years, starting in 1994 and included feasibility and development work, support in developing Parliamentary Infrastructure Committee reports, statutory approvals, environmental studies and multidisciplinary detailed design and engineering for a 200 m wharf, 580 m jetty, 1.3 km access road and a depot facility. GHD provided project management services for the tendering and construction phase and our involvement culminated in the opening of the AUD43 million Twofold Bay facility in 2003.
Hardened and Networked Army (HNA) Edinburgh Defence Precinct Project

In a unique collaboration between GHD, Woodhead and Aurecon, the Edinburgh Design Team was created in 2007 to undertake the role of masterplanning, architecture, engineering, and interior design, for the Hardened and Networked Army Facilities at the Edinburgh Defence Precinct (HNA EDP) in South Australia. The redevelopment at RAAF Base Edinburgh included the delivery of 56 buildings, providing accommodation, administration support, training facilities, messing, base infrastructure, maintenance and storage facilities for the 7th Battalion Royal Australian Regiment (7RAR) relocation from Darwin to the Edinburgh Defence Precinct. The project created a new facilities benchmark for the Australian Army to meet evolving demands of potential operational environments, technological change in the training and prosecution of conflict, and emerging social attitudes towards the treatment of personnel and their families.

The facilities are designed to reflect the traditional values of the site and create a new standard of amenity for personnel, achieving a sustainable working environment compatible with civilian standards and international military models. The application by the design team of the Defence Force Green Building Requirements and Environmental Sustainable Design (ESD) performance standards, particularly the investment in water and energy saving elements, has positioned the HNA EDP project as a flagship project for Defence, and an ESD benchmark for large scale developments throughout the country.
**RAAF Base Williamtown redevelopment, New South Wales, 2003**

This AUD150 million redevelopment of the Royal Australian Air Force base north of Newcastle, NSW, provides the headquarters of Australia's Air Combat Control. The changes facilitated the accommodation of early warning and control aircraft, as well as four Boeing 727-700s. GHD developed the master plan and provided technical assistance. A further commission included design of the AUD17 million initial works, including a 3000 m2 headquarters building, and the upgrading of base security and communications.

**AIR7000 Phase 2B, RAAF Darwin, 2013**

In February 2013, the Edinburgh Design Team (EDT), with GHD as lead consultant, was awarded the AIR7000 Package 1 Project – Darwin. The project involved the construction of facilities at the RAAF Base Darwin Forward Operating Base to deliver a Maritime Intelligence, Surveillance, Reconnaissance and Response (MISR) capability, to replace the current Maritime Patrol and Response (MPR) capability. The project supports the new fleet operations, mission support, maintenance and logistics function related to the introduction of the P-8A maritime patrol aircraft.

**Campbell Barracks Redevelopment, Perth, 2013**

This AUD200 million redevelopment will provide function and flexible purpose-build facilities, and improved infrastructure at Campbell Barracks, home to the special forces unit of the Australian Army (Special Air Service Regiment - SASR). GHD has the key role of Project Management and Contract Administration (PMCA) for this significant Defence project. The project also delivers a sustainable outcome for the Defence estate by maximising the reuse of existing facilities, consolidating buildings and functions, demolishing redundant buildings, and extending and upgrading existing infrastructure.

**Light Armoured Vehicles (LAV) – NZ1IR Workshops, New Zealand, 2008-10**

This project involved the development, documentation and contract management of a new workshop facility at Linton Military Camp, the New Zealand Army’s largest base, to house a workshop facility for the Light Armoured Vehicles (NZLAVIII).

**Civic and community**

**Shepparton Law Courts, Victoria, 2016**

The new Shepparton Law Courts, designed by GHDWoodhead in collaboration with Architectus, affirm the importance of civic architecture in the life of a community. Located on the corner of High and Wyndham Streets, the project has created a justice precinct, with the police station to the west, and the 1930s heritage Supreme Court building in the centre. The new Shepparton Law Courts building, with its welcoming entry lobby inspired by the enduring image of the ancient river red gum tree, one that provides shade or shelter, offers the possibility of a gathering place or a meeting place. Its base is founded on brick - a memory of older country courthouses, and this new five-level courts building seeks to provide a contemporary expression for the open and transparent delivery of justice to Shepparton and the wider community.
**Brisbane Town Hall, Queensland**

In 2009, GHD was commissioned by Brisbane City Council to deliver interior design services for the restoration of Brisbane City Hall. GHD was project architect in association with Tanner Kibble Denton Architects, who provided heritage and architectural services. Our interior design role included space planning, design of joinery, bespoke carpets, colour schemes, finishes selections, wet areas, window treatments, coordination of services with design elements and furniture selections. A key success factor of the design was that the original building fabric of Brisbane City Hall remains largely unaltered. Central to the restoration work was leveraging opportunities within the building services and structural requirements to deliver an interior suitable for its role as a convention/functions centre, while addressing the heritage, environmental sustainability and internal building constraints.

**Christchurch rebuilding**

Following the Christchurch earthquake in February 2011, GHD had a central role in the immediate post-earthquake remediation work. While initial tasks focused on in-ground services and roads, these included geotechnical assessment and building structural inspections. One of the immediate needs was for structural engineering and GHD established a P&B business in Christchurch to undertake the work. As a member of the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) Alliance, responsible for rebuilding the city’s infrastructure, GHD played a crucial role, mobilising resource teams quickly to provide services using our global reach.
Khalifa Stadium, Doha
In 2002, GHD won the contract with Cox Richardson and PTW Architects, to redevelop the Khalifa Stadium in Doha for the 2006 Asian Games. The AUD170 million redevelopment featured a tensile fabric roof structure, a second arch structure, and seating for 40,000 people. GHD also designed the landscape and urban infrastructure for the Khalifa Sports Precinct.

Auckland Central Library
In 2004, GHD (formerly City Design), in association with Athfield Architects, was engaged to redevelop Auckland’s Central Library. The work focused on expanding the library’s visibility and accessibility, and a key element was a prominent new entrance to the library in the form of a lantern – a lofty glazed space that connects the library to the street. In addition, internal rearrangements of the library’s collections were undertaken to provide better accessibility and increased appeal, particularly to previously underutilised collections.

Clarence Reardon Centre, Melbourne
In 2012, GHDWoodhead completed a new carbon-neutral function centre and administrative headquarters for a major metropolitan cemeteries trust in Melbourne. Situated in the heart of Springvale Botanical Cemetery, the Clarence Reardon Centre was designed to sit in harmony with its lush botanical context. The upper floor is clad in highly reflective double-glazing, allowing it to not only perform well in the harsh Australian climate but also to cloak itself in the imagery of its natural setting. The building’s long, smooth and ephemeral form catches and continues the colours and shapes of the surrounding sky and tree canopies, shifting and changing as time passes and weather turns – a simple homage to the beautiful yet transitory patterns of life.

Commercial and workplace

Al Bidda Tower, Doha, 2005
The award-winning Al Bidda Tower is a landmark building constructed on Doha’s waterfront esplanade. From initial concept to final development, GHD completed the design with features derived from the concept of a tornado. Designated by the Council on Tall Buildings and Urban Habitat as one of the 100 greatest high-rise buildings in the world, the innovative design creates a twist in the tower that gives the impression of dynamic movement. The Al Bidda Tower is iconic not just in terms of GHD’s portfolio, but as a beacon of design excellence on the world stage.

Burj Khalifa Tower, Dubai
GHD is playing a vital role in managing the long-term structural integrity of the world’s tallest building, the Burj Khalifa Tower. GHD was initially appointed in 2004 to design and review the installation of a cathodic protection system to protect the reinforced concrete piles and raft foundation, as well as to provide advice on securing the longer-term durability of the foundations. Throughout construction, the GHD team
filled the critical role of Verification and Testing Agency (IVTA) for the developer, EMAAR Properties. The 160-plus-storey mixed-use tower stands at over 800 m above sea level. Concrete and metal specialists James Aldred and Hugh Cunningham from GHD’s Materials Technology team in Perth, led the review process of the structure and authored recommendations.

**UN Green One House, Hanoi, Vietnam (UNGOH), 2010**
This project comprised the re-use and expansion of a six-storey building in Hanoi to house 450 staff working with 14 UN agencies operating in Vietnam. GHD provided full design and construction supervision services to UNDP, from concept design through to handover of the building.

**Dumas House, Perth**
In 2009, GHD was appointed Project Manager and Lead Interior Designer for the AUD44.5 million refurbishment of Dumas House for the WA Government. Demanding a high level of logistical planning involving the relocation of government departments and ministerial offices, the base building works included complete refurbishments of the interiors and electrical, fire and telecommunications upgrades, while occupied by six ministerial offices.

**Education and science**

**Mission Heights School, New Zealand**
When building two new schools on a greenfield site in Auckland, Hawkins Construction approached GHD to provide the skills they needed to complete the project – Green Star-accredited professionals, with world-class engineering and landscape architecture
credentials. Situated in Flat Bush, Mission Heights School is actually two schools sharing a library, administration facilities, a gymnasium and a performing arts centre, and will eventually cater for some 2000 students.

A fast-tracked timeframe meant the project required swift completion. Working closely with ASC Architects, Hawkins Construction, the Ministry of Education and the New Zealand Green Building Council (NZGBC), the tight timeframe dictated a strong partnering and team approach. This was a true example of a multi-disciplinary offering, with GHD providing a single point of contact for the client.

GHD was pivotal in bringing to the fore a reduced ecological footprint for the project. With no previous Green Star-rated schools in New Zealand, GHD worked with the NZGBC to develop a pilot tool to rate educational buildings based on the project experience. The design of this project provides a blueprint for green schools of the future, benefitting from lower operational costs, and a healthier and improved learning environment.

**CSIRO Energy Centre, Newcastle, 2003**

Sun, wind, and natural gas were put to use at the CSIRO Energy Centre in Newcastle, NSW, to provide a showcase of sustainable design and renewable energy management. Passive energy conservation initiatives include maximising the use of solar energy and daylight, natural ventilation, automatic lighting controls, and underfloor air conditioning. For this project, GHD Flack+Kurtz (GHD's advanced building technology group) designed active and passive energy systems, and provided sustainable design, mechanical, electrical, fire, hydraulics, security, information technology and civil engineering services.

**Al Ain University, Abu Dhabi**

GHD's P&B global capability was further confirmed in 2005 when the company was awarded the engineering design for the expansion of Al Ain University. The company provided structural, mechanical, electrical and hydraulic engineering design services, as well as building fire services and IT and communication services for the AUD500 million project. To meet its fast-track schedule, GHD committed to the project more than 250 people from 12 GHD offices in Australia, Egypt, Malaysia, Qatar and the UAE.

**New York University, Abu Dhabi**

Concept design for the New York University in the UAE had been completed by the world-renowned Rafael Vinoly Architects (RVA) in the United States. The Abu Dhabi Government investment authority (Mubadala) tasked with delivering the project, tendered it under a design-build model, with an ambitious program to meet the UAE's commitment to accommodate the first intake of students in 2014. GHD worked with lead consultant RVA to deliver the design on schedule in 2012, with the university opening in early 2014.
The project proved to be one of the most demanding and rewarding structural and civil engineering projects undertaken by GHD. Comprising 37 buildings, from three to 12 storeys on a podium, the design incorporated a range of challenging structural design elements, such as basketball court spanning across an Olympic-size swimming pool, all located beneath a library.

*Curtin University – Building 410, Perth, 2013-16*
GHDWoodhead designed the AUD40 million Curtin University Building 410, a state-of-the-art learning and teaching building which forms the first visionary initiative of the Curtin City master plan. Formal interior learning spaces range in scale from a 30-person space up to a 180-person collaborative learning room, enabled with the latest audio visual technology. Mark Corbett led the project from inception to completion.

**Healthcare**

*Centre for Remote Health, Alice Springs*
Involving lengthy collaboration between the site’s traditional owners and custodians - the Arrente Aboriginal community, and the centre’s users - Flinders University, SA, the Northern Territory University and the Cooperative Research Centre for Aboriginal and Tropical Health, GHD provided the engineering design for this unique project providing tertiary education, training and research for the health needs of remote communities. The centre was given a Sustainable Architecture award and Public Building commendation by the Royal Australian Institute of Architects.
**Al Jalila Foundation Research Centre, Dubai**

The UAE’s first independent multidisciplinary biomedical research institute will focus on the region’s biggest health challenges. As lead consultant, GHD has provided full design and construction supervision services for the 10-storey centre in association with IBI. Strategically located in the heart of Dubai Healthcare City, the centre will ensure seamless collaboration between the academic, healthcare and scientific community.

**Calvary Hospital, Canberra**

In 1989 GHD was engaged by the project manager (IQON) on behalf of Calvary Health Care for the design and documentation and construction phase technical support of the new Intensive Care Unit/Critical Care Unit of Calvary Hospital in Bruce, ACT. GHD undertook all design services including architectural, structural, building engineering and civil engineering design, and documentation.

**Robina Hospital, Gold Coast**

In 2013 GHD was commissioned to complete designs for the 30,000m² expansion of the Robina Hospital. This included a four-level south wing, a new clinical services block and three additional courtyards to give patients plenty of natural light and greenery. The site is served by a 7.5MWr bi-directional distributed chilled water system, new clean steam system (first for Queensland Health) and 2MW grid connected stand-by power generation that can be used by power authorities to reduce demand on local power infrastructure.
The Starlight Foundation

GHD carried out interior design work across various children's hospitals in Australia for the Starlight Children's Foundation. Mary Harben, Principal Interior Designer, explains: 'The Starlight Express and Live Wire rooms are a retreat for seriously ill children, teenagers and their families, giving them an environment away from the rigours of hospital life to create a hub of fun and distraction'.

The positive impact of GHD's work cannot be clearer when the parents of children using the facility were asked to share their experiences: 'Because of the facilities Starlight provides, our children actually look forward to visiting the hospital for treatment.'

Industrial and utilities

Tip Top Bakery, Chullora, NSW

Completed in 2006, the Tip Top bakery is one of the largest automated baking facilities in the southern hemisphere. Following a fire in June 2002 at its Fairfield bakery, George Weston Foods (GWF) asked GHD to present options for its replacement. The contract for planning, design and environmental impact assessment was given to GHD, who was also responsible for the submission of proposals and plans to the local authority.

Highbrook Business Park, New Zealand

GHD was commissioned by Highbrook Development Limited to be part of a team of international designers to develop the concept for the 190-hectare Highbrook Business Park. Designed to accommodate 12,000 employees within 500,000 m2 of floor space, the park includes commercial offices, warehouses, light industrial spaces, and retail
businesses. GHD planners, land development engineers, and project engineers were responsible for preparing resource consent applications and detailed civil engineering designs for the road network and infrastructure. Extensive community consultation was a vital part of the project, which involved local Maori representatives and the preservation of nearly 30 archaeological sites.

**Infant formula blending and canning plant, Synlait Milk Ltd, New Zealand**

GHD, in association with specialist design and build contractor Apollo Projects, completed the engineering design for a new infant formula blending and canning plant for South Island dairy processing company, Synlait. Together we delivered an integrated solution focused on safeguarding food safety and traceability. The design team embraced the opportunity to set new industry benchmarks but without adding cost. The facility includes a five-level blending tower and adjacent cannery, with specialist hygiene areas including a bag stripping area, bag tipping room, canning room, laboratory, re-closure room, changing areas and viewing gallery.

**Residential, retirement living and aged care**

**Saadiyat Beach Apartments, Abu Dhabi**

The Saadiyat Beach Apartments project for Abu Dhabi’s Tourism Development and Investment Company (TDIC) was secured by GHD as design consultant in 2008. Comprising the design and construction supervision of six luxury residential complexes with associated communal facilities, the project involved the construction of a residential community consisting of 495 residences and is being developed in two phases. Construction works on the second phase was completed in late 2014.

**Foyer Oxford, Perth, 2011-15**

The Foyer Oxford project in Leaderville, WA, is based on a UK model and is the first purpose built Foyer to be established in Australia. Part of the international Foyer movement, the multimillion dollar project is founded on the idea that ending youth homelessness can be achieved through education, training and sustainable employment. GHD was engaged by Foundation Housing in Perth as lead consultant for this project, encompassing project management, architecture and engineering, for this 98-room multi-storey building. The project collected numerous design awards, including the 2015 Urban Development Institute of Australia’s Sustainable Design Award.

**Retail and hospitality**

A host of projects reflect GHD’s influence in the retail and hospitality markets, both in Australia and overseas. These include: the 2002 design of the City Centre Mall in Doha, Qatar; the 40-storey Park Hotel in Adelaide; retail pods at Adelaide International Airport; the 32 hectare resort for the Royal Automobile Club of Victoria (RACV) in Inverloch, and facilities for McDonald’s and Boost Juice retail chains.
Transport

**Sydney International Airport Terminal 1 redevelopment, Mascot, NSW**
In 2006, GHDWoodhead was commissioned by Sydney Airport Corporation Ltd to design the expansion of the departures level of Sydney’s international terminal, encompassing a range of activities within a main piazza called ‘The Forum’. An integrated and dynamic passenger experience, The Forum defines the travel experience as a civic place of dwelling, where travelers can pause and reflect on their journey. Terminal 1 is a key infrastructure asset for Sydney airport handling about 45 percent of all international passengers in Australia. The design form ensures passengers departing Sydney leave with a positive impression and enjoy a uniquely Australian experience. The project incorporated upgrading check-in facilities, a landside food court and retailing environment, outbound immigration and security control, provision of premium check-in and processing facilities, and an airside retailing environment. Environmental initiatives for the project include the use of recycled water for toilet flushing and for use in cooling towers, and energy-efficient displacement air-conditioning.

**Perth City Link Busport, 2013-16**
The Perth City Link Busport project represents the final stage of the AUD249 million Public Transport Authority (PTA)’s infrastructure project to construct a state-of-the-art underground busport, replacing the 40-year-old Wellington Street Bus Station. The AUD126 million project supports the aspirations of the PTA for a public transport facility as a critical component of Perth’s public transport infrastructure. GHDWoodhead was the architectural designer for this landmark project.

**Port Lincoln Airport, South Australia 2014**
Port Lincoln Airport, designed by Heath Jobson and the team at GHDWoodhead, is located adjacent the Lincoln Highway, 14 km from the centre of Port Lincoln in South Australia. The project, involving the design of a new terminal with a floor area of approximately 2300 square metres, includes many environmentally sustainable design elements, including natural light and ventilation, low water use amenities, and an underground labyrinth system providing natural tempered air to the air conditioning system. The design philosophy was influenced by the natural beauty of the Lower Eyre Peninsula region and is reflected in the curved exposed pavilion style roofline that stretches over the building. GHDWoodhead designed and documented the terminal using BIM, which offered the client access to the project at all stages of its design. Construction of the AUD10 million facility was completed in 2013.

**Lusail Light Rail Transit Depot, Qatar**
GHD contributed to Lusail City, Qatar’s newest and prestigious planned city, by providing architecture and engineering services for the Lusail Light Rail Transit Depot, which includes 14 buildings on a site of 150,000 m². The project is being documented in a BIM environment, helping the client visualise how this complex facility will come together.
Urban development

*Al Raha Beach and Al Raha Gardens, Abu Dhabi*  
In 2007, GHD was awarded its largest ever P&B commission - AUD150 million for the Al Raha Beach project – a mixed-use residential, commercial, leisure and retail development in the heart of Abu Dhabi. Over a quarter of GHD’s global workforce collaborated on the development. Also commissioned in 2007, Al Raha Gardens is a mixed-use residential, commercial, leisure and retail development. The vision was that of a medium density village-style community, encouraging interaction and recreation, and for the design to foster a sense of community, ownership and pride in the surroundings. The site extends over a length of some five km adjacent to the Dubai-Abu Dhabi highway and neighbouring Al Raha Beach.
Forest Place Redevelopment, Perth, Western Australia

Located in Perth’s CBD, Forrest Place is the city’s premier civic space, used for small scale events through to major public celebrations. The City of Perth’s design brief to GHDWoodhead detailed the requirement to remodel what was a rundown part of the city into a vibrant, dynamic plaza. The aim of this project was to reinstate the space itself as a destination and support the surrounding urban fabric. Conceived as four main areas – station forecourt, stage area, plaza and urban lounge, the spaces are configured on the longitudinal axis and fringed at building edges by pedestrian walkways. The axis from the centre of the station facade has been reinforced by the installation of an artwork by the celebrated Perth-born sculptor James Angus. The Water Labyrinth, a water sculpture designed by Jeppe Hein, marks the intersection of this longitudinal axis, with the natural cross axis formed by the entrances to the former General Post Office and Myer department store.
GHD’s connected global network engages in a vast array of projects, linking multiple disciplines to provide solutions to private, commercial, community and government groups. As a discrete service line, our architectural practice today involves an integrated team of architects, interior designers, planners and urban design professionals working across a range of markets, focusing on community infrastructure, workplace and lifestyle, Defence and security, resource, and industrial sectors.

One of the pathfinders for our success in integrating architecture into the fabric of GHD’s multidisciplinary approach is David Pinnock. Between 1997 and 2013 (out of the Adelaide office) David established architecture as a formal service line in GHD, and later became Business Group Manager for Property and Buildings. David retired from full-time work with GHD in 2013 but his legacy remains.

The great-grandson of the founder of Pinnock’s Sewing Machine Company, born in Sydney, David grew up in South Australia. He attended university in Adelaide where he gained his Bachelor of Architecture. Graduating in 1977, the first chapters of his career were written with the South Australian Government’s Public Buildings Department, followed by Works Australia, the federal government’s building and infrastructure agency.

GHD’s acquisition of Works Australia in 1997 was the catalyst for GHD to embark on a new journey of diversification, one that would see property and buildings emerge as a core target market. With Works Australia sewn into the fabric of GHD by the late 1990s, as inaugural Service Line Leader for Architecture, David focused on growing architecture within GHD’s traditional engineering-dominated service lines, and establishing a foothold for architectural capability in each of GHD’s Australian Operating Centres.

Meanwhile as GHD strove to enhance its architectural capabilities, architecture in Australia and internationally was experiencing a change. Mandatory energy performance requirements introduced to evolving building codes in the 2000s offered multidisciplinary companies with environmental knowledge a unique opportunity. In this regard, a host
of exemplary projects illustrated GHD’s potency in delivering world-class architectural services including the Foyer Oxford Housing (Perth), Clarence Reardon Centre (Melbourne), Brisbane City Hall Redevelopment, UN Green One Building (Hanoi), the Hong Kong Academy, and the Al Bidda Tower (Doha).

Reflecting on his 16 years with the company, a period that saw David lead some of GHD’s largest and most innovative architectural projects to date, including the South Australian Supreme Court Redevelopment Stage 1, the Australian Embassy in Vientiane, and the AUD650 million Hardened Network Army Edinburgh Defence Precinct in South Australia, he says GHD's journey in architecture is still a work in progress.

“When you look at international models, multidisciplinary practice is a natural part of the market. This is not so much the case here yet, but the opportunity is there and there is a groundswell of change occurring. There are huge benefits for clients in having architecturally-led integrated design practice as a key offering and we’re still seeing the infancy of our work in this area. There’s so much potential.”

“What we need to do is lift the gaze. You have to get people with the right DNA into the business. It’s about leadership and having architecture represented at the highest levels in the company.”

Since 2013 David has continued to work as a consultant for GHD through GHDWoodhead, offering his much valued insights and experience.
Chapter 5.

Major projects are always an exciting environment to work in. The relentless pressure of meeting milestones, managing safety and co-ordinating many different inputs is rewarded by the finished product of assets that really make a tangible difference to our economy.
5. Energy & Resources
David Luscombe / Craig Walkemeyer / Malcolm Rushin

Sowing the seeds 1980-89

The 1980s saw GHD deliver a swathe of vital infrastructure and transport projects for the mining sector, including a railway link for resources through the Pilbara in Western Australia, and the electrification of more than 1500 km of rail lines in Queensland which connected the state’s ports to coal mines in the Blackwater, Goonyella, Blair Athol and Oakey Creek districts. Projects also included Mount Arthur North and Ravensworth Washery in New South Wales, and the Curragh/Laleham rail project in Queensland’s Bowen Basin. These projects established GHD’s early reputation for railways in the mining and resources sector.

GHD’s connection with the Pilbara was cemented after winning multiple commissions to supply process infrastructure, port facilities and rail systems for iron ore miners. GHD forged an enduring relationship with BHP Billiton’s Worsley alumina operation, undertaking feasibility designs and overseeing construction of a refinery and six dams up to 70 metres high and totalling eight kilometres in length.

With the Worsley project GHD established itself as a leader in the design of mine tailings and related dam and residue systems. The company’s 30-year track record in this area began with GHD’s work at the Gove Alumina Refinery in the Northern Territory where GHD upgraded the tailings for the management of red mud. This project highlighted GHD’s technical proficiency in red mud dams, which GHD are still known for today, and which became a universally accepted methodology for this type of construction.

GHD’s red mud dam capabilities gained recognition internationally. In Sardinia, Italy, GHD provided planning, design and construction phase services for the Eurallumina Sa Foxi Red Mud Basin, a project GHD are still involved with today. In the Philippines, GHD designed a system to store 37 million tonnes of tailings for the Masbate gold project. Other projects included the one million cubic metres of earthworks at the Argyle Diamond mine and the design of Newman’s 13 km2 Ophthalmia Dam.
The Kidston gold mine project in North Queensland was completed in 1984 and GHD provided survey and engineering services for most of the infrastructure to support the mine operations. This included the tailings dam and the Copperfield River Gorge Dam – the first roller-compacted concrete dam in Australia and only the second in the world to be built using this method.

GHD secured important commissions across the power industry in the 1980s. Channel Island Power Station in Darwin broke new ground as a joint venture company, with GHD-Black & Veatch selected to design the Northern Territory’s major public sector power station. The 200 MW Channel Island Power Station was the first in Australia to adopt combined cycle technology, using waste heat produced during generation to boost the turbine’s efficiency from 30 percent to as much as 45 percent. Channel Island was also a first for GHD as the company provided engineering, procurement and contract management (EPCM) services on the project, which comprised five 36 MW gas turbines, a 35 MW steam turbine, two heat recovery steam generators and 58 km of 132 kV transmission line.

GHD began a relationship with Apache at Varanus Island in Western Australia in 1985, delivering engineering, procurement and construction support services for the Harriet Alpha, Bravo and Charlie platforms and associated subsea pipelines, oil storage facilities and load-out docks. Design studies, upgrades and maintenance have since been carried out for a range of facilities on the island, including Bambra, Sinbad, Campbell and Agincourt.

In 1984 GHD was commissioned to design the 800 metre-long LNG load-out jetty and facilities at Karratha for Woodside Energy’s AUD12 billion North West Shelf Gas project. This was Australia’s first LNG export terminal which enabled major LNG export contracts to be secured with Japan.
The productivity decade 1990-99

Mining

The 1990s began with Australia’s enthusiastic adoption of information technology that paved the way for a surge in productivity, particularly in engineering services for the mining and resources industries. At the same time, GHD transformed itself into a much larger, more multi-skilled and cohesive consulting practice, able to compete with the best in the world. The addition of the LongMac Group in Sydney fortified GHD’s competence in geotechnical, geological and environment services, which in turn improved GHD’s capability in the energy and resources sector. Towards the end of the decade, GHD’s breadth and depth of skills had created strong demand from major mining clients for risk management advice. The company advised BHP (now BHP Billiton) on material transport options and profitability over the mine life of Mount Keith nickel operation and advised Rio Tinto on risks to its assets worldwide.

Thanks to GHD’s emerging competitive edge, GHD obtained commissions for major infrastructure works in the mining sector, including a feasibility study for North Queensland’s entire resources rail network for the Queensland Competition Commission. The company oversaw the AUD300 million expansion to triple the capacity at New South Wales’ largest coal export terminal, Kooragang Island, extending the loading berth to accommodate two ships at once and carrying out dredging and other works. GHD’s work on this project was recognised with multiple industry awards.

Comalco (now Rio Tinto Alcan), one of the world’s largest aluminium producers, embarked on building the Yarwun refinery in Gladstone, the first greenfield site alumina refinery anywhere in the world for the previous 20 years. GHD was initially commissioned to provide geotechnical services with respect to a subsurface site investigation and report on the preferred site for Yarwun. The project was ultimately completed in 2004 and GHD to this day continue to provide professional services associated with the operation and expansion, including with tailings and the marine port terminal.

Further north in Weipa, the source of the bauxite for Yarwun, GHD has been associated with providing professional services associated with the Weipa township and mine infrastructure since inception in the early 1960s. This included the design for Mission River and Andoom Creek roads and heavy haul bridges. In the mid-1990s GHD was approached to provide additional services associated with extending the life of these assets and provide engineering advice on maintenance issues on the bridges between the mine site and the calcination plant and port. A complete design check of all structural elements of the bridges was carried out using current limit state design codes and construction information on pile locations and rakes at all piers. Additionally, GHD developed underwater welding techniques to strengthen steel components of the bridge piles plus techniques to protect against carbonation of the bauxite concrete used in the piers and the road bridge deck. Sometime later, GHD was engaged to strengthen the main bauxite dump station bridge.
GHD’s expertise in advanced digital modelling was used extensively to create a system to return tailings to an empty uranium ore pit at the Ranger mine site in the Northern Territory for Energy Resources of Australia. As part of the rehabilitation, GHD monitored the dredging of the pit with hydrographic surveys of the entire dam. The collection of the data was highly automated, using real-time navigation to overcome restricted access to the site and seasonal strong winds. It was then used to create digital models of the tailings surface and compared with models created from earlier surveys to calculate volumes of dredged and deposited materials. Another complex project was the Sunmetals Townsville Zinc Refinery in 1996, which saw GHD provide investigation, design and documentation for a large stormwater holding pond to be constructed partly in dispersive soils.

Meanwhile international projects burgeoned and GHD’s commissions included work for the giant Freeport gold and copper mine in Irian Jaya. Former GHD director Sam Caltabiano, who worked on the project, remembers its complexity. “We completed hydrology and geotechnical studies plus concept designs and final plans for the mine as well as the Timika Airport, barracks and powerhouse, along with essential services including earth and road works,” says Sam. “It involved more than a thousand drawings, quantity schedules for international tendering, specifications and reports. GHD also designed infrastructure for a 5000-person town near Timika to service the mine.”

In 1992, GHD designed a 15 km pipeline traversing the rugged terrain of western PNG to provide water to the Ok Tedi copper mine for its mineral processing operations. The extremely challenging project involved an 800 mm welded steel pipeline rising vertically on its route to the mine, from two spring-fed, mountain stream sources. Other international engagements included the XeKaman Hydroelectric project in Laos, and mining and infrastructure projects in the Philippines and Sardinia.

In the late 1990s GHD’s Mackay office in Queensland was increasingly providing facility, transport and water infrastructure engineering services to the numerous coal mines in the Bowen Basin, as well as coal export terminals to the south of Mackay. Mackay’s importance as a support hub for the Bowen Basin mines was recognised by global suppliers, and this resulted in GHD securing the design and construction administration of German-based company DBT’s underground longwall facility. This project, showing GHD’s ability to deliver large industrial facilities with bespoke functions, attracted the attention of other clients, including Hastings Deering, who provide, service and support Caterpillar heavy equipment. Since then GHD has supported Hastings Deering with the development and refurbishment of facilities both in Australia and internationally.

**Power**

During the 1990s, GHD-Black & Veatch was active securing work on the Loy Yang B power station in Victoria’s La Trobe Valley with Mission Energy, a project GHD is still heavily involved in today.
Another first for GHD came in 1997, when the company was appointed to augment the generation capacity of the Electricity Trust of South Australia (ETSA) at Snuggery and Port Lincoln. GHD sourced and supervised the refurbishment of secondhand gas turbines, which were obtained from South America, with an output of 50 MW. Transformers were sourced from Finland and the project was completed in just seven months.

GHD Project Director, Neville Horner recalls this project with fondness. “It was one of the most enjoyable projects I have ever worked on, particularly as ETSA gave us a lot of scope, and saw us as a trusted advisor,” says Neville. “We had a close and collaborative relationship that enabled us to get the project done on time and under budget.”

The idea of utilising secondhand turbines has been widely used since. The same year, GHD carried out projects for Energy Equity Corp and Boral Energy in Queensland. The former engaged GHD as owner’s engineer to convert a Frame 6 gas turbine to a more efficient combined cycle operation using a second-hand steam turbine, while the Boral commission involved installation of two refurbished 35 MW gas turbines at Roma.

GHD’s drive to innovate across its business sectors has long been part of the company’s success. This is also true in power generation. Many commissions have incorporated cogeneration, using waste heat from industrial processes to generate electricity which can be sold to offset costs. One such example was the design of a bagasse fuelled 60 MW power generation facility at the existing Pioneer Sugar Mill in Bardon, just north of Ayr in North Queensland. A commission in Perth in 1994 was a breakthrough for GHD in this area. Using cogeneration and combined cycle technologies it involved engineering, design and construction supervision services for a 116 MW plant for Edison Mission Energy at BP’s Kwinana oil refinery. Producing both electricity and steam for refining heavier crude oil, the end product was Liquefied Petroleum Gas (LPG) and gasoline.
GHD’s services included optimisation studies and detailed costing for the cogeneration plant which sold excess power to Western Power. In 1997, GHD delivered a 38 MW cogeneration project for Western Power at Tiwest’s Kwinana pigment plant, while a 40 MW cogeneration project was completed for TransAlta at Western Mining’s Kwinana nickel refinery in 2000.

A number of projects were carried out at Kemerton, an industrial park in Bunbury, Water Australia’s second-largest city. In 1995, GHD delivered a 200 MW plant at Simcoa’s silicon operation, which enabled the company to enter into a long-term electricity supply contract with Synergy, WA’s major electricity retailer. Two years later, Pacificorp commissioned a feasibility study for a 50-100 MW cogeneration plant at Kemerton, including an option to recover heat from adjacent industries, while Millennium Inorganic commissioned a 40 MW cogeneration plant at Kemerton.

Oil & gas
For many at GHD, the 1990s is best remembered as the decade when the company’s work in pipelines began to expand exponentially, with numerous commissions for infrastructure to service the growing energy and resources sector.

In 1992, the Petroleum Division of the Western Mining Corporation engaged GHD to supervise the movement of oil rigs south of Barrow Island off the Pilbara coast, as well as carry out site surveys and investigate load bearing capabilities on the seabed. This signalled the start of scores more projects for the oil exploration industry. In 1994 GHD assisted the Queensland Department of Minerals and Energy to develop a 750 km gas pipeline from far south-western Queensland to Wallumbilla, near Roma, to maintain supplies to Brisbane and Gladstone as reserves in the Surat basin were diminishing.
In Western Australia, GHD provided input on geotechnical and hydrological conditions for a feasibility study for a 1400 km gas pipeline from the Pilbara coast in the north-west of the state to Kalgoorlie. GHD carried out a desktop survey and participated in a three-day site evaluation using a helicopter fitted with professional video equipment to record ground conditions and topography.

During the 1990s GHD was active in supporting oil & gas companies with design of facilities infrastructure and project management. Only a few years later, through merger activity, GHD would find itself moving into the design of significant hydrocarbon process plants and pipelines nationally.

Building capability 2000-2010

By the dawn of this century, globalisation and the explosion in communication services, underpinned by the internet and mobile telephony, changed forever the way GHD did business.

GHD thrived having prepared a strategy to become a consultant operating globally.

In Santiago, Chile, the acquisition of the marine and power consultant Promina in 2001 established the company’s foothold in South America and paved the way for numerous power projects. In Australia, GHD’s merger with Geo-Eng in 2002 brought additional proficiencies in mining, dams, geotechnical and environmental services to GHD.

The acquisition of Integrated Pipeline Services in 2000 created the first gas pipeline and facilities design capability, but the most significant event was the integration in 2002 with Egis Consulting Australia (formerly CMPS&F). This merger boosted operations in mineral processing, oil & gas, light rail, contaminated site assessment and remediation. It also increased GHD’s workforce to more than 2300 people. Landmark projects such as the 270 km Kutubu Oil pipeline, linking the oil reserves of the Southern Highlands of Papua New Guinea to the coast, and a marine loading terminal in the Gulf of Papua, (turning that country into an oil exporter), now became part of GHD’s heritage and capability.

Later in the decade, the acquisition of SMG Consultants added specialist mining technical services including mine engineering, mine planning and exploration, resource evaluation, geology and geotechnical services, further broadening GHD’s reach in the energy and resources market.

Pat O’Dwyer, a former director of GHD and Global Market Leader – Energy and Resources, until 2010, joined the company with the integration of Egis. Pat remembers this as a time of great change, when two companies with similar values united, delivering huge gains for GHD’s energy and resources sector.
“Egis had considerable experience in working with private sector clients, particularly in the mining and oil & gas sectors. This boosted GHD’s business and enabled us to be seen in the market as a much more well-rounded competitor,” says Pat.

“One of the first projects that really put us on the map was the North Queensland Gas Pipeline project, including a gas treatment and compression station in Moranbah, and a 392 kilometre high-pressure gas pipeline to Townsville. This was the first coal seam gas to major power station project in the country, helping to found what became a 70 billion dollar CSG industry by 2015. Importantly this was a first and highly acclaimed alliance project for GHD. It paved the way for many more, particularly in the transportation and water sectors. It also changed GHD’s standing in the oil & gas industry.”

Mining
The decade was symbolic in that Australia experienced the biggest resources export boom since post Second World War, fuelled mostly by China’s massive economic expansion and infrastructure transformation. Iron ore on the west coast, and coal on the east coast of Australia were the predominate commodities in demand. Other commodities such as copper and gold were also in strong demand. GHD was fortunate to secure a significant number of projects during this time and many of them of a size and complexity not experienced before.

In 2006, GHD in Adelaide was commissioned by BHP Billiton to undertake a prefeasibility for primary water supply associated with expansion of the Olympic Dam mine. The estimated AUD1.2 billion project included 320 kilometres of pipeline and a 220 megalitre per day desalination plant. The project was to be the start of a significant transformation for GHD in South Australia, recalls David Luscombe, the state manager at the time.

“As a result of this project we were able to develop a collaborative relationship with the client. This resulted in GHD being trusted to deliver a significant number of additional projects for BHP Billiton supporting both the planned expansion and existing operations. In 2008 we opened an office in Roxby Downs and we have continued to deliver services for BHP Billiton associated with the Olympic Dam mine ever since.”

Across Australia, GHD was being engaged for projects associated with all phases of a mine’s life. This included a multitude of prefeasibility and feasibility studies for either the establishment of new mines or expansion of existing mines. Projects included the Moranbah South underground coal mine for Anglo American, Mount Arthur coal mine expansion for BHP Billiton, the Watermark coal project for Chinese company Shenhua Watermark, Southdown magnetite project in WA, and infrastructure design for BHP Billiton Iron Ore expansion projects, also in Western Australia.

At the same time GHD was completing design of non-process infrastructure to support the expansion of many global miners’ assets, particularly those associated with rail, roads, water, power, site facilities, airports and more. One significant project was the
Coal Connect project. This rail infrastructure design and construction project was as part of the wider Goonyella Abbot Point Expansion Project for 50Mtpa (GAP50). GHD was part of an alliance team for the design and construct consortia with a scope of work to deliver upgrades to the southern section of the existing Newlands system and 69 km of new rail corridor between North Goonyella Junction and Newlands Junction. 11 rail bridges, three passing loops and two road overpasses were designed as part of the project.

In 2004, GHD was engaged to upgrade processing infrastructure at Rio Tinto’s Tom Price, Paraburdoo and Marandoo mines in the Pilbara.

In Victoria, as a result of the Geo-Eng Australia acquisition, GHD had not only gained valuable mining technical services capability but also the ongoing mine planning and engineering of the brown coal open cut mine at Loy Yang, Australia’s largest coal mine. The mine delivers 30 Mt of brown coal per year to a 2000 MW base load power station owned by AGL Loy Yang and a 1000 MW power station owned by Engie - Mitsui. Mining is carried out by four bucket wheel excavators that deliver coal to the power stations and overburden dump by a conveyor network. GHD provides a wide range of mining and related services to AGL Loy Yang on a continuous basis. Services performed to date include whole-of-life and medium-term mine planning, mine plant reliability modelling, mine operational support, geotechnical engineering, JORC resource and reserve estimation, hydrogeology, environmental management, tailings management and dam surveillance.

Internationally, GHD’s work began to ramp up. In Bangladesh, GHD provided engineering services for the Phulbari Coal Project, one of the most significant foreign investment projects in the history of the country. GHD provided concept and pre-feasibility studies to Asia Energy for an open pit coal mine. This included coal resource assessment,
hydrogeology and geotechnical engineering, mining methods, power requirements and data management. GHD also provided information to assist Asia Energy raise funds on the London Stock Exchange.

In Indonesia, GHD worked with Rio Tinto on a number of aspects of its mine closure plans for the PT Kelian Equatorial Mining gold mine. GHD was also commissioned to provide engineering services in the final closure of the Namuk Tailings Dam complex in East Kalimantan. The task required more than two years’ research and preparation leading to a major upgrade of the tailings dam wall to ensure its safety in perpetuity, involving a 55 m rock-fill embankment, upgrade of the existing spillway system and a new emergency spillway.

This was a time when Building Information Management (BIM) technology emerged as a key engineering practice to allow clients, in particular miners, to bring together all facets of engineering into an integrated model of proposed infrastructure, prior to construction. GHD has applied BIM to numerous projects since, including the Boggabri Mine Expansion Feasibility Study, where GHD’s people assessed the potential for expanding coal production from 1.5 Mt to 6.5 Mt per year. GHD’s team provided a range of services including the design of mine facilities (administrative offices, bath house and related amenities, workshops, stores, fuel systems, heavy and light vehicle wash facilities) and coal handling plant (hoppers, conveyors, bins, stockpiles, structures, reclaim tunnels), heavy vehicle pavements and light vehicle roads as well as a 20 km rail link and loop with related bridges. The entire project was modelled using BIM, providing multi-disciplinary coordination both internally and externally.

In 2010, GHD played a key role in the development of MCC Cape Lambert’s iron ore mine in WA's north-west to meet magnetite concentrate demand from Chinese steel mills. GHD, in association with another mining industry specialist, managed the feasibility study for MCC. GHD separately conducted studies for the operation’s port, power and water needs, and completed the study work and documentation for the project’s environmental approvals.

For Xstrata in the coal fields of NSW, GHD managed surface rail safety associated with underground longwall mining at the Tahmoor underground coal mine, which produces approximately 2.3 Mt of coking coal per year. Graeme Robinson, GHD’s Group Manager – Strategic Rail Services, NSW, comments, “In this case, we knew the railway would expand or contract on a daily basis between 500 mm and 800 mm impacting on about 950 m of track affected by the underground longwall. We worked closely with Xstrata to develop an innovative management system to enable this to occur, while allowing normal train operations to continue on track above longwall mining.” GHD is one of only a few companies to have successfully carried out this technique.

During this time, GHD won a large commission to undertake a mine feasibility study for Shenhua Watermark Coal, a project that covers an area of 195 km2 near Gunnedah in NSW. GHD’s people worked closely with Watermark to develop a coal marketing
plan, wash plant and mine infrastructure design, mining methodology, water model, geotechnical assessments, economic mining strip ratios and production rates, rail and port logistics as well as an economic model.

As an essential part of mining and mineral processing activities, water was very much at the forefront of the mining industry and GHD’s services in this area were in high demand between 2000 and 2010. The Centennial Coal Group is one organisation that turned to GHD to improve the efficiency and sustainability of its water resources across ten mines in NSW.

**Power**

In 2001, GHD completed feasibility studies and EPCM delivery of a 25 MW second-hand turbine for Synergen in South Australia, and fast-tracked EPCM delivery of a 150 MW second-hand gas turbine for AGL in Victoria. After a major failure of the NSW power grid in 2005, GHD drew on its experience with second-hand turbines and resources in Newcastle, Perth and the United Kingdom, to find a 40 MW gas turbine and generator for a ‘black start’ (the process of restoring a power station without relying on the external transmission network) at the Eraring power station at Lake Macquarie. The gas turbine was refurbished in Dubai and the new generator found in the UK.

A stream of combined cycle projects followed, including in 2002-03 a commission for a 240 MW combined cycle plant for Western Power at Cockburn, south of Perth. A more recent combined cycle project involving EPCM delivery secured Tasmania’s energy supply. It was a commission from Babcock & Brown Power in 2007 to install a 210 MW combined cycle turbine and a 60 MW open cycle gas turbine at the Tamar Valley Power Station near Georgetown in the state’s north. Three simple cycle gas turbines were already installed at the site adjacent to the Bell Bay Power Station on the Tamar River.
Working as owner's engineer, GHD carried out investigations of the challenging, steeply sloping and rocky site before preparing detailed designs and overseeing construction and commissioning of the new plant.

GHD’s power group undertook several cogeneration projects for the energy-intensive alumina industry. In 2003, Alinta Energy appointed GHD as owner’s engineer to design two cogeneration plants for the Alcoa refinery at Pinjarra in WA. GHD delivered feasibility studies and costed two plants, each with 140 MW gas turbines, capable of producing 420 tph of high pressure steam daily, and worked closely with Alinta to connect the new turbines to Alcoa’s existing powerhouse. In 2005, GHD designed a 120 MW plant for Origin Energy at BHP’s Worsley alumina operation, and also delivered feasibility studies for a 160 MW cogeneration plant for Queensland Alumina.

In 2004, GHD was appointed as an independent engineer to carry out due diligence on behalf of the AUD36 million EarthPower Foodwaste to Energy Facility that converts 80,000 tonnes of food waste per annum to electrical energy, and high-grade liquid and solid organic fertiliser. The food waste is sourced from food manufacturers, retailers and restaurants. The process entails pulping the waste, removing solid contaminants and introducing it into two anaerobic digester tanks. GHD’s people oversaw the design, construction, testing and commissioning of the plant. The company also provided concept design and feasibility studies, prepared tender specifications, tendering and site technical supervision of the cogeneration systems and connections to the electricity grid.

In the Philippines, GHD was selected to manage a complex survey and preliminary design study to provide micro-hydropower to traditional barangays, or small villages, which cannot be connected to the national grid. As part of the project more than 80 potential sites were identified, 50 of which were surveyed using teams that included villagers with local knowledge.

A 60 MW biomass cogeneration power plant designed for the Pioneer Sugar Mill at Brandon, just north of Ayr in Queensland, completed in about 2006, is powered with bagasse waste to reduce the company’s energy costs. GHD designed all aspects of the AUD100 million project, including process machinery and other works necessary to increase the plant’s steam efficiency. Another notable project began in 2006, when Chilean company Colbun appointed GHD as owner’s engineer to design the first 350 MW unit of a 700 MW coal-fired power plant at Coronel, 500 km south of Santiago. The first stage of the Santa Maria Power Station involved designing a 350 MW pulverised coal combustion plant with a seawater desulfurisation system, electrostatic particulate removal, and burners designed to emit low levels of nitrous oxide. GHD also completed the specification for Santa Maria 2, the second 350 MW unit at the site.

In the renewable energy sector, GHD was instrumental in establishing Australia’s first community wind farm known as the Denmark Community Windfarm, located west of
Albany in WA. In 2007, GHD completed a feasibility study for the installation of the wind farm, capable of generating 10 gigawatt-hours of energy per annum using two 900 kW turbines. GHD’s integrated solution included renewable energy consultation and project management for the installation as well as the mechanical, civil, geotechnical and electrical services.

In 2007, GHD was engaged by the Queensland Office of Energy to review the costs and benefits of competition in the electricity market. The cost benefit calculations supported the introduction of full retail competition into Queensland the same year.

In 2008, GHD was awarded the contract for the design of a 27 km, 220 kV transmission line and 220/33 kV substation by the Metallurgical Company of China Mining (MCCM) – the main EPC contractor for the Sino Iron project in the north-west of WA. The project represented a challenge in that GHD had to produce designs that took into consideration cyclonic wind conditions in the region. In a pioneering move, GHD implemented the IEC61850 standard for the Supervisory Control and Data Acquisition (SCADA) system on the project and the company was retained for the construction phase.

To support an upgrade to new air-conditioned rolling stock in the rail network for Sydney and the surrounding area, GHD was engaged in 2010 by Rail Corporation NSW (RailCorp) to design and document a large number of new traction substations and section huts to be built at various locations around the network. The substations convert 33,000 volts AC to 1500 volts DC and are typically rated to supply five megawatts of power to the trains via the overhead wiring system.

In 2010, GHD conducted a study associated with the Kintyre Project in the WA’s Pilbara. This involved comparing options for a 5-15 MW power supply, including remote transmission, and a combination of gas, diesel and renewable options. A strategic study in 2011 for Newcrest involved reviewing options to increase capacity at the Telfer power station from 150 MW to as much as 250 MW.

Another first for GHD in power generation was in the Northern Territory, where GHD was appointed to design a 3 x 11 MW (with eventual capacity of 90 MW) gas-fired power station near Alice Springs. This was the first in the nation to use diesel-fuelled reciprocating generators and came as part of GHD’s contract as owner’s engineer for the Power and Water Corporation, a role which has drawn on the skills of engineering professionals across the company’s network in Australia, the UK and China. GHD also oversaw the installation of two 50 MW gas turbines at Channel Island Power Station in Darwin, and a third 43 MW gas turbine at the city’s Weddell Power Station. GHD also completed feasibility studies for upgrades of Berrimah, Yulara and Tennant Creek power stations.

In Papua New Guinea (PNG), GHD led a technical assistance project to develop a comprehensive feasibility study of six hydropower sites and two bio-fuel plants to
determine future funding from the Asian Development Bank. GHD's findings helped the PNG Government formulate the foundation for new energy efficiency policies to help distribute energy to provincial centres at a reasonable economic cost.

GHD provided advice on installing a 30 MW solar unit at Katherine in the NT, and was engaged by the Australian Solar Institute to deliver a long-term communications plan, a variety of materials and the provision of ongoing communications support as part of an awareness campaign.

**Oil & gas**
The Patricia-Baleen project in eastern Victoria for Santos helped initiate GHD's Oil & gas engineering in its own right. GHD provided detailed design to Santos for the 75 TJ per day gas processing plant, which received fluids from the Patricia-Baleen fields and processed raw gas into sales quality gas. As part of this project, a 19,000 kPa sales gas pipeline was designed which remains the highest rated pressure onshore pipeline in Australia to date. The work on the gas compression station, which enabled gas to be transported from the producing fields in the offshore Gippsland Basin to markets in Sydney and regional areas along the Eastern Gas Pipeline route, demonstrated GHD's emerging technical skills.

Another landmark major multidiscipline oil & gas project was the Mereenie Compression Project in the Northern Territory for Santos in 2003. This project included the complexities of a two phase pipeline from the Mereenie field to a treatment plant, separation, compression, dehydration and hydrocarbon dew point control. GHD's oil & gas processing facility engineering ranks swelled and GHD delivered a fully automated project on time and on budget. GHD supported Santos through the procurement and commissioning and helped prove the facility at the project design capacity.
“This was the first significant win for GHD’s newly combined team following the merger with Egis,” says Malcolm Rushin, the lead process engineer on the Mereenie project and now GHD’s Service Line Leader for Hydrocarbons and Chemicals. “It was certainly a challenging project and it allowed us to showcase GHD’s complete, multidisciplinary oil & gas design capabilities being applied at the heart of an oil & gas facility and pipeline.”

By 2005 GHD was playing major roles with some of the emerging Coal Seam Gas developers. GHD provided concept and front end engineering design (FEED) for Queensland Gas Company’s initial Berwyndale South, as well as the Argyle and Bellevue Developments accelerating QGC towards the development of its major QCLNG project and eventual sale to the BG Group (formerly British Gas).

In 2006 GHD conducted the conceptual design for Santos for its Fairview Phase II project to significantly expand the field it had acquired from Tipperary, by 64 Tj per day. This was followed by the virtually continuous supply of a wide range of services and projects to Santos, to help it overcome the emerging challenges of rapid CSG production expansion. Highlights included running a complex CSG water management strategy evaluation that drew on a wide range of GHD’s more traditional skills, designing many dams and the conceptual and then complete design of Santos’s first commercial scale Reverse Osmosis Desalination plant at the Fairview 77 well. GHD worked directly with the Santos team in an engineering, procurement and construction management (EPCM) style delivery mode, providing the design, project manager, construction manager and commissioning team. GHD went on with Santos to pioneer the irrigation of trees with amended coal seam gas water to further boost Santos’s gas production capability. GHD provided the soil science and environmental impact modelling services needed to obtain the necessary regulatory approvals.

If the 64 Tj/d Fairview Phase II expansion had seemed demanding at the time it was soon dwarfed by the grand Gladstone Liquified Natural Gas Project (GLNG) that GHD had, in strict confidence, begun assisting Santos develop. GHD developed the conceptual routing and design and costings for the 420 km 42” pipeline that could transport some 10 to 20 times the Phase II flow to Curtis Island near Gladstone. There it was planned to install trains of LNG which would have the capacity to produce 7.8 million tonnes of LNG per year and facilitate the shipped export of CSG to Asia.

Santos announced their plans in July 2007 and in the same period three other proponents announced similar mega projects. They were QGC (which became BG and now Shell), Origin which formed APLNG with ConocoPhillips and Sinopec, and lastly Arrow, which was bought by Shell and Petrochina. To date three of the four proponents have executed and completed these projects and there are six trains of LNG on Curtis Island.

This created an unprecedentedly overheated oil & gas engineering and construction market and, coupled with the LNG projects in Western Australia and Darwin, would catapult Australia to potentially become the largest LNG producer in the world.
Such was the scale of the boom that it attracted many of the oil & gas engineering majors to the region and created a very different environment in which GHD competed. It was against this backdrop that GHD grew its business and further diversified its services supplied into the oil & gas industry.

Santos commissioned GHD to deliver front-end engineering design (FEED) studies as well as technical and price data for its GLNG pipeline. GHD then took up the Owner’s Engineer role for the QCLNG pipeline. In 2009 GHD supported Fluor to win the GLNG Upstream EPC and provided engineering services to Fluor for this over a five-year period. This project exposed many of GHD’s engineers for the first time to the processes and procedures used by global oil & gas players on multibillion dollar projects. GHD also provided a wide range of services to Bechtel for their EPC of the APLNG LNG facilities on Curtis Island.

The CSG projects also created a significant number of opportunities for GHD with engineering design for the support infrastructure associated with roads, drainage, tunnels, and water supplies, as well as housing to support construction and operation of the facilities. Another important element of GHD’s work with CSG companies involved helping them address regulatory requirements and achieving compliance with government/environmental standards. The company has worked with Canadian and American drilling companies, plant designers and builders, to tailor their designs to facilitate approvals. Commissions to ensure regulatory compliance also include work with APA, the largest gas transmission group in Australia.

During this time, GHD drew on its traditional strength in innovation in water treatment and management to help many of the CSG proponents develop solutions for the treatment and management of the large volumes of saline water produced as part of the gas extraction process. GHD helped its clients evaluate desalination technologies, salt concentration and crystallisation systems as well as options for the potential beneficial use of the produced salt and for the use of the purified water. Overall, GHD assisted in many of the trials and in the implementation of several of the commercial scale solutions.

GHD commissions have helped develop and raise the standard of pipeline design in Australia. In 2006, for example, GHD was appointed by AGL and Petronas to carry out a FEED study for a proposed PNG gas to Queensland project and delivered a detailed analysis of options to minimise the capital costs of 3800 km of cross-country pipeline from PNG to Queensland and 26 compressor stations stretching from Gladstone to Moomba. This was the first major pipeline that would apply a newly released, much revised Australian Standard for Gas and Liquid Petroleum Pipelines (AS-2885). GHD led the way in developing the application of the standard.

In 2007, GHD acquired PCT Engineers, an Australian consulting company with considerable experience in oil & gas. This enabled GHD to broaden its capabilities in the
sector and a range of commissions followed including 3500 Equipment in Hazardous Area (EEHA) inspections for Woodside Energy’s new gas processing platform on Australia’s north-west coast known as Angel Gas.

After fire caused extensive damage on Varanus Island in WA in June 2008, Apache turned to GHD for help with refurbishment. GHD conducted site surveys and inspections before drawing up a remediation program, providing project management and technical advice from GHD’s Perth office and round the clock engineering support onsite while repairs were carried out.

A 2009 commission in the Northern Territory for Inpex had a strong environmental focus. Inpex, who was developing the Ichthys LNG Project in the Timor Sea, planned to pipe oil & gas 850 km from the field to Darwin. GHD was engaged to carry out flora, fauna and marine life studies to minimise the impacts of the planned processing and jetty facilities at Blaydin Point.

GHD’s willingness to take on technical challenges and adopt new approaches continued to pay dividends for clients, delivering superior design, cost savings and other benefits. For example, work on port developments and remote projects such as the North West Shelf can involve high labour costs and risks to contractors. This encouraged GHD to use innovative telemetry systems and other unmanned devices. The company introduced autonomous subsea gliders to monitor water quality on the NWS project to avoid employing divers for environmental surveys. The two metre-long gliders were trialled on the NWS project to collect data and send it via satellite to Perth.

Working on the Gorgon project at Barrow Island off WA until 2007, GHD engineers developed new Glass Reinforced Epoxy (GRE) oil & gas flow lines, which have
environmental and safety benefits. In testing and installing 400 km of the new GRE lines, GHD enabled Chevron to phase out inferior steel flow lines, which posed a risk of corrosion, and helped to define the new Australian Standard AS 2885 for pipelines.

GHD does not shy away from innovation and complex technical first-of-a-kind projects. A great example of this came in 2009, when GHD was appointed to design the Colongra lateral, Australia’s first large-diameter 42-inch pressure cycling gas storage pipeline and compression system near Newcastle, NSW. The pipeline in effect created a reservoir of extra gas to facilitate the operation of a 600 MW gas-fired power station during periods of peak demand. The supply pipeline to the area had insufficient capacity to supply a power station of this size but the Colongra lateral GHD designed, allowed gas to be stored during periods of low electricity demand and then drawn down in peak electricity demand periods.

The project required complex transient hydraulic modelling to be performed in order to produce and check a workable compression and hydraulic design and work out temperature effects. Fatigue issues created by the pressure cycling also required specialised mechanical design attention. According to John Eijbergen, long-term leader of GHD’s pipelining capability and South Queensland’s Service Group Manager for Plant and Process, GHD had to meld a combination of the Australian pipeline standards with other relevant American Standards to develop and defend the design. This pipeline remains the highest pressure 42” Australian onshore pipeline to date and made an important contribution to AS 2885. Joe Mead, senior process engineer, who has taken the lead transient hydraulic modelling role on many of GHD’s pipeline projects, recalls some satisfaction at witnessing the commissioning trials and confirming the results matched his predictions. GHD received an Award of Excellence from the Association of Consulting Engineers for its work on this project.

GHD also contributed to one of Australia’s first large-scale carbon capture and storage projects by delivering concept designs and regulatory approval for Perdaman’s proposed urea project in Collie in southern WA. The plant is designed to produce two million tonnes of granulated urea fertiliser a year using coal gasification technology, sequestering about one-third of its carbon dioxide emissions in the urea.

An energy and resources powerhouse 2011-16

Having built capability and reputation through the previous decade, GHD continued to expand its project throughput for major front-end and back-end projects in mining, power and oil & gas. In 2010, David Luscombe was appointed to the position of Global Market Leader – Energy and Resources, taking over from Pat O’Dwyer. David had a strong connection with the energy and resources sector, having spent many years accompanying his father, Ivan Luscombe, former GHD Regional Director and Principal Surveyor, as he surveyed mines from the 1960s to the 1980s.
Mining

In 2010, GHD recruited ex-Alcoa executive, Craig Walkemeyer, as Operations Manager for Energy & Resources in Western Australia. This was at a time when the Western Australian mining industry was booming and, in particular, the iron ore industry was in the midst of a rapid expansion phase.

A milestone came in 2011, when one of the world’s biggest miners, BHP Billiton, commissioned GHD to supply study and EPCM services for a portfolio of major iron ore mine expansion projects in the Pilbara region. Under this contract, GHD was responsible for EPCM delivery of the Jimblebar iron ore mine hub including maintenance workshops, ore handling plant workshops, warehousing, ammonia nitrate facility, fuelling facilities, water and waste water and other infrastructure elements. Management of this program of studies and projects required a team of 200 people in the design and delivery teams and considerable safety and logistics planning given the remote nature of the Pilbara region. From 2011 to early 2014, as a result of this contract, BHPB was GHD’s biggest revenue client.

Craig Walkemeyer has continued to take on further leadership roles in GHD, including Manager – WA, and most recently as National Market Leader Energy & Resources for the Australian region. Reflecting on this period of growth Craig commented, “Major projects are always an exciting environment to work in. The relentless pressure of meeting milestones, managing safety and co-ordinating many different inputs is rewarded by the finished product of assets that really make a tangible difference to GHD’s economy. These assets will be there for decades to come, generating export revenue for Australia and delivering long-term benefits to the Pilbara communities in which they operate.”

The Anglo-American Metallurgical Coal & Exxaro Resources Joint Venture engaged GHD to prepare the underground mining and infrastructure design for the pre-feasibility study of the Moranbah South Underground Coal Mine. GHD’s team analysed the mining operation using two longwalls, investigating geotechnical issues, materials handling options, underground services and surface infrastructure alternatives, including drift and service locations. The final deliverables included capital and operational cost estimates as well as execution plans for the feasibility and project execution phase. In addition, GHD prepared a series of environmental impact statements and plans to mitigate the effect on fragile marine ecosystems of coal port expansions, including at Abbot Point, Hay Point and Gladstone in Australia.

GHD was instrumental in introducing new methods of developing underground mines with the introduction of Tunnel Boring Machines (TBM), until then used in Australia for road and water construction projects. From 2011 to 2015, GHD commenced geotechnical investigations and this ultimately led to undertaking detailed design and owner’s engineer services to Anglo American’s Grosvenor project located near Moranbah. The project includes two mine access drifts (conveyors) from the surface to
the Goonyella Middle Coal Seam. After completion of the design of the conveyor drift to be excavated using conventional tunnelling techniques such as road header, bolts, shotcrete and precast invert in poorer ground, the methodology switched to TBM with precast segmental lining. Both drifts were excavated for the first time in Queensland by the use of an eight metre diameter Earth Pressure Balance Tunnel Boring Machine (EPB TBM). The tunnel is 7 m ID and lined with steel fibre reinforced concrete (SFRC) segments (six segments with full sized key) in a universal ring arrangement.

During this period many international companies were dominant in the market place in securing mine leases in the new frontiers of the Galilee and Surat Basins. The main challenge was the lack of infrastructure, logistically operating a mine, getting product to port for export and obtaining the necessary approvals to construct and operate their assets. GHD was well positioned to support these mine development opportunities and was successful in providing particularly environmental services and infrastructure feasibility studies.

Considered a leader in the area, new commissions to manage water in mining – a key technical challenge – continue to flow. These include hydrological studies to manage groundwater and environmental impacts at the proposed Buccaneer Archipelago iron ore project in the Kimberley and Southdown’s 10 million tonne a year magnetite project in Albany, WA.

Liaising with environmental and licensing authorities is an important aspect of GHD’s work on the proposed Aurukun bauxite project south of Weipa in Queensland. The scope of services included designing infrastructure to support the mine and tailings ponds as well as port infrastructure, along with stakeholder management including Indigenous land use agreement negotiations.
An Environmental Impact Statement was completed to World Bank Standards for the Ma'aden alumina refinery and smelter on Saudi Arabia’s east coast. GHD carried out studies on air, noise, flora and fauna, waste and water and assessed social and economic impacts of the facility, which included a rail link, 1800 MW power station, desalination plant and port.

GHD is using innovative instruments and telemetry systems to remotely monitor subsea acoustics and water quality during construction of a new outer harbour at Port Hedland in WA.

Air quality monitoring is a particular focus in built-up areas and for environmentally sensitive projects. GHD has carried out studies to ensure emissions from shipping, road and rail transport at Perth, WA's Kwinana Quay project meet national and international guidelines, and used custom-built equipment to cost-effectively monitor air quality and noise for Woodside on the Burrup Peninsula.

In the growth area of remediation and rehabilitation, GHD’s plan for the Beenup minerals sands project near Augusta, WA is one of the few that has been put to the test, and has largely succeeded. The company is now working on closure plans for Fortescue’s Pilbara mines. It is also carrying out mine closure planning studies for Xstrata Coal’s Collinsville and Newlands mines in QLD. In New Zealand GHD has been assisting the Ministry for the Environment to remediate the Tui Mine site, a former lead, zinc and copper mine, that was abandoned in 1973.

GHD has well-developed capabilities in modelling rail, stockpiling and ship-loading facilities to improve mining logistics. The company recently provided designs to triple the capacity of the Hunter Valley rail system in NSW. In 2012, GHD was involved in
port expansions at Port Hedland and Gladstone, and overseeing planning to remove bottlenecks and double capacity at Australia’s most northerly deep water coal port, at Queensland’s Abbot Point, transforming it into a multi-user facility.

With a slow-down in mining investment emerging in 2012, GHD’s mining workload shifted to sustaining capital. This delivered a remarkable level of success with engineering panel contracts being awarded by all of GHD’s major mining clients, including BHP Billiton, Rio Tinto, South 32, Newcrest, Vale and others. As a result, in 2016, against a backdrop of lower mining investment, GHD saw rising revenue from the mining sector in Australia.

Power

The Kwinana High Efficiency Gas Turbine project in WA delivered maximum power efficiency while conserving valuable potable water. GHD’s feasibility study identified the most efficient gas turbine available and the best option for power generator Verve Energy at its Kwinana site. The first of its kind in Australia, it can deliver about 100 MW within 10 minutes of a start, with efficiencies of about 39 percent compared to the 30 to 37 percent efficiency of most combined cycle gas turbines of a similar size. Pivotal to its efficiency is a water-cooled intercooler, which is the first to use sea water rather than fresh water, an increasingly scarce resource in WA.

In the industry’s drive to produce power at a lower cost, all options are being considered. GHD has in recent years invested significant amounts in renewable technologies. It has carried out geothermal studies in SA and trials of tidal power technology in Derby, WA, and wave power at Port Kembla, NSW. In addition, the company is building on capabilities in wind and large-scale solar. GHD was recently commissioned by ACCIONA Energy to manage the preparation of a planning application and a number of technical studies for the company’s latest project – a 47 turbine 70.5 MW wind farm at Allendale East, 17 km south of Mount Gambier in SA. Once operational, the wind farm is expected to generate enough power to supply 43,000 homes and offset more than 180,000 tonnes of carbon dioxide each year.

In the United States, the Hidden Valley Lake Community Services District in California, engaged GHD to develop a project which includes 1176 photovoltaic panels located on one acre at the water reclamation plant. The finished product will supply 100 percent of the plant’s energy requirements. Polygeneration is another emerging area for the company with GHD’s teams assisting clients in producing heat, power and urea from feedstock.

In Chile, GHD has assisted Codelco, a state-owned copper mining company, to carry out a study of operational and maintenance services on the high and medium voltage electrical assets of the Andina mine facilities. Located 3000 m above sea level, the Andina mine draws its energy from the national power grid via more than 100 km of transmission lines and 10 main power substations. As part of the project, GHD undertook an audit of the organisational structure including Codelco employees and the external contractors.
in charge of construction and maintenance activities. GHD developed maintenance plans of the electrical grid and associated patterns of the power network, and created a critical equipment and spare parts list of the power network that comprises the transmission, transformation and distribution networks.

In Malaysia, GHD was engaged by Sarawak Energy Berhad to conduct both pre-feasibility and feasibility studies for the Baleh hydroelectric project. As part of the Sarawak Corridor of Renewable Energy, this project focused on helping the state develop its energy resources. Services provided include highly specialised skills in project management, hydrology, supervision, dams and environmental management of dams and hydropower.

In 2013, Horizon Power, a government trading enterprise responsible for power generation, transmission, distribution and retail in regional Western Australia, decided to outsource EPCM services as part of a broader cost reduction program. GHD successfully tendered for this work, with the contract being executed in July 2014. The outsourcing agreement included the transfer of more than 30 Horizon Power personnel into GHD, a transition which happened seamlessly and which led to very high levels of engagement of both long-term GHD and Horizon Power people in the merged power service group. The leadership of GHD’s Paul Buch and Horizon Power’s Marc Beckx, together with GHD’s approach to providing the best outcomes for Horizon Power’s people, were key reasons for GHD’s success. The opportunities provided under this contract led to GHD achieving a leadership position in power, and in 2016 there were over 70 people in GHD’s WA power team, and over 200 people nationally.

Under the Horizon Power contract, GHD was project manager for the Pilbara Power Project, consisting of a 150MW combined cycle gas fired power station (owned and
operated by Transalta underwritten by a power purchase agreement with Horizon Power) and a seven km 220kV transmission line. Other projects have included new gas, diesel, solar and hybrid power generation facilities throughout regional WA, and the implementation of innovative stand-alone power systems for customers near Esperance where bushfires had destroyed overland power distribution lines. Through this program of work Horizon Power has rapidly grown to be a major and strategic client of GHD.

Several mergers were completed during this period as part of GHD’s very deliberate global power step-up strategy. In 2012, the merger with strategic power consulting group, Hill Michael, enhanced GHD’s advisory capability in power, and delivered strong relationships with senior executives in power utilities. The capabilities of the Hill Michael team are recognised and respected Australia-wide, and have been a key factor in growing high level consulting services to a range of power clients.

The merger with GHA Livigunn and subsequent growth in UK power capability brought new opportunities. By early 2016 GHD had secured the complete multidisciplined design of three 10 MW waste wood to power plants in the UK. The new GHD multidisciplinary team based near Chester in the UK was supported by the detailed design capability that had been built up in Queensland during the oil & gas boom. The Brisbane team helped manage the fully integrated 3D model environment and provided detailed mechanical piping and structural design. The Chester team delivered all other aspects of the fast paced projects. GHD’s systems strongly supported the team that had been formed from opposite sides of the globe with the ability to share screens and work through project challenges in a virtual face to face type environment.
Oil & gas

In 2013, one of GHD’s most significant commissions was for Chevron’s Australian business unit, which includes the giant Gorgon and Wheatstone LNG projects in Western Australia. GHD joined forces with oil, gas and industrial engineering consultants EDG, based in the United States. GHD now supports EDG as their sub-consultant in their delivery of a five-year contract for brownfield engineering services for Chevron Australia.

Many of the major engagements signed up in the 2008 to 2010 period during the coal seam gas to LNG boom continued into this period with GHD’s client focused culture resulting in long-term engagements. The breadth and scale of services supplied to the CSG proponents grew. For example, in 2013 GHD reported to QGC that it had successfully completed over 110 assignments to QGC under a services contract.

Global construction giant, Bechtel was the head contractor for construction of the Australian Pacific LNG (APLNG) facility at Curtis Island. GHD provided engineering and environmental services for a significant number of non-process infrastructure facilities in support of this project. Working on behalf of Betchel, GHD led the approvals and permits processes. These included obtaining/reviewing a range of approvals for material change of use, operational works, tidal works, environmentally relevant activities, plumbing and drainage and building approvals. GHD also facilitated the Type B Gas approval for the process plant. Services also included early works design and documentation for the all the facilities in Gladstone and the marine facilities on Curtis Island. The detailed design scope of work included the roll-on/roll-off truck ramps, ferry terminals, aggregate conveyors, offices, warehouses, car parks. Other works undertaken by GHD included water quality modelling, stormwater management plans, erosion and sediment control plans and acid sulphate management plans. GHD’s GIS team designed and implemented a WebGIS giving access to project data to APLNG, Bechtel and other subcontracts. GHD’s Instrumentation and Controls team assisted Bechtel in developing and completing the Functional Safety Compliance requirements for the facility’s safety trip system and several GHD mechanical engineers spent time on site assisting the construction effort.

Diversifying from the CSG industry in Queensland, GHD worked with InterOil Napa Oil Refinery, near Port Moresby in PNG, to set up a services agreement. Over the four years until the refinery was purchased by Puma, InterOil benefited from a range of engineering services from GHD, including the design of mercury removal beds, process and steam production modifications, refinery HAZOP services, water treatment facilities, water systems, storage tank overfill protection, as-building services and risk assessments. GHD’s team also assisted with managing crude tank turnaround and improving power system reliability, together with power supply upgrades. A key part of the company’s engagement was the transfer of knowledge to InterOil employees. GHD negotiated into the original contract a performance bonus payment that would be partly used to set up an in-country scholarship fund. GHD is currently working with Puma to implement the fund that was accumulated.
A 2011 appointment to design a new west wharf to supplement the existing east wharf dock and boat landings at Varanus Island off the north west coast of Western Australia, was one of GHD’s commissions from Apache. The project added to GHD’s extensive experience in wharf design. GHD has also designed offshore LNG wharves in Yemen and onshore facilities at Jervoise Bay, Dampier, Port Hedland and Gladstone, Australia.

In 2012, GHD determined the route alignment options for the Bunbury to Albany natural gas pipeline corridor in WA, using innovative home-grown technology known as INDEGO. The project would provide a secure energy supply for the future economic and social growth of WA’s South West and Great Southern regions. GHD assessed existing and potential demands for gas and determined route alignment options for the corridor that best met these demands. These options also took into account social, economic, environmental and engineering considerations.

A defining market feature of this period was the oil price impact. From the middle of 2005 oil traded above 80 USD per barrel and from 2011 averaged above 100 USD per barrel. This strongly supported the enormous capital expenditure that was undertaken from 2009 through to 2014. However, in the middle of 2014 the oil price dropped rapidly and dramatically and approached 30 USD per barrel in early 2016. Much has been written about the causes of this change, and the reasons for the sustained low price, but the tremendous success of oil & gas from the shale industry in North America and OPEC policy changes were certainly major causal factors.
In Queensland and Western Australia, the drop in oil price not only followed a sharp decline in activity in the mining sector but was coupled with the completion and near completion of most of the major LNG related capital projects in Australia. This resulted in significant challenges for all participants in the industry. Major project works ended and even annual program related capital spends were reduced significantly. Local markets experienced an oversupply of service providers because of the influx of global majors that had occurred during the boom.

GHD had anticipated a correction and had for some time been pursuing strategies to increase its involvement in the operational phases of oil & gas assets. The win of the Chevron brownfields engineering contract, with partners EDG, being one such example. GHD’s diversified and robust business model helped GHD’s oil & gas business weather the storm and maintain capability and capacity. The period drove improvements in flexibility, competitiveness and collaboration.

The mergers with CRA in North America with GHA Livigunn in the UK gave GHD access to larger markets for the skilled process plant engineering capability that had previously mainly focused on oil & gas projects. For the first time in its history GHD now had staff skilled in hazardous process plant and pipeline design, not only in Australia, but in North America and the UK. Networks were quickly formed and opportunities sought to leverage the combined capability.

At the time of merger, 50 percent of CRA’s revenue was from oil & gas clients, for services ranging from environmental consulting to remediation contracting. This brought a whole new dimension to GHD’s positioning in the oil & gas market. Global majors such as Chevron, ConocoPhillips, Shell and ExxonMobil were now a major part of GHD’s business. This presented the opportunity to leverage these relationships into regions outside of North America. One notable example was GHD’s success in being awarded a contract with Chevron's Australian business unit for environmental services. This was a direct result of CRA's track record of delivery to Chevron's Environmental Management Company in North America. Joe Cruseturner, GHD’s contract manager for Chevron in Houston worked with the bid team in Australia to make sure that the excellent work and reputation from North America was well represented in the company’s submission.
People of GHD
Charles Munce

As a Principal and Vice President based in Louisiana, Charles works out of Baton Rouge. Key to the Baton Rouge office’s diversification in the mid-2000s as part of CRA, Charles led the company’s charge into large environmental engineering projects for refinery and petrochemical clients.

Born in Port Huron, Michigan, Charles was a high-achieving athlete at high school and university, inspired by the values and work ethic of his WWII veteran grandfather. After studying chemistry and graduating from Albion College, one of the oldest and most respected academic institutions in the Midwest, it was the University of Michigan that bestowed his civil engineering degree in 2003.

Based in Detroit during his studies and taken on as a CRA intern, Charles was first involved in environmental projects for the automotive industry. Relocating to Baton Rouge in 2004 as a full-time employee, he started out as a project engineer supporting geotechnical and water resource projects. With the regional marketplace defined by heavy industrial clients in the petrochemical sector, Charles’ responsibilities evolved quickly into targeting large multi-disciplined environmental engineering projects for that sector. In 2005, he was asked to assist in the management of CRA’s ConocoPhillips account for the Gulf Coast Region, where his duties included client and project management for oil and gas projects.

Two years later, appreciative of the results he had been able to achieve, Chevron requested he manage one of their largest environmental liability projects at a petrochemical plant in Louisiana. As always, good work landed more work. Projects won during this period included mine site reclamation design, active and former refinery environmental liabilities, water resource analysis of industrial facilities, and many more. In 2009 Charles was promoted to Associate at CRA, and in 2011 to Principal. Today his responsibilities include delivering GHD’s services throughout the Gulf Coast region, and he’s never been more optimistic about his work and the opportunities still to be realised in the environment sector.
“GHD and CRA grew because of their shared commitment to high-quality work and client service, and together we’re an even more successful winning team,” says Charles.

“On the Gulf Coast, we’re currently seeing expansions in the export of LNG facilities, made possible by the continued advancement in shale gas extraction. Petrochemical manufacturing is also expanding, as easy access to feed stocks and bulk transportation is available. Combined with the need for even further infrastructure investment to support the expansions, at GHD Baton Rouge we’re hugely optimistic about the future.

“These are exciting times. As part of GHD, we’re part of a globally connected network that is client-service led and uses imaginative thinking to solve our client’s toughest challenges. It’s already having an effect, with diversification into new markets and new opportunities arising.”
In the early 2000s, transport networks in Australia came under pressure due to economic growth, ageing infrastructure, rising congestion and underfunding. These factors compelled road-controlling agencies, governments and councils to adopt a whole-of-life approach to managing assets.
Our transportation business accounts for more than 30 percent of the company's annual turnover in Australia and New Zealand, and sees more than 1000 of our people devoted predominantly to this market sector. In other parts of our business, it is smaller, but developing. Across the spectrum of airports, maritime, roads and highways, rail, bridges and logistics, for more than half a century our transportation teams have provided integrated transport services throughout the project lifecycle - from initial policy, transport planning, economics and business case advice, through concept, procurement, detailed design and construction, to operations, maintenance and asset management.

Roads

Road planning, approvals, design and delivery remains the largest part of GHD's transport business, generating work for hundreds of our people in many disciplines across Australia and New Zealand, and increasingly throughout our global network. From planning through to feasibility and investigation, as well as design, procurement, construction, delivery and maintenance, GHD provides client-centric solutions for roads that can also incorporate masterplanning, funding and economic analysis, transport planning, asset management, environmental management, risk management and more.

With rapid population growth in Australia in the 1950s, GHD became increasingly engaged in infrastructure development for expanding cities, particularly residential sub-division development and sub-arterial roads servicing new suburbs. This was a time when private car ownership skyrocketed and many tram and light rail systems were dismantled. Road construction in particular, and upgrading work, accelerated in the late 1950s through to the early 1980s, allowing GHD to develop strong road and bridge design businesses in Queensland, New South Wales, the Australian Capital Territory, Victoria and Western Australia.
In the 1990s, GHD was asked to undertake a stocktake of Australia’s infrastructure and commissioned to prepare an Infrastructure Report Card for the professional engineers’ national body – Engineers Australia (EA) and this work was led by GHD’s Tom Pinzone. EA used the report to lobby state and federal governments to focus on infrastructure investment. Since that time, there have been record levels of investment in infrastructure, initially publicly funded, and more lately, privately funded, as governments looked to privatisation initiatives and public private partnerships (PPP). A number of landmark projects in the 1990s confirmed GHD’s credentials in the sector. Nowhere was this more pronounced than in New South Wales. The M2 motorway project in Sydney, constructed between 1992 and 1995, which linked the city’s north-western suburbs with the inner-city fringe, was a watershed project, providing the catalyst for GHD to progress from sub-arterial road designer for the New South Wales Roads and Traffic Authority (RTA), to full major motorway designer for a Design and Construct (D&C) contractor. The project involved 21 km of motorway, many major bridges and a 500 m long bored tunnel, with the underground section providing GHD with an opportunity to develop our tunnel ventilation, lighting, electrical and communications systems skills. GHD’s tunnel system skills had initially been developed in the late 1980s, assisting major contractor Transfield with the design and delivery of the Sydney Harbour Tunnel. May Ngui, now a GHD Director, has been continuously involved with the immersed tube road tunnel under Sydney Harbour from its inception, providing ongoing tunnel systems support. In the late 1990s, the M2 was followed in Sydney by the City West Link, a motorway standard arterial road, delivered as a design and construct project with John Holland as our client.

A significant project undertaken during this time in regional New South Wales was supplying expert technical advice and subsequent redesign for a section of the Alpine Way – a highway in the state’s south which was damaged after a landslide at Thredbo in 1997. GHD worked closely with LongMac, our then newly-acquired specialist geotechnical group, to develop an innovative remediation strategy for the highway.
GHD’s Newcastle and Canberra offices developed their own capability in road design in the 1990s, sharing people with each other and with Sydney. Our road team in Newcastle delivered successive stages of design for the West Charlestown Bypass – a AUD107 million road built by the RTA and completed in 2003. The team went on to complete the concept design and environmental impact assessments for significant sections of the Pacific Highway Upgrade Projects, under the leadership of Graeme Robinson.

The decade was a transition period for the Canberra office, which had historically completed significant sub-division and road design work for the ACT Government. With land development handed over from the government to the private sector, GHD developed strong relationships with developers. Key projects included Monash Central Estate and Gleneagles Golf Estate.

In Western Australia (WA), our road design team progressed from providing detailed design services on small-to-medium size suburban roads to more significant detailed design work for the WA Government’s Main Roads Department (MRD) in the early 1990s. Projects included the Roe Highway and Welshpool Road in 1991, upgrades to the Great Northern Highway, the Great Eastern Highway upgrade in the mid-1990s and the Kwinana Freeway extension later in the decade. These projects established GHD as one of the pre-eminent road designers in WA under the leadership of Paul Fisher and Erik Geidans, and led to the company becoming Leighton Contractors’ consultant of choice for major road design and construct contracts. The first major design and construct project that grew from this was the Goldfields Highway upgrade in the late 1990s – the largest rural road design and construct project ever undertaken by MRD. Concurrently GHD in WA developed a road construction supervision and contract administration team to provide superintendent services on many of the construction contracts flowing from the design work. In 1995, this team won what at the time was the second largest fee paying project in its history, with the management of a four-year road maintenance contract covering some 2500 km of the state’s southwest.

The 1990s saw GHD develop a significant road design capability in Tasmania. One major project was the detailed design for the Bass Highway bypasses for the towns of Westbury and Hagley. The work included the design of the road, drainage and civil works for the AUD36 million construction and maintenance contract for Leighton Contractors which began in 1999.

In addition to the earlier success on the Bass Highway, GHD was appointed as a major provider of engineering, project management and environmental services to the Department of Infrastructure, Energy and Resources in 2004. Now in its third successive five-year appointment, the team led by Greg McGuire is the premier provider of road related services in Tasmania.
In Victoria from 1994, GHD further strengthened its relationships with the State Road Authority, VicRoads, and was appointed its technical advisors for the highly significant Melbourne City Link project – one of the largest infrastructure projects ever undertaken in Australia to that date. GHD assisted in drafting the concession deed, evaluating bids, and in selecting a preferred Build Own Operate Transfer (BOOT) consortium, and went on to play an ongoing role by providing technical advice to the Melbourne City Link Authority, including overview of design packages prepared by consultants for the Transfield-Obayashi Joint Venture and Baulderstone Hornibrook. GHD’s involvement was extended with its appointment to redesign intersections and road sections affected by the CityLink works.

The late 1990s saw GHD transition from providing concept and detailed design work directly for the Victorian Government, to being Leighton Contractors’ consultant of choice on major design and construct projects – including sections of the Western Ring Road, Geelong Road Upgrade and Deer Park Bypass.

Tom Brock was the driving force behind the growth in GHD’s Victorian road business and remains a key part of our team after more than 35 years of service with the company. At the end of the decade, GHD commenced design on two sections of VicRoads’ AUD250 million Melbourne to Geelong Road Upgrade program, once again teaming up with Leighton Contractors to design road, drainage and structural works. The project included 27 km of upgraded freeway, a complex interchange above a rail line, five bridges and elaborate hydrologic and hydraulic modelling. GHD has continued to build road capacity in Victoria and played a pivotal role in delivering the AUD209 million Deer Park Bypass – a 9.3 km freeway which connects the Western Highway at Caroline Springs to the Western Ring Road at Ardeer, relieving congestion in one of Melbourne’s major growth corridors. The company was commissioned by Leighton Contractors to
design the freeway which included 14 bridges. The bypass was delivered eight months ahead of schedule and opened in April 2009. David Kinniburgh, the current Australian Market Leader – Transport, played a key role in the roads projects delivered in Victoria, Tasmania and NSW in the 2000s and 2010s.

In South Australia, GHD was engaged to provide engineering design services for the AUD900 million South Road Superway project – a 4.8 km non-stop corridor, including a 2.8 km elevated roadway from the Port River Expressway to Regency Road in Adelaide. Design commenced in late 2010 and the road opened in 2014. The South Road Superway was the state’s largest ever single investment in a road project, and the most complex engineering road construction project ever undertaken in South Australia. GHD’s team, largely based in the South Australian capital, utilised skills drawn from across the business.

In Queensland in the 1990s, the roads team was split between Brisbane and Cairns. Major projects undertaken between them included the Gateway Motorway Extension between 1995 and 1996. GHD teamed up with construction contractor Thiess for this project, which included 23 bridges, a toll plaza and 11 km of two-lane dual carriageway. Another significant project from this period was the detailed design of the Maroochydore Road Upgrade, including pedestrian and road bridges. In North Queensland, road projects for local councils and Queensland Main Roads (TMR) were smaller in size, but larger in number.

Whilst GHD provided road construction phase services in many states, the Road Construction Supervision team in the South Queensland Operating Centre has dominated this sector in the state, delivering many kilometres of upgrading for TMR to the Bruce and Pacific Highways around Brisbane.
In the early 2000s, land transport networks in Australia came under increasing pressure as a result of economic growth, ageing infrastructure, rising congestion and underfunding. These factors compelled road-controlling agencies, governments, councils and municipalities to reconsider their road management strategies and adopt a whole-of-life approach to managing assets.

Since 2000, GHD has been involved with every major Sydney motorway project that has been undertaken. Tender design support was provided to Abigroup on the Lane Cove Tunnel, and to Transfield on the M7 Motorway. GHD was Leighton Contractors’ Banker’s Engineer for its bid for the Sydney Cross City Tunnel, and subsequently assisted WorkCover in its geotechnical and geological investigations into the collapse of the tunnel during construction by another consortium. During the 2000s, the NSW road team undertook much detailed design work directly for the RTA, including sections of the Great Western Highway, the New England Highway and the Pacific Highway. GHD also transitioned into the alliance model of project delivery, being shortlisted as part of the final two preferred bidders for Sydney’s Lawrence Hargrave Drive Alliance and the Sydney Windsor Road Alliance, both with Abigroup.

Although initially slower to embrace the alliance delivery philosophy, Western Australia has embraced the approach on more difficult and larger road projects. GHD has been highly successful in the alliance market in WA, winning and delivering projects, including the Southern Gateway Alliance, City East Alliance and more recently, the Gateway WA Alliance. These projects contributed significantly to GHD’s transport revenues. In the period 2007 to 2015 nearly AUD2 billion of major road projects were delivered via a core alliance team comprising Leighton Contractors and GHD.
GHD in Queensland has also experienced significant success with road alliances. Developed in response to the projected growth of south-east Queensland’s population from 2.7 million in 2006 to 4.4 million by 2031, the Darra to Springfield Transport Corridor project was the first integrated road and rail project for this rapidly developing region. GHD was an integral member of the Horizon Alliance that delivered the project over three years. Other alliance members included John Holland, QR, TMG and Kellogg Brown & Root. The roads team in South Queensland was significantly strengthened in this period under the leadership of Martin Peelgrane, Darren Cain and Mike Bryett.

Victoria chose not go down the alliance route in the 2000s, but other factors gave GHD a significant step-up in the state’s transport sector. The merger with Melbourne-based bridge design specialists Corcoran Shepherd Consultants in 1999 brought world-class experience in segmental bridge design, prestressed concrete and remedial engineering. Bernard Shepherd went on to play significant roles in road, rail and light rail projects in Victoria culminating in a role as Global Technical Leader - Transport from 2011 to 2013. Notable bridge contracts that grew from the merger include the Green Bridge in Brisbane, the Sorrell Causeway in Hobart, and the South Road Superway in Adelaide.

The merger with Egis in 2002 provided GHD with a significant increase in our transport capability, particularly in the road sector in Victoria, under the leadership of David Ryan. In NSW, Egis brought to the table its ongoing relationship on the M5 East Tunnel, which had just been completed at the time of the merger. That role continued for another five years with GHD as the tunnel consortium’s asset management advisor. In South Queensland, the combined Egis-GHD team continued to deliver the Independent Verifier’s (IV) role on the Yelgin to Chinderah sections of the Pacific Highway, a role that was completed in 2015.

From the mid-2000s, road teams in each state continued to grow. In NSW, major projects included the IV role on the Hunter Expressway in the Newcastle office; the detailed design of a AUD3 billion, 48 km section, of the Woolgoolga to Ballina section of the Pacific Highway for the Laing O’Rourke/Parsons Brinkerhoff, Pacific Complete Consortium (the largest single package of design work ever delivered by the private sector to Roads and Maritime Services); and tender design of the AUD4.5 billion WestConnex Stage 2 in Sydney.

The Woolgoolga to Ballina project is the largest road design project that GHD has undertaken to date and involves a team of more than 100 people, under the leadership of Alex Horton. In NSW under the leadership of Anthony Penn, GHD has continued to provide significant input into road preliminary concept design for Roads and Maritime Services (previously known as RTA). Recent significant arterial road projects include the detailed design of Northern Road Stages 1, 1B, 2 and 5, with a total construction value of more than AUD1.2 billion. The roads will provide vital arterial road linkages for priority growth areas in Sydney’s west and south-west, and the proposed new Western Sydney Airport.
In North Queensland, our roads team has steadily increased capacity while working for TMR for more than 40 years. The team recently completed the 7 km Cluden to Vantassel section of Queensland’s No. 1 highway, the Bruce Highway near Townsville.

In South Queensland, the larger road projects included the Port of Brisbane Motorway which links the broader road freight network to the port, and the Legacy Way project – a 4.6 km twin-bored tunnel tollway delivered by a construction consortium compromising Acciona, Ghella and BMD. GHD was one of the consortium’s principal designers; the project being awarded the International Tunnelling Project of the Year in 2013 for its ‘innovative design’, and the 2015 Infrastructure Partnerships Australia National Infrastructure Awards Project of the Year.

In Victoria, GHD acted as technical advisor to the Linking Melbourne Authority on the Melbourne City Link project and the AUD2 billion Mitcham Frankston Freeway project, the Peninsula Link project. More recently, GHD was engaged for more than two years to lead the technical aspects of the AUD5 billion East West Link project for the Victorian Government. The project was cancelled by the newly-elected state Labor government in December 2014, whose focus moved to delivering its pre-election commitment to removing up to 20 major city road/rail level crossings by 2018. GHD was successful in transitioning from its role on the East West Link to become the state’s principal technical advisors for the Level Crossing Removal Program, which will see AUD2.8 billion spent between 2016 and 2018, and for the AUD5 billion Western Distributor road project.

Participation in projects such as the East West Link, the Western Distributor, and the Level Crossing Removal Projects, has seen the NSW and Victorian teams develop significant skills in planning approval, and community and stakeholder consultation for road projects – a rapidly growing part of the GHD business.
GHD in New Zealand broke new ground on highway consenting processes for the NZD700 million 18.5 km Ara Tūhono Pūhoi to Warkworth motorway north of Auckland. GHD was asked by the NZ Transport Agency to form a team in 2008, to undertake a scheme assessment study. Based upon the successful delivery of the scheme assessment, the Transport Agency engaged in discussions with GHD as to how they could reduce consenting and designating costs, which resulted in the establishment of a planning alliance between GHD and Jacobs that then procured the services of a legal alliance participant. The independent Board of Inquiry granted the approvals in September 2014. The planning alliance delivered flexible, outcome based consents that became a game changer and established GHD’s credentials. Embracing this opportunity, the Transport Agency selected the same team for a Procurement Alliance to manage a competitive tender for the country’s second road Public Private Partnership.

During 2015, GHD’s South Island planning team won awards with their consultation strategy for the NZD300 million Christchurch Southern Motorway 2 approvals. GHD’s principal planner led the team that gained the approvals from another Board of Inquiry, allowing widening and upgrading of the State Highway, a new section of motorway and upgrades to 16 km of local roads.

In recent years, GHD has been increasing its transportation presence in North America, and particularly in the Greater Toronto Area of Canada. Historically, transportation services in North America concentrated on roundabout planning and some minor bridge design. Under the leadership of Brian Ruck, the team has grown significantly recently with the addition of over 15 bridge engineers who provide the full suite of bridge services from inspections through rehabilitation to replacement. Our highway engineering offerings now include full planning services for all roadways including fully controlled access freeways. GHD is now carrying out designs for 18 transportation structures for the Ontario Ministry of Transportation. Recent wins in transportation
planning for major municipalities area also helping GHD with brand recognition in the transportation space.

Road asset management

GHD’s pioneering work on asset management from the late 1990s allowed the company to develop significant skills in applying this to roads management. That potency was further strengthened with the acquisition of the Manukau Consultants in New Zealand in 1999. New Zealand has led the way in the development of proactive road asset management and GHD’s road business has reaped the benefits. In the early 2000s, the Far North District Council in New Zealand adopted a performance-based maintenance contracting model, and GHD was engaged to further develop this approach and incorporate an inclusive stakeholder process. Within a few years, GHD had established itself as one of the country’s principal consultants in this area, working continuously with clients such as Far North, Manawatu, Rangitikei, Ruapehu and Rodney district councils on more than 12,000 km of roads and over 3000 bridges. Typical contracts extended over five years and included responsibility for maintenance, capital works and emergency repairs, along with strategic road network management. Gary Payne and David Proctor were the key leaders of this period of growth in our NZ road capability.

In the national context, the New Zealand Transport Agency implemented a new contract model for all 23 state highway networks, commencing in 2014. Network Outcomes Contracts (NOC) are a fence-to-fence model and are contractor-led. With NOC contracts having five-to-seven-year terms, GHD has partnered with a number of contractors to supply safety and transport engineering and management services, and asset management support across data management, pavement performance modelling, and geometric design. Since 2012, GHD has been providing road asset management services to Auckland Transport in the North Region (formerly Rodney, North Shore and Waitakere Councils). A critical contract to win, this provided us the impetus to further develop the road asset management team and capability, including the ability to develop forward works programs. Network and asset management contracts in New Zealand continue to underpin the transport business and represent more than 25 percent of annual transport revenue for GHD in New Zealand.

Our team in New Zealand regularly supports the wider GHD business, in particular working with the Charlotte office in the United States, who have been working with the Pennsylvania Department of Transport (PennDoT). PennDoT is responsible for managing a federal and state network consisting of more than 64,000 km of roadway and more than 25,000 bridges, with a total annual budget of more than USD6 billion. Overall, 55 pavement performance models will be developed by GHD for PennDOT’s road network through a comprehensive analysis and modelling of all relevant data, including over 16 years of pavement condition data, traffic count and classification data, pavement construction and maintenance history data, and route classification data.
GHD’s road asset management experience continues to be shared across our global network, most recently on major infrastructure asset management projects in New York and Washington. Major road asset management projects have been undertaken by GHD for the National Road Authority in Ireland and the Road Traffic Department of the Abu Dhabi Government. GHD’s UK transport business has undertaken a number of key leading edge asset management commissions, assisting clients such as Scottish Executive Main Roads Department and London Underground, as well as providing support to Birmingham Airport and Transport for Greater Manchester.

**Rail**

Between the 1970s and the 1990s, a surge of activity in the Australian mining sector required the construction of heavy haul rail, road and port infrastructure. This period was also one of significant investment in heavy commuter rail for Australia’s growing cities, and GHD responded by progressively developing its in-house rail design capability, initially in its Sydney and Brisbane offices, and later in Melbourne and Perth.

It was GHD’s involvement on the civil engineering side, undertaking alignment and trackwork design with commissions such as the Greenvale Nickel line in Queensland in the 1970s, which provided the company with its first chance to prove its capability in this area. The increasing complexity of commuter rail network projects provided GHD with further opportunities in the 1980s, strengthening its capabilities with overseas expertise. A vital step forward was striking a partnership with British Rail’s consulting arm Transmark in the mid-1980s, an alliance that was based on GHD’s engagement by the NSW State Rail Authority (SRA) as its advisor on the East Hills rail line duplication. A decade later, GHD-Transmark was engaged by SRA to project manage the design and installation of the new train radio operating system – offering significant improvements.
in the efficiency, safety, and on-time running of NSW trains. GHD’s involvement with rail operating systems subsequently progressed to the design of a new automatic ticketing system for 294 commuter stations in Sydney.

The early 1990s saw GHD involved in tram and light rail projects in Melbourne. The lessons learned in Victoria were applied to Sydney when GHD-Transmark became involved in the first Sydney light rail project from Central Station to the Fish Markets, via Darling Harbour. The project involved extensive in-ground and above-ground utilities relocations, civil and track work, electrical supply and distribution and communications. By the mid-1990s, GHD-Transmark was assisting NSW CountryLink assess tilt trains, including project managing trials, and working with NSW CityRail on track and overhead wiring projects. Other projects included project management of the Casino to Murwillumbah line, the Homebush Bay rail loop and station, and the New Southern Railway link to Sydney Airport, the latter two in preparation for the 2000 Sydney Olympics.

Elsewhere in Australia, GHD’s capability in rail projects developed in parallel. In Queensland, GHD was busy assisting Queensland Rail (QR) in more traditional work – designing upgrades or replacements of hundreds of bridges and other civil infrastructure on the Brisbane to Cairns main line. In WA, GHD won the Northern Suburbs Railway line project – seven kilometres of new alignment in the rapidly emerging City of Joondalup – an extension of the first new rail line in Perth for many years, and the first to be electrified.

By the early 2000s, GHD had grown its in-house rail capability for track work, overhead wiring, electrical supply, communications and signalling. After the East Hills commission in NSW, projects like the Ensham Rail spur (Queensland/NSW), the Bengalla Coal Mine Loop, the Antiene Spur Line and NSW South Coast Electrification followed. GHD’s rail capability was given additional potency with key appointments in the early 2000s, notably Rob Schwarzer (former CEO of the Sydney Light Rail) joining as leader for strategic rail projects, and David Roberts joining GHD from Transmark. Rob and David went on to build GHD’s rail business significantly, so that, by the mid-2000s, we had one of the largest rail consulting practices in NSW.

Towards the end of the 2000s, Martin Baggott joined the team as the Business Leader for Rail after executive roles in the public and private sector in WA and Victoria. Martin brought a focus on rail business advisory services – a natural progression from GHD’s more traditional design-based services. By the late 2000s, GHD was effectively NSW RailCorp’s preferred sub-station and electrical supply consultant, and communications and train radio work was being consistently won and delivered by our highly specialised team in Sydney. GHD’s signature rail project of the 2000s was in Sydney – the AUD2 billion Epping to Chatswood Rail Link (ECRL). Supported by Parsons Brinkerhoff, GHD was the primary civil consultant on the ECRL to the Thiess Hochtief Joint Venture (THJV), commissioned for the design and construct delivery of 13 km of twin commuter rail tunnels and three new underground stations.
In Western Australia, GHD remained involved in rail work in the 2000s, with projects including Vertical Clearance Improvement works to assist container transport, and upgrades on the rural grain freight network on behalf of Westrail. GHD also provided design services for Perth’s South Western Metropolitan Rail – MetroRail City project. Meanwhile in Melbourne, GHD was engaged to design the signalling, overhead wiring power supply and communication systems for Southern Cross Station.

Diversification has been felt in GHD’s rail projects as much as any other part of its transport business. In the 2010s, the company branched out into rail station design, taking on the role of main designer for a number of station upgrades in Sydney. This capability was enhanced by the addition of the team from Woodhead Architects in 2014, who brought leading-edge architectural experience to our existing station architecture team. In Victoria, GHD was an alliance partner with the client, AECOM, John Holland and Abigroup, in delivering a section of the Regional Rail Link project, and shortly after began advising the Victorian Government on technical aspects of extending the South Morang rail line to Mernda to cater for significant population growth in Melbourne’s north.

Light rail continues to be an important element of GHD’s transport work across Australia, and in Victoria we have been a key supplier of design and advice to Yarra Trams, the operator of Melbourne’s tram network. GHD’s services have included the design of tram line extensions and interchanges, and planning advice to improve operational efficiency. In Queensland, GHD had a significant role in the development of the overarching concept for G:link (Gold Coast Light Rail), and our involvement with light rail in the NSW capital has involved carrying out the design of two extensions to the Sydney Light Rail network. More recently, GHD has been engaged by Acciona as joint designer for the CBD and South East Light Rail.
GHD has delivered more projects in the light-rail market than any other consultant in Australia including planning for the expansion of the network in Adelaide; proposed light rail on the Sunshine Coast; the planning and design of the Vermont South Tram Extension, Docklands Drive and Collins Street extensions in Melbourne; extensive planning studies in Sydney for the recent CBD and South-Eastern suburbs’ works and proposed routes along Parramatta Road; and the development of significant planning instruments such as the Tram Improvement Toolbox in Melbourne, aimed at improving the efficiency of the tram network and improved outcomes for customers.

Internationally, GHD is contributing to Lusail City, Qatar’s newest planned city, by providing architecture and engineering services for the Lusail Light Rail Transit Depot. GHD’s rail business development has benefited like every other sector in our portfolio from the creation of partnerships. In 2011, Collinson Dutton Limited (CDL), a UK-based specialist rail consultancy merged with GHD’s fledgling civil engineering practice in the UK. The fruits of that partnership saw Andy Collinson and John Dutton provide leadership for GHD’s developing transport businesses in the UK and in the Middle East.

Similar to the delivery of road projects, the focus shifted to the alliance delivery model for rail in the 2000s. GHD’s Newcastle practice began to grow a significant rail business at this time via the strong relationship it developed with the Newcastle-based Australian Rail Track Corporation (ARTC) under the leadership of Grant Wood. The Sandgate Rail Grade Separation was the first large project undertaken via this relationship, followed by the Hunter 8 Alliance with John Holland. The Hunter 8 Alliance – duplicating a large section of the Hunter Valley heavy-haul coal line – was the first major alliance for ARTC and remains the largest rail civil design project ever undertaken by GHD. Building on the experience of the Horizon Alliance Combined Road and Rail Corridor in Queensland between 2006 and 2008, GHD’s Brisbane rail team moved on to deliver the Coal Connect Alliance in the central Queensland coal fields between 2009 and 2012. This AUD1.1 billion project created a twin-track heavy-haul coal railway linking Goonyella coal mines to export facilities at Abbot Point. The team also delivered balloon loop rail lines into existing and new coal mines, including the Middlemount Early Rail Alliance.

The Perth City Link Alliance, where GHD was the principal designer, was a challenging inner-city brownfield rail project where the alliance delivery method produced a good outcome for the client, WA’s Public Transport Authority. The Melbourne Regional Rail Link, City to Maribyrnong Alliance was also a very large project and GHD was again part of the John Holland team, which successfully delivered this challenging brownfield project ahead of budget and ahead of time. The AUD1 billion, Glenfield to Leppington Rail Line in Sydney, where GHD was the lead designer for John Holland’s design and construct contract, was delivered early and under-budget for Transport for NSW. This project required near super-human efforts from the GHD design team over a 24-month period.

GHD was successful in securing the independent certifier’s role on the driverless Sydney Metro – North West Rail Link, an AUD8 billion project being fast-tracked by the NSW
Government from 2016. The role places GHD between the public-private partnership proponents and the government, tasked with reviewing all aspects of the work and moderating stakeholder technical inputs. As GHD’s largest single rail project to date, a continuous average involvement of 30 people for four years is expected on this project, and at its peak, as many as 60 people will be involved.

In 2016, GHD with the Salini Impregilo/NRW construction joint venture, was successful in its tender for the Forrestfield Airport Link project in Western Australia. This AUD2 billion project (for which GHD was able to apply its extensive experience from the Perth City Link Alliance project) involves a new rail spur servicing Perth’s eastern suburbs and comprises 8 km of twin bored tunnels under the Swan River and the main runway of Perth International Airport and two major new stations.

Ports

Parallel to the development and export of Australia’s vast mineral and energy resources, port developments in Australia sky-rocketed from the late 1960s through to the 2000s. To take advantage of this growth, two strategic partnerships were crucial. The acquisition in 1981 of the mechanical and electrical engineering business Planner West gave GHD significant coal port terminal expertise, centred on their long involvement with Port Waratah Coal Services in Newcastle. Then, in the mid-1980s, GHD formed an alliance with specialist marine consultants Alex Macknight & Partners – a partnership which evolved into a full acquisition a decade later. Macknight’s Victorian practice specialised in small craft facilities, but by the mid-1990s as a result of working together, the list of GHD-Macknight projects included the design of an oil terminal in Pakistan, cement-loading facilities in Malaysia and Vietnam, and a petrochemical wharf in Indonesia – all completed under the leadership of Alex Macknight.
Significant studies of that period included navigation simulations for Newcastle and Brisbane ports, a major feasibility study for a bauxite port facility at Weipa in Queensland, and the drafting of a masterplan for the East Arm Port in Darwin, of which GHD-Macknight went on to design many aspects of its implementation. The largest design projects undertaken by the GHD-Macknight teams later in the decade were the Gladstone, Fisherman’s Landing bulk liquids berth in Queensland, and a three-berth facility at Bintulu, Malaysia.

In the 1990s, the relationship with Port Waratah Coal Services (PWCS) expanded to include the Kooragang Coal Terminal and GHD led the Engineering, Procurement and Construction Management (EPCM) delivery of the AUD1 billion Kooragang Coal Terminal Stage 2 Expansion, from 1993 to 1996. The development involved reclamation over marginal marine mud flats and with many geotechnical and site remediation challenges. GHD engaged specialist geotechnical company LongMac to assist. GHD also went on to develop the concept design and assist with obtaining government approvals for the AUD1 billion Stage 3 expansion in 1997. The work was led over a six-year period by Ian Dawson who went on to become the Global Market Leader - Transport between 2009 and 2013 and by Brian Mahony, a Director of GHD. As always, such legendary projects nurtured their own unique memories. The Kooragang Coal Terminal projects remain among the largest fee jobs ever to be undertaken by GHD, and during this time, Brian Mahony became a well-known resident of the Newcastle Club, located high above the city, where after hours he could keep a weather eye on the coal bulk-carrier movements in and out of the port, all the while relaxing in the old world charm of an institution described by Mark Twain in a quote:

“Newcastle consists of a long street with a graveyard at one end with no bodies in it, and a gentlemen’s club at the other with no gentlemen in it.”

Rest and relaxation also achieved a historic status - the never to be forgotten “Blocked Chute” annual cricket match between PWCS and GHD, along with “Dawso’s” rugby league State of Origin backyard BBQ were all iconic social events for the project team.

Following the Kooragang project, in 1997, LongMac joined GHD and has continued to grow as GHD’s NSW specialist geotechnics and geology team. GHD’s close relationship with the Newcastle port continues to this day, with notable projects over the past 15 years being the design, environmental impact statement and approvals for the deepening of the south arm of the Hunter River. Together with PricewaterhouseCoopers (PwC) and Meyrick & Associates, GHD developed a strategically vital piece of work for the port with the Newcastle Harbour Entrance project. This study explored trends in bulk carrier construction, the depth constraints of destination ports, and the cost-benefits for deepening the port and mechanisms for recovering the benefits which flow on directly to shippers, in addition to indirect benefits that flow on to the terminal operators and mining companies.
The merger with Meyrick & Associates in 2008 gave GHD strategic capability in trade forecasting, road pricing, and federal and state transport policy development. Subsequently GHD developed the National Ports Strategy for the federal government and the Queensland Ports Strategy for the Queensland Government. Work for the coal sector continued to dominate the Queensland and NSW marine teams’ work in the 2000s, up to 2013. Significant projects included concept design and approvals for the Abbot Point Multi-User Facility for the Queensland Government’s Northern Queensland Bulk Ports, concept design and initial review of environmental factors for the new Balaclava Island coal terminal for Xstrata, and concept design for a coal terminal at Gladstone for terminal operator 3TL. Gladstone Port and its various terminal operators have been long-time clients, with projects including the concept design for the reclamation for the Fisherman’s Landing Multi-user facility, the expansion of the Reg Tanner terminal and design of a new import/export wharf for bauxite/alumina for Comalco.

The Townsville Port Authority (TPA) has been a regular client since the early 2000s, with the most significant recent project being the detailed design, approvals and construction monitoring for the Townsville Marine Precinct. An alliance project between TPA and Laing O’Rouke, it involved the relocation of the local fishing fleet and marine industries from upstream in the Ross River to downstream of the river’s mouth. Much of the marine infrastructure built in the early years of the 1960s mining boom has required remediation, having reached the end of its notional design life. GHD embraced a risk-based approach to this type of work. One example is the work we have completed for the TPA and Xstrata, to prolong the usable life of Berth 7 (one of nine berths in the Port of Townsville) by modifying operating procedures, undertaking regular inspections and using sophisticated computer modelling.
In 2005, GHD and PwC were engaged by the Sydney Ports Corporation to support its position in a state commission of inquiry into the proposed Port Botany expansion. GHD developed 10 redevelopment options for Port Botany, and worked with PwC to examine the options from the view of the community, the port’s users and environmentalists. GHD developed a due diligence capability based on a broad range of in-house disciplines that has been highly successful in the privatisation process for Australian ports. This capability has been used to provide technical due diligence for the long-term leases of Port Botany, Port Kembla and Newcastle Port. In each case, a higher than expected purchase price has been achieved by the respective state governments.

In the early 2000s, the marine team in Western Australia developed a strong coastal engineering focus under the leadership of Shahab Hosseini and Heather O’Keeffe, which led to a number of significant land-backed projects. One – the Australian Marine Complex (AMC) in Henderson – was constructed as part of a vision to build a supply base capable of supporting local projects in the iron ore, and oil and gas sectors. The project had its detractors in the early days, but the vision was borne out when the resources boom of the late 2000s arrived. GHD was the project manager for AMC and followed up on this experience by becoming involved in similar facilities in Dampier and Port Hedland after 2010.

In WA, much coastal protection work has been undertaken for local government, as well as for WA’s Department of Transport. The most notable to date is the Exmouth Boat Harbour Upgrade project, for which GHD has undertaken the design from concept to tender, and went on to provide technical support in the construction phase. Adaptation planning has been a key market from 2013, with GHD involved in the Cockburn Sound Coastal Alliance Coastal Adaptation Plan and Port Leighton, Mosman Park Coastal Hazard Risk Assessment and Adaptation Plan.

In recent years, GHD’s marine group in WA has developed a renewed focus on the iron ore industry. The group’s deliverables include a new tug harbour in Port Hedland for BHP, and operating life extension and remediation of iron ore export wharves also in Port Hedland. Collaboration between the WA project management team, the marine teams in WA and South Queensland delivered the Rumah Baru Freight and Passenger Facility for Cocos (Keeling) Islands (2009-2013), and the Flying Fish Cove Jetty Upgrade for Christmas Island (2013-2016), both funded by the Australian Government.

Beyond Australian shores, GHD’s marine capabilities came to the fore in the AUD6 billion Yemen LNG processing plant, located at Bal Haf peninsula—Yemen’s largest ever industrial investment. Commissioned as an engineering procurement and construction project by YLNG (Total Oil and the Yemen Government), it was delivered by Yemgas - a consortium formed by Technip (France) and the UK’s KBR. Malaysia-based contractor Muhibbah Engineering won the subcontract for the works and engaged GHD for the detailed design of the LNG loading jetty and seawater intake and outfall. Crucial to the success of the project was GHD’s involvement with Muhibbah in promoting large-scale construction at
a remote site by modularisation and transportation of the structural elements. Our work on this iconic project was led by the South Queensland marine team, headed by Scott Vivian and Gavin Clark.

GHD’s Chilean business includes a significant marine capability, which has grown steadily in the 2000s. Chile has a long coastline where, in many remote locations, marine transport is the primary mode of transport. GHD has undertaken a variety of projects along the coast, with the major projects being near the port of Valparaiso. The Chilean team has also helped the San Antonio Port develop a blueprint for future expansion as Chile’s largest freight hub.

In the Asia Pacific region, the condition assessment of 27 wharves for the Papua New Guinea Government was a strategic study undertaken by GHD in 2014 that resulted in the establishment of a permanent port capability in PNG, under the leadership of John Nicholls. The marine practice continued to grow through the late 2000s and early 2010s with the appointment of Michael Wright as National Marine Business Leader. Michael developed the NSW marine team to be the largest in the state until his untimely passing in 2014. Perhaps Michael’s most iconic piece of work at GHD was the 30-year master plan for Port Botany, developed for Sydney Ports Corporation in 2012, just prior to the long-term lease of the port. Michael leaves an enduring legacy.
Like other GHD business sectors today, it was our civil engineering base that was used as the entry point into the aviation sector. In the 1960s and 1970s, the company assisted councils across regional Australia to develop airstrips and basic landside facilities. In the 1970s and 1980s, this capability grew substantially, with work for the Australian Government’s Department of Defence. Project management and design of airside and landside infrastructure at Cairns International Airport undertaken by GHD in the late 1980s was the precursor to larger and more complex projects, such as concept design for Sydney International Airport’s third runway undertaken in the early 1990s, and the design of taxiways for Sydney’s domestic terminal in the early 2000s.

Work at regional airports in the early 1990s included the Longreach and Charleville runway upgrades and the Mackay Airport Masterplan in Queensland. Later in the decade, work was undertaken for Coffs Harbour, Rockhampton, Meekatharra, Kalgoorlie, Cairns and Coolangatta. In remote Western Australia, GHD was engaged to design new runways at Fitzroy Crossing and Halls Creek, and the Aboriginal community of Lombadina/Djarindjin.

Our aviation capability increased substantially with the acquisition of the Federal Government’s engineering arm Works Australia in 1997, that added their experience in airfield lighting and electrics, airside pavements and masterplanning to the table. During this time, GHD played a significant role in the masterplanning of most RAAF bases in Australia under the leadership of Graeme Moss in our Canberra office. Our close relationship with Defence and these bases continues to this day.
Like any global gateway, aircraft noise management is an ongoing challenge at Sydney International Airport and GHD has undertaken a number of noise studies for the Sydney Airport Corporation. Subsequently, aircraft noise-modelling became a significant part of GHD’s service offering, with major investigations undertaken for Rockhampton, Cessnock, and the Royal Australian Air Force (RAAF) bases at Point Cook, Williamtown, Amberley, and East Sale, Army Aviation Oakey, and HMAS Albatross at Nowra.

In the mid-1990s, the Federal Airports Corporation commissioned GHD to assist in developing two alternative concepts for a new Sydney West Airport. In 2014, the Federal Government announced that it would proceed with the development of a new 80m+ passenger airport at Badgery’s Creek, west of Sydney. Since this announcement GHD, along with EY and Landrum & Brown, have provided the Government with business and technical advisory services. Tom Ryan and Mia Barnard have been instrumental in this regard. In addition, the GHD team led by David Chubb, together with RPS successfully delivered the environmental impact statement for the airport.

GHD has also had a long relationship with Newcastle Airport, assisting its transition from a modest airstrip to a significant RAAF base and domestic airport handling more than 1.2 million passengers per year. GHD prepared the initial airport master plan, and followed on with engineering design for the new terminal and other significant infrastructure commissions.

Defence has underpinned our aviation business over many years. In the 1990s GHD assisted the RAAF develop apron extensions, apron shelters and bulk component storage for F-111G aircraft at Amberley Base in Queensland. Master plans were completed for RAAF bases at Darwin, Tindal, Learmonth, Curtain and Amberley. GHD assisted the RAAF to plan apron extensions at Rockhampton Airport, and played a significant role in the project management of the design and construction of the major new RAAF Base Scherger at Weipa, Queensland. In more recent times, the Adelaide aviation team has grown significantly under the leadership of Van Tang to now be GHD’s centre of excellence in defence aviation.

In Western Australia, the resources boom that took hold of the state from the early 2000s and ran for ten years led to the increase of the fly-in fly-out workers. This itinerant labour force converged on Perth Airport, which experienced unprecedented growth in passenger numbers. The influx created huge demand for upgrades to regional airstrips, as well as new airstrips for the many mines spread throughout the north-west of the state. The WA aviation team led by Mike Ryan was kept busy and built up large numbers of people supporting airstrip projects at Port Hedland, Karratha, Newman, Broome, Boolgeeda, Tom Price, and other mine locations until the resources boom subsided in 2014.
GHD's aviation work in the past 20 years has seen the company provide significant ongoing assistance to a number of key airports, including environmental impact assessments for major upgrades at Coffs Harbour Airport in NSW, a master plan for Avalon Airport in Victoria, and runway extension to Canberra Airport.

Overseas our aviation work continues to grow on the back of a slate of highly successful projects including:

- Our role as principal consultant for the Doha International Airport extensions in Qatar and the expansion of the Sharjah International Airport terminal in the UAE
- Passenger terminal design at Abu Dhabi International Airport
- Passenger terminal design at Al Ain International Airport, Abu Dhabi’s second international airport
- Masterplanning services for Timika Airport, Irian Jaya, Indonesia
- Masterplanning for future developments in the Cook Islands

**Traffic and transport planning**

Traffic and transport planning has been a part of the transportation practice for more than 30 years. Initially the work was delivered by small teams in the major capital cities, focusing on land-use planning and its connection with transport infrastructure. This local work expanded into larger projects and more strategic contracts during the 2000s.
In 2004, GHD commenced a project in Caloundra City, Queensland, that would run for a number of years, developing an integrated transport and land-use strategy, based on an optimum plan to reduce internal trips and private vehicle use, and integrate land use and transport to better cater for a rapidly expanding population.

Following closely behind was a much larger study – the Palm Jebel Ali Master Plan. Undertaken between 2004 and 2006 this was the second of the offshore mixed-use developments constructed as part of the artificial palm shaped archipelago in Dubai, which began construction in 2002. GHD was commissioned by the developer Nakheel to undertake all master planning roles, including major transport planning work, traffic analysis, integrated land use, public transport and marine transport planning and road network planning.

In Auckland in 2008, GHD was engaged to assist in developing systems to manage the region’s entire traffic network, including the development of a region-wide Integrated Traffic Management Unit, which applied the latest transport systems technology to manage traffic flows. The South West to East Tamaki Corridor study identified a route for an efficient east-west transport link between the south-western corridor and East Tamaki. The project established the travel demands and transport deficiencies, identified future demand, and the subsequent infrastructure requirements needed.

The Bruce Highway Urban Congestion Study in Mackay, Queensland, is an example of a typical strategic network study. It involved investigating a 30 km section of the Bruce Highway, a traffic engineering assessment of the performance of the road network, a review of alternate modes of transport, and evaluating opportunities and constraints in relation to infrastructure provision.
The Beenleigh Rail Feasibility Study undertaken in 2010 for TMR in Queensland is typical of the transport planning that informs the development of a new rail station. The existing two-track rail corridor passed through Beenleigh town centre in a cutting, reducing connectivity and limiting development potential. Options for a new rail corridor were examined and reuse of the existing corridor was deemed to be the most effective, comprising covering all tracks in a ‘cut and cover’ tunnel and developing the proposed rail station within a reasonable walking distance of the town centre. Additional tracks would be constructed as a bridge structure providing a continuous deck over Market Place Drive. A concourse over the corridor accommodating station facilities provided vertical transport to station platforms, and enabled direct and convenient access from the town square.

The Campbelltown Road Route Selection Study, in Sydney’s south-west, began in 2005 and further showcases GHD’s capabilities in major road route strategy. The study, for RMS, involved transport planning, land use planning, urban design, road safety, base plan development, strategic level demand modelling and a broad level infrastructure assessment. The final output was an evaluation of competing routes, and the establishment of a staged road infrastructure upgrade plan and costings for the transport corridor.

An integrated transport planning strategy for a city centre involves network performance indicators and staged infrastructure measures for managing the progressive growth of the city. GHD undertook such a study for the Hurstville CBD, which had been identified in the Sydney Metropolitan Plan 2036 as a major centre serving regional employment and community service needs. This multidisciplinary study, included master planning and urban design, refined Hurstville’s development guidelines and future infrastructure concept design development.

GHD has undertaken numerous traffic impact assessments as part of environmental impact statements and approval processes for projects. Examples from Victoria include the Sugarloaf Pipeline, the Victorian Desalination Plant, the Peninsula Link, and the East-West-Link Eastern Section. Microsimulation is an important tool for transport engineers to assess traffic impacts and design mitigating strategies. GHD has extensive capability in this area, as demonstrated in Victoria on the M80 Ring Road Corridor traffic microsimulation model used to assess freeway and ramp configurations for this AUD2 billion project.

GHD has also undertaken key policy and advisory work in the transport planning arena, including providing transport advice to the Victorian Department of Premier and Cabinet in developing the AUD38 billion Victorian Transport Plan in 2008. This advice involved developing potential alignments for the North-East Link, prioritising this link against the West Gate Alternative and East-West Links, and undertaking a critical review of the East-West Link Needs Assessment Study.
Further to studies for the Port of Brisbane, GHD designed the upgrade and duplication of the existing Port Drive.

Transport strategy and economics

GHD significantly strengthened its position in the transport, economics and infrastructure markets with the merger with its alliance partner Meyrick & Associates in 2008. With Meyrick on board, GHD was able to offer a complete suite of services, combining our traditional strengths in engineering, traffic modelling and transport planning with Meyrick’s capabilities in transport demand and economic analysis.

The fusion of the two companies expanded the range of services GHD could offer at a crucial time, allowing our Strategy and Economics team in 2009 to undertake a major strategic piece of policy work for the National Ports Strategy, commissioned by Infrastructure Australia and the National Transport Commission (NTC). This was followed a year later by delivering strategic studies for the Port of Brisbane. Closely aligned to the National Ports Strategy, work was undertaken for the NTC on the development of a consistent Road Pricing Strategy for heavy freight vehicles across the states to reduce freight costs.

GHD has completed a considerable volume of work in the freight sector, both in terms of strategic studies and design work. A strategic study for Mildura Rural City Council in Victoria, analysing freight connection to the transcontinental rail line and the development of an intermodal terminal is a typical example. Design work has centred around intermodal road/rail terminals, including projects at Parkes, NSW; Griffith, NSW; and Dynon in Melbourne. Commissions such as our review of the organisational structure of the NSW Roads and Maritime Services, reflects our Strategy and Economics team’s ability to deliver major service delivery efficiencies for clients through analysis of their business systems.
As president of the eSolutionsGroup and a GHD principal, Karen is at the forefront of developing new technologies and digital services for our clients. With many unique selling points to enhance our global ICT offerings, eSolutions develops web and mobile applications to help clients better connect with the communities they serve, deliver services more effectively, and make the most of their IT investments.

Born and raised in Kingston, Ontario, Karen graduated with an architecture technology degree in 1985. A first job in engineering saw her cut her teeth on civil infrastructure projects, and a move into drafting, using early versions of AutoCAD and Civil Softdesk. In the 1990s, Karen broadened her technical skills and added business leadership experience, branching into client-side PC diagnostics, IT systems and networks management as well as advanced programming for AutoLisp. Predicting the rapid uptake of clients’ use of internet technologies in their service delivery and communications, the eSolutionsGroup was launched in 1999 as a separately branded company within CRA – a strategic move to differentiate eSolutions from CRA’s environmental and engineering services.

Making its name throughout North America by delivering advanced municipal and industrial applications, web and intranet solutions, eSolutions went from strength to strength. Acclaimed for its enterprise-level websites, digital marketing services and custom applications, after five years as a division of CRA, in 2005 eSolutions was launched as an independent company and wholly-owned subsidiary, building and delivering online products and services to the public sector.

As a passionate life-long learner, Karen completed the Richard Ivey League School of Business Quantum Shift program in 2009 – an advanced trainingscheme targeted exclusively to Canadian business leaders recognised for their innovative, fast-growth companies. Under Karen’s leadership, eSolutions has grown from a staff of four in its first year, to close to 60 in 2016, working from offices in Waterloo, Ottawa, Toronto and Newmarket, Ontario, and Canberra. Today, the company serves the web, mobile application, and IT needs of more than 300 public sector clients throughout North America.
In recognition of her contribution to business and the community, Karen was nominated for the Premiere’s Award for outstanding college graduates in 2011 and 2016. She predicts a bright future for the products and services eSolutions provides.

“Our clients comprise more than 40 percent of Ontario municipalities with a population of 5,000 or more, and 14 percent of those Canada-wide,” says Karen. “We see a tremendous opportunity to expand from that base, to increase the number of Canadian clients, and grow further in the US.

“With 230 percent year-over-year growth in sales of our end-to-end eProcurement management system, and in bids and tenders, eSolutions growth is accelerating into other sectors. Public demand for mobile applications that unlock the power of big data for municipal services to their communities, combined with client-driven innovation in new products and services, paves the way for even greater things.

“As part of the GHD family of companies, we have the global infrastructure to fuel that growth, while developing our people and continuing to meet and exceed the needs of our clients.”
Chapter 7.

The lack of water security and capacity resulted in one of the largest capital expenditure programs in Australia's history over the next five years.
1980-1990: A period of significant change

GHD started as a water consulting business and by the mid-1980s was the largest water consultant in Australia. With a strong presence in the eastern states, GHD had carved out a client base made up of small to medium size water and sewerage authorities, mostly on the fringe of the major cities and in rural towns. In Victoria alone, GHD was the sole consultant to about 50 water and sewerage authorities that served a population of more than 500,000. Meanwhile, the major water utilities - which employed in-house design teams that made little use of local independent consultants - meant the potential to engage with the ‘big city’ players was limited.

As the decade wore on, the water industry in Australia began to experience major changes, a transformation driven by a need to rationalise and create greater efficiencies, with many authorities, particularly in Victoria, amalgamating into larger water utilities. This presented both challenges and opportunities for GHD, not least the threat posed by the large metropolitan utilities taking over water and sewerage functions in the fast-growing city suburbs such as the Mornington Peninsula - the bedrock of much of GHD’s client base. But the move to corporatise had an even greater impact on the utilities themselves. Under the new arrangements, the utilities had to operate in the same way as private corporations. This led them to review their operations and to improve efficiency to achieve a better return on government investment. As a consequence, they began to outsource their design and construction functions to the private sector, opening the door to local consultants and contractors. The first major water utility to outsource their design services was Melbourne Water in 1991. Though GHD was unsuccessful in its bid for that contract, this setback became one of the triggers for the company’s diversification strategy, and created other opportunities that would have far reaching consequences.

In 1991, Des Boland, Albury office manager and previously operations manager of the Frankston sewerage scheme, moved to Perth to start GHD’s water business in the west. After working for 30 years on the Mornington Peninsula sewerage scheme, Frank Maguire
won an AusAID commission, to provide operations advice to the Bandung water authority in Indonesia, an experience that proved there was international demand for the skills GHD had acquired on the Mornington Peninsula project. Subsequently, Robin Povey was hired to lead a team focusing on international aid opportunities in the Asia Pacific region. GHD’s first formal business unit had been constructed to seek opportunities outside Australia.

The outsourcing of work by the major Australian water utilities had created new openings for GHD, but there was a catch: the only way to access these opportunities was through joint ventures with international consultants. At the time, the utilities had little exposure to local consultants and were of the view GHD did not have the capability to handle the size and complexity of their projects.

The biggest opportunity to emerge in the late 1980s was the AUD2 billion Sydney pollution abatement project and the building of four major water treatment plants. GHD established a joint venture (JV) company with US-based CH2M Hill. The two companies had previously worked together and organised a staff exchange program, with Nick Apostolidis working in CH2M Hill’s San Francisco office for a year, and Jim Bloomquist working for the same period in Melbourne.

The JV was named GCEC - GHD and CH2M Hill Environmental Consultants. Its Managing Director was Mike Anglea from CH2M Hill with Nick Apostolidis the Deputy Managing Director. Whilst the JV did not win the program management of the pollution abatement project, it secured significant commissions in infiltration and inflow, and many other water and wastewater treatment projects. One unique commission included an air emissions monitoring program of all the Sydney Water’s incinerators. At the time, it was the largest air emissions monitoring project in the world.
We successfully completed the first nutrient removal plant at an oil refinery in Australia at BP Kwinana, with Thiess as the constructor. The JV was also successful in winning work in other states, but was dissolved in 1993 when the NSW government wound back the pollution abatement project as funds dried up.

In Western Australia, GHD’s investment in building water capability paid off when it won the right to take over the design arm of the Water Corporation. This was a defining moment for GHD’s presence in the state, helping it establish critical mass in WA and at the same time significantly strengthening GHD’s water design capability nationally.

The experience gained in working for major water utilities with global water consultants was valuable to us and our clients. It showed our local people could handle larger projects and gave confidence to our own people that we are capable of competing with global consultants.

1990-2000: The recession we had to have

The early 1990s was a tough economic period in Australia. Home loan interest rates reached 17 percent and most of our clients responded by deferring capital expenditures, and looked to improve asset management practices to drive their existing infrastructure further.

GHD built up its world-leading capability in asset management at the time under the leadership of Roger Byrne. Many water utility clients that were amalgamated or in the process of being corporatised, had to undertake detailed asset management studies and GHD was successful in winning a good share of that work. Our capability in this area started to be recognised internationally, resulting in the establishment of a JV in New Zealand with Worley Consultants (later renamed Meritec and subsequently acquired by AECOM) to pursue asset management opportunities across the Tasman.

The economic downturn was particularly severe in Victoria, NSW and Tasmania. However, there were still good opportunities in the growth states of Queensland and Western Australia, driven by mining developments and growing population. With the winding down of GCEC, Nick Apostolidis relocated to Brisbane to lead the water business in South Queensland. This proved a good move as the water industry in the state started to open up with a change in government. Under the new administration’s regulations, all councils in Queensland had to call for competitive tenders. Until then, most of the work was carried out by a handful of consultants that had informal long-term single source positions. GHD was successful in winning a larger share of that work and saw its water business in the state grow significantly over the next two decades. Our North Queensland practice had several single source arrangements, particularly around Cairns, but it was able to grow its business under the new regulations in other parts of North Queensland. Jose Foruria was appointed to help grow the business in Townsville, where GHD’s market share had been limited.

GHD’s investment in the aid business started to pay off with several significant wins including the Da Nang Water and Sanitation Project in Vietnam which was won against
As a result of our work, people in the townships of Bac Lieu, Ha Tien and Sa Dec, Vietnam, now have direct access to piped clean water and sanitation.

international competition. This project was strategic in two ways: it helped GHD build up international experience for some of its talented people such as Lindsay Mott, Chris Lloyd and Ross Smith, all of whom had limited opportunities in Australia. Secondly, it showed our local clients that GHD was globally competitive.

By the mid-1990s the Australian economy had begun to recover and more opportunities started to emerge, especially in Queensland and Western Australia. To take advantage of these opportunities, Tony Norrish relocated to Perth to help Des Boland grow the market. Chris Hertle was appointed in Brisbane to nurture our wastewater business in the municipal and industrial sector. During this time GHD delivered a number of large industrial wastewater pre-treatment using high rate anaerobic systems for the food and beverage sector including CUB, Golden Circle and Davis Gelatin.

Opposition to ocean outfalls, and major algal blooms in estuaries and rivers started a major program of water recycling and advanced wastewater treatment across Australia. GHD was well placed to win a good share of that work.

Sydney winning the 2000 Olympics brought great opportunities to our NSW business. GHD won the right to manage all the infrastructure supporting the Olympic facilities and the theme “The Green Games” provided the company a chance to create innovative projects like that Olympic Village recycled water project. GHD developed the concept to capture all the wastewater from the village, treat it to a very high standard, and then, via a separate pipe, to supply water to each village household, to use for toilet flushing and garden watering. The concept was also used in the Rouse Hill Development, one of the largest thirdpipe recycling projects in the world.

In 1998, GHD appointed Jeremy Stone to be its South East Asia manager based in the Philippines. Within a short period the investment paid off, with GHD commissioned
to provide design services to the Maynilad Water Concession in Manila. This was a 30-year concession won by French company Lyonnais des Eaux to supply water and wastewater services to half of the Philippines’ capital. At the height of the program GHD had more than 100 people working on the project designing major pipelines throughout Manila. The project provided great opportunities for young water professionals such as Warren Traves, Dean McIntyre, and Paul Hansford many of whom would go on and take leadership positions in GHD.

The Asian Financial Crisis, although it preceded GHD’s work with Maynilad, ultimately brought an end to the project. The significant devaluation of the Philippine peso against the US dollar made the concession unviable and Maynilad, unable to gain an increase in water rates to compensate for the currency devaluation, withdrew from the contract. In response, our Manila office focused on diversifying its client base in the Philippines and other South East Asian countries.

2000-2010: The path to a global consultant

A defining moment for GHD and our water business was the path laid out in our Strategy 2000. The strategy recommended that GHD grow and become a global company and that the company restructure into a matrix organisation, with the delivery arm of the business locally empowered and the development arm operating across the global operations. Water was recognised as a key business stream and the inaugural Water Business Stream leader was Nick Apostolidis.

GHD expanded its operations in New Zealand with the acquisition of the design arm of Manukau City Council, Manukau Consultants. This saw the immediate establishment of a municipal water market presence in the Auckland, Bay of Plenty, and Lower North Island regions. Michael Brouwer relocated to lead the New Zealand operations and soon after
recruited Tony Norrish from our Perth office and Steve Carne from Melbourne to help the local team grow the water business.

New drinking water standards in New Zealand at the time saw some early wins on major treatment plant projects in Auckland and the major provincial cities of Nelson, Tauranga and Hamilton. The ‘One GHD’ philosophy was certainly in evidence on all these projects with collaboration between GHD people in New Zealand and Australia. Mike Muntisov relocated to Auckland for eight months to be the design manager for the Hamilton upgrade project. That gesture demonstrated to our people and local clients, GHD’s commitment to New Zealand and the calibre of people we could bring to projects.

The merger with Promina consultants in Santiago, Chile, helped establish GHD’s presence in South America. Mike Rodd, one of GHD’s most experienced water engineers relocated to Santiago to assist with the merger. It didn’t take long for Mike to secure some significant water projects in Santiago, including a major planning study to supply water to the Escondida Copper mine involving a pumping lift of over 3000 metres. Another major win included an audit of all the wastewater treatment plants operated by Thames Water in Chile.

Our presence in South East Asia grew when we were invited to oversee the redesign of the USD750 million Samut Prakarn Wastewater Management Program in Thailand. Jim Giannopoulos relocated to Bangkok to lead that project and later became office manager in Thailand. Our aid business secured another significant win in the Three Delta Towns project in Vietnam, an AUD80 million, six-year program management project to provide water and sanitation to three cities on the Mekong Delta. Chris Lloyd relocated to Vietnam to manage the project and become the Vietnam office manager. The project won the top Engineers Australia Excellence award in 2009.

GHD’s first foray into the US market in 2001 was on the back of an asset management commission for Orange County Sanitation District. Roger Byrne received an unsolicited invitation from US consultant Parsons, to join their team to bid for the Orange County project. When Roger asked why they contacted GHD, they replied: “Aren’t you the guys who wrote the International Asset Management Manual?”

Roger replied in the affirmative and, after winning the job, relocated to the US to start the work. What Roger and GHD did not appreciate was that it would take more than a year after being told that we’d won the job before we could start work. US consultants that missed out on the project filed a complaint with the client that they had given the job to a foreign company. After several enquiries and board deliberations, the client held their nerve, and finally backed the Parsons and GHD bid. Roger was joined by Brenton Marshall and Matthew Oakey to carry out the project. The team established a small office in Irvine, from where they branched out and undertook work across the US, mostly as specialist sub-consultants.
GHD’s dam engineers worked on several projects in the Middle East in early 2000. One was a recharge dam north of Oman near the Straits of Hormuz. GHD with Renardet (Switzerland) and Sogreah (France) carried out the planning, design and construction supervision of the 2.1 million cubic metre dam on the Wadi Khabb. During this time GHD merged with Meinhardt Middle East to establish an operation in Doha, Qatar, and secured a major consultancy to lead the preparation and implementation of a master plan for the 2006 Asian Games in Doha.

In 2002, GHD’s water business grew significantly when we merged with GeoEng and Egis. Egis was one of GHD’s main competitors in Victoria and NSW, and one of the larger consultants in Australia, whilst Geo Eng a strong geotechnical and dam business, including an office in China. Together the three companies created the largest water consultancy in Australia. Unbeknown to GHD at the time, the additional resources would help us take advantage of the huge opportunities about to be created by the Millennium Drought in Australia.

GHD’s expansion into the Asian market continued. In China, GHD secured some significant projects including developing the Flood Management Framework for the country. GHD designed and managed the construction of the Kranji Dam, the largest roller compacted dam in Malaysia. Middle East operations expanded to UAE and our water teams worked on some of most significant infrastructure projects in the world at the time, including the water and transport infrastructure for Palm Jumeira, the man-made island in the shape of a palm planned to accommodate 100,000 people. The design office for the Palm Jumeira project utilised people from across GHD’s global network who worked around the clock to deliver the project.

Our water business in New Zealand consolidated and carved out a market leader niche in wastewater system master planning and upgrades; a feat achieved through Steve Carne’s leadership, winning projects in Auckland, Wellington, Christchurch, and a range of other provincial cities. In 2008 our long-term planning, design and construction management capabilities in the country received major recognition by winning (with Beca) the NZD250 million Hunua 4 trunk water supply pipeline for Watercare against global competition. The project is our largest water capital project in New Zealand to date.

By the middle of the decade the drought in Australia started to hit and most major Australian cities were experiencing a significant decline in water storage levels. At the same time Australia’s population was growing faster than ever and the underinvestment of the 1990s started to show, with many utilities planning significant capacity expansions and upgrades of their water and wastewater infrastructure.

The lack of water security and capacity resulted in one of the largest capital expenditure programs in Australia’s history over the next five years. A significant win for GHD, along with its partner Fichtner from Germany, was the Sydney Desalination Plant project. The project started as a planning study but as the drought worsened it turned into a blueprint design, and then continued as Sydney Water’s technical advisor through to the plant’s
The team, led by David Waddell and David Wunder, with technical support from Mike Green, who relocated to Sydney from Perth, did an outstanding job and on the strength of that performance we went on to win a role in virtually every major desalination project in Australia, including, Gold Coast, Melbourne, Adelaide and BHP’s Olympic Dam projects.

Our desalination capability increased exponentially and we attracted desalination leaders such Gary Crisp to join GHD. Our team developed an excellent international reputation and people who worked on these projects, such as Greg Finlayson, Peter Eccleston, and Chris French, went to lead major desalination projects across the world.

The drought was perhaps worst felt in Queensland where GHD secured one of its largest commissions in fee value for the AUD2.4 billion Western Corridor Recycled Water Project. The initial commission was won jointly with Black & Veatch to develop the concept for the project. As the drought worsened the project quickly swung from a concept to implementation. Black & Veatch decided to take the lead for the delivery of one of the three water recycling plants, while GHD remained on the client side and provided all engineering, environmental, geotechnical, land services and technical oversight of the entire project through to commissioning. In association with Sunwater, GHD also undertook the detailed design of some 200 km of pipelines, four river crossings and eight major pump stations. Owing to its complexity and urgency, the government decided to deliver the project under an alliance contract. The entire project was delivered from concept to commissioning in 36 months. By world standards this was an outstanding achievement. There are too many people to name who contributed to the success of this project, but special mention must go to Phil Kirby, Jim Thompson, Mike Rodd, Nigel Johnston, Lindsay Mott, Liong Khoo and Graham Ebsary.
During the drought there was also pressure on industry to reduce their water consumption. This led GHD successfully implementing a number of water minimisation and recycling initiatives, predominately in the food and beverage sector. Chris Hertle led the way with developing this business, which included implementing treatment systems that provided the lowest water consumption on breweries globally.

In addition to the water security projects, Australia's water utilities were playing infrastructure catch-up. This, combined with a mining boom, placed enormous demand for our services. Clients wishing to secure the best teams to deliver their projects started to use alliance forms of project delivery. Under this arrangement, the client selects the designer and usually the constructor, to plan, design and build the project. The first water team to secure an alliance project was our Perth office, who won the Beenyup odour control project and the Wanneroo water treatment plant. Des Boland played a key role in securing those projects and his experience was valuable in helping GHD win many other projects on the east coast of Australia, and in New Zealand, including the Beenleigh/ Merrimac Alliance, Gold Coast; Palmer Street Drainage Alliance in Melbourne; Sugarloaf Pipeline, Victoria; Coffs Harbour Alliance, NSW; Water Matters Alliance in Townsville; Cotter Dam in ACT; Barwon Water, Victoria; and Clean Harbour Alliance, NZ.

During the mid to late 2000s GHD was involved in water projects with a total capital expenditure in excess of AUD12 billion. This was a remarkable transformation for the company. We had reached the big league! With this portfolio of projects, we demonstrated to ourselves and to our clients we had the capability to deliver water infrastructure of global significance.
It was a truly exciting time to be a water engineer in Australia. However, in the midst of this euphoric time we were also conscious that these projects would come to an end and we would need to find replacement work outside our traditional water utility clients. Fortunately, as the water security work for utilities tapered off, there were new opportunities emerging in the mining and oil and gas sectors. We secured a number of projects in these sectors around water and brine management. We were able to leverage our skills gained on sea water desalination into water management for the emerging coal seam gas sector and rapidly growing coal and iron ore sectors.

Under the leadership of Mike Polin, GHD’s Board commenced a strategy to expand the company’s work in North America. To assist these ambitions Mike hired Don Graf who had had senior executive roles with US consultants and a better understanding of the US consulting market. While GHD was well recognised in Australia, it did not enjoy such a profile in the giant US market. The only recognition we had was in asset management through our small asset management team. As it turned out this recognition proved an asset in itself, as one of the consultants we teamed up with to win the Washington Suburban Sanitary Commission asset management project was Stearns & Wheler.

This was a significant win for both companies as we beat a strong global field vying for that project. Our people worked well together and it demonstrated to Stearns & Wheler that together we were capable of beating the major US consultants.

Stearns & Wheler was a 300-person private consulting business with an excellent reputation in wastewater treatment particularly in the northeast coast of the US. They were particularly strong in enhanced nutrient reduction and had completed over 30 projects on Chesapeake Bay alone. They also had a strong asset management team that had won a USD10 million commission to upgrade the New York Fire Department’s maintenance management system. It was clear to both management teams we had compatible cultures, and after some discussion we agreed to merge. The US market is very parochial, so to achieve a critical mass on the West Coast we identified a number of potential partners and merged with three small businesses.

Soon after, the US and the world experienced one of the steepest recessions in 80 years, brought on by the financial crisis of 2008. This had a profound impact on our US operations, especially on our West Coast business that was reliant on local government and local government owned utilities. In the US, local governments rely for their revenue on rates based on property values. With some properties dropping by as much as 50 percent, this had a major impact on our clients’ revenue. There was a clear need to identify alternative opportunities and to utilise our US people in other GHD offices.

One major opportunity that emerged during this downturn was a private plan to build a desalination plant in Southern California. Poseidon Resources developed a concept to co-locate a 250MLD desalination plant next to an existing power station in Carlsbad, and use the same intake and outfall structures as the power station for its intake and
concentrate discharge. The project was proposed some nine years earlier but faced major environmental approval hurdles due to opposition by the local surf riders and people not wanting to see further population growth in Southern California. GHD was engaged by Poseidon Resources to provide technical support during the design and construction of the plant, on the strength of our track record in Australia.

As it turned out, it took a further three years of environmental and financial approvals to see the project commence. In December 2015 the project was finally completed and put into operation in the midst of the worst drought in Southern California's history. Paul Hermann, who worked on the Western Corridor Project, commenced working on this project from the start to its completion. He was assisted by Gary Crisp who championed the benefits of desalination throughout California. Peter Eccleston, who worked on the Sydney Desalination project, relocated to California to assist during the design and construction phase of the project. The Carlsbad Desalination Plant was named International Plant of the Year for 2016 by Global Water Intelligence.

2010-2015: Consolidation in North America

The flat market in the US caused us to look across the border into Canada. At the time Canada was experiencing a mining boom like Australia and population was growing in the Greater Toronto Area. Colin James was tasked to identify opportunities and he found Canadian utilities were welcoming to a new player with GHD’s capabilities. On the back of an asset management commission, a couple of strategic hires and the support from our Cazenovia office in the US, we were able to secure and deliver work that opened more doors. Colin was able to grow our business relatively quickly to about 30 people based in Markham. In addition to asset management, GHD secured some significant pump station upgrades and pipeline projects for the City of York.

Work on the Metro Wastewater Reclamation Facility was undertaken by Stearns & Wheeler for the District of Denver, USA
Even in a downturn, the size of the US market was large. It became clear that for GHD to participate in larger water projects on the West Coast we needed more feet on the ground. This led to discussions with a 350-person California-based multidisciplinary company Winzler & Kelly. With an excellent reputation in Northern California it was clear we had similar values. About 25 percent of the business was in the water sector and it had completed some significant projects including the award-winning Santa Rosa recycling water project. This involved transporting recycled water from the Santa Rosa Wastewater Treatment plant some 60 km to Geyserville, where the water was injected into a live geyser to generate power. In September 2011, the two companies merged. Mike Muntisov and Nick Apostolidis relocated to San Francisco to assist with the merger, help in business development and provide a connection with the bigger GHD family. The merger started on a positive note with major pipeline project win in Southern California in the first week.

The Northeast Coast of the US did not suffer as much downturn as the West Coast. More opportunities were identified in this region that resulted in the merger with Commonwealth Engineering and Technology (CET) – a 100-person water engineering practice based in Harrisburg, Pennsylvania. CET was very well respected for its technical skills that complemented those of Stearns and Wheler, giving GHD a stronger capability on the East Coast.

As predicted, the Australian market was starting to slow down but even during this period there were some significant opportunities. One was the Cotter Dam and associated pipelines in Canberra. GHD was successful in securing this project under an alliance contract with John Holland and Abi Constructions as the civil contractors. The 90 m high dam is the highest roller compacted concrete dam in Australia. Completed in 2013, it is now the principal source of water for Australia’s capital.

Opportunities in Canada continued to emerge driven by the population growth in the Greater Toronto Area. GHD recognised it needed more capacity on the ground to realise these opportunities. This led to discussions and eventual merger with the Sernas Group who had a strong urban development team supported by specialist geomorphological and transport divisions.

By the end of 2012, GHD had close to 1000 people in North America and was well placed to pursue and deliver bigger projects in that market. GHD was quick to recognise the talents within our merged companies and provided opportunities for them across the globe. For example, Rip Copithorn, one of the most respected wastewater engineers in North America in nutrient reduction, was appointed GHD’s Global Technical Leader - Water. Thor Young, a senior process engineer from our Bowie Office, was appointed GHD’s Service Line Leader for wastewater treatment. In 2012 GHD’s global water turnover exceeded USD250 million and ranked in the top ten in the world in water consulting.

In July 2014 GHD merged with Conestoga-Rovers & Associates (CRA). With the merger came some unique water experience out of Waterloo, Ontario and Buffalo, NY. Our new
water specialists were even able to participate in GHD's first water and wastewater treatment technical conference held in North America, in San Francisco, two months before the formal merger. Soon after, the Waterloo team, led by George Godin, Tom Casher and Heather Brewer, were awarded a multi-million-dollar project for Upper York in the Greater Toronto Area to deliver a unique advanced wastewater treatment and recycling scheme at Lake Simcoe that will achieve record ultra-low levels of effluent phosphorus (0.02 mg/L). To date, this is the largest single water project GHD has won in North America.

The CRA merger signaled a new milestone in GHD's global aspirations with local critical mass in water capability being achieved across Australia, Canada, USA, and New Zealand, with potential for further growth in these and other markets. This was confirmed in May 2015 when GHA Livigunn, a multidisciplinary design consultancy with a track record in delivering water projects under the UK water utility Asset Management Programmes, joined GHD and further strengthened our presence in the UK.

Two years after the CRA merger we have grown our North American water business through leveraging our experience with Enhanced Nutrient Reduction (BNR), desalination and asset management, and diversifying our client base and services offered to existing clients. There is currently a strong focus on developing our industrial water offering to new and existing private sector clients, with a focus on petrochemical, food and beverage, paper and manufacturing sectors. Recent project wins include integrated water resource management strategy for the City of Austin, Huntington Beach and Doheny desalination plants, Water replenishment district of Southern California advanced water treatment facility and Santa Clara Valley Water brine management strategy.

The future looks bright for GHD's water business as we move towards 2020, with a solid base in North America and the UK to build from, and our ability to maintain our stronghold and grow our water business in Australia and New Zealand.
Mike Muntisov has worn a lot of hats during his 30-year plus career at GHD. Some colleagues put it down to a selfless personality – a willingness to offer his skills for the greater good, whenever and wherever they’re needed, but for Mike, it’s more about realising opportunities.

“In GHD, what I’ve experienced is a company where people are empowered to pursue their passion. There are huge opportunities and they’re only limited by your own imagination.” The son of a migrant tailor from Macedonia, Mike grew up in the inner Melbourne suburb of North Fitzroy, infused from a young age with a desire to learn and achieve. A passion for the sciences at high school drove him towards engineering. A Bachelor of Engineering (Hons, Civil) at the University of Melbourne, followed by an ME at the University of California saw Mike join GHD as a graduate recruit in 1983.

In essence, his numerous job titles – Job Manager, Project Director, Service Group Manager, Service Line Leader, Acting Operating Centre Manager, and later Global Technical Leader and Director – are about three fundamental pillars of the GHD story: the application of technology, knowledge sharing, and that most precious of skills, the ability to connect people.

Asked to pick three ‘stand out’ projects from his long career, Mike starts with work that is embedded in GHD’s DNA. “Our heritage is small jobs for regional water authorities. I love those kind of jobs because you learn as much as you do on larger projects, but you do more of them,” says Mike, before relating his experience of installing a membrane filtration system at Nelson in New Zealand in 2000, a job that helped break the market open for GHD across the Tasman.

"Ultimately we ran the project from Melbourne after our buyout of local Manukau Consultants. The client was delighted with the outcome and the way we approached it was a model of project management."Four years later, a larger project in New Zealand provides Mike’s second example. Asked to find a solution to combat algae in Hamilton’s
water supply, preliminary studies and the installation of advanced technology required boots on the ground for this AUD25 million job. Mike and his family relocated to Auckland for six months so he could oversee the project. A whole-of-GHD effort, another landmark project had confirmed the company’s credentials in New Zealand.

Mike’s final example is the biggest: the Victorian Desalination Plant at Wonthaggi. With a capital cost of AUD3.5 billion, in the late 2000s it was one of the largest projects the company had ever undertaken. How GHD performed on this iconic project became the stuff of legend and Mike was at the centre of it. On secondment to the Victorian Government as Project Director to run this time-critical project, Mike remembers the enormous resources GHD provided to ensure the project’s success.

"We had about 400 people from 10 operating centres involved. It was a staggering effort," says Mike. "It elevated us to new heights, as a leader in environmental approvals and advanced treatment technologies. What that project proved, is the extraordinary way in which GHD can respond when faced with a huge challenge. If you can hang in there and don’t lose your focus, you can do remarkable things.”
In 2007, GHD took a significant step to realising its own and its clients’ commitment to sustainability by hosting a world-class event in Australia entitled Our Planet: Leaving a Legacy, featuring former US Vice-President Al Gore.
GHD has been helping public and private organisations solve technical challenges for more than 85 years. Of no greater importance has been its contribution to projects that have prevented or mitigated adverse impacts to communities and the environment around the world, so that the right balance between economic, social, and environment is achieved.

The early years

GHD can trace its involvement in the environmental sector back to the 1950s, when the company became a pioneer in waste management and recycling at a time when industrial waste was disposed of by less than desirable practices, and sustainability was an unknown concept. In these early days, prior to the introduction of environmental legislation of the 1970s, much of the work undertaken by GHD in the sector focused on water facilities, dams, rivers, ports and weirs.

By the early 1970s, GHD was developing a diverse portfolio of technical experience covering almost all forms of physical infrastructure. Demand for environmental services was still in its infancy and usually formed part of a broader infrastructure or municipal planning project. This work was undertaken by engineers and town planners, as qualified environmental practitioners did not begin to exert an impact until the late 1980s, following the introduction of tertiary environmental qualifications.

One of the earliest projects was in southern Australia, where the company designed collection systems for water pre-treatment at meat processing plants, a wool mill and a brewery, allowing waste to be managed in the local sewerage system. In the late 1960s when Australia was in the grips of a development boom, salinity of low lying parts of the 2000 km long Murray River catchment rose to national significance, requiring focused attention. At the time the Murray River Commission appointed GHD to undertake salinity investigation work. This work was regarded as some of the most comprehensive in the world in terms of the value of land and crops. The project later won the inaugural
Excellence Award from the Association of Consultant Engineers Australia in 1971. It is an issue that continues to be managed today and one in which GHD is still involved.


In 1972, when the United Nations Conference on the Human Environment - the first ever global conference on environmental issues was held in Stockholm, GHD established its first small ‘formal’ environmental practice to assist clients with specific needs. Environmental legislation was beginning to strengthen in Australia. Victoria led the way with the Environment Protection Act 1970 and Queensland followed with the introduction of the State Development and Public Works Organisation Act 1971.

Opportunities in the environment sector began to grow. A major coastal management investigation was carried out on the Queensland coastline from the NSW border to Noosa. In addition, a strategic plan was commissioned for the supply of water and sewerage services to Albury-Wodonga which included initiatives for the control and development of the Murray River and its floodplain.

One of the biggest commissions GHD received in the 1970s was from the NSW Government to assist in drafting a manual for the assessment of environmental impacts and preparation of an environmental strategy for the Hawkesbury River Valley. The Victorian Environment Protection Authority also engaged GHD to prepare a draft policy for protecting creeks and rivers against the discharge of untreated and semi-treated industrial waste. In 1978, GHD prepared a 500-page report on treating and reusing wastewater for the federal government. As environmental awareness grew and new regulation started to take effect, GHD’s dedicated environmental practice expanded. A wider range of services...
were offered to a broader selection of clients. As Australia experienced major economic reforms in the 1980s, GHD continued to increase its focus on environmental services. A study of irrigated areas of NSW warned that salinisation and waterlogging would affect between 70 and 80 percent of the Murray and Murrumbidgee irrigation territory by the end of the century. In 1985 work was carried out on a major prawn aquaculture project in Townsville located adjacent to the Great Barrier Reef Marine Park and World Heritage areas. A decade later GHD would be re-commissioned to rehabilitate the site.

The 1990s marked the start of the company’s transition to a globally competitive player, with a focus on innovation and quality, and building collaborative, multidisciplinary skills irrespective of geographic borders. GHD also started to develop greater engagement with large private organisations, offering services to help them manage their environment obligations and liabilities.

GHD’s major offices obtained certification by Lloyd’s Register for Quality Assurance to ISO 9001 and 9002. In parallel, the company invested substantially in information technology and increasingly undertook more complex environmental consulting projects. GHD prepared environmental impact statements for large developments by Australian Newsprint Mill, Associated Pulp and Paper Mills, the Forestry Commission of NSW and various land developers. Other projects of note from the period include dam and weir impact studies around the country, including in Queensland, preparing an EIS for the Condamine River and proposed raising of the Awoonga Dam. Such projects established early credibility for the company in the sector and effectively put its environmental business on the map. Demonstrating its pioneering spirit, GHD undertook its first geographic information system (GIS) project in the 1990s, well before councils and industry, including GHD’s competitors, had embraced the technology.
A sand and gravel extraction study for the Environmental Protection Authority (EPA) was undertaken in North Queensland to determine potential impacts on tidal reaches. A contamination assessment was also completed, including a human health and ecological risk assessment for the port of Geelong, and a geomorphology study of the Douglas River to address water management, flooding, drainage, and river system health, as well as nature conservation for terrestrial habitat and wetlands. Internationally, GHD’s environment practice provided similar marine design services in Indonesia, Malaysia and Pakistan.

In 1997, the company acquired the LongMac Group in Sydney, a move which strengthened GHD’s expertise in geotechnical, geological and environmental services. By the end of the decade many states had passed environmental legislation and developments were required to assess potential impacts to the environment and show environmental mitigation strategies, prior to development approvals being granted. The foundations had been laid for a sustainable transition into the new century.

**Nurturing environmental practice 2000-2010**

The beginning of the new millennium brought with it globalisation and an explosion in communication services underpinned by the internet. The way business was undertaken changed significantly. Unsurprisingly, Australian and international projects in the environmental sector accelerated during the decade. GHD, which by then had prepared a detailed strategy to become a global consultant, was thriving. The company was experiencing unprecedented growth, fuelled in part by a series of acquisitions. The business grew into the Middle East, Asia, the Americas, and Europe.

In the early 2000s, a large number of projects were successfully delivered thanks to GHD’s extensive experience in water, particularly with port expansions, capital dredging and wastewater treatment plants. In a move that demonstrated the growing importance of the environment in the marketplace, GHD appointed Colin Whyte as its first demand stream leader for the environment.

Within the environment practice, GHD established an Aquatic Sciences group staffed by ecologists and began delivering biological and ecological assessments to underpin sustainable infrastructure development. Sophisticated modelling tools were introduced including hydrodynamic capabilities. This led to advancements in assessing and predicting water quality impacts in receiving water environments such as lakes, rivers and oceans. At this time, multiple GHD-authored papers were published in Australia and around the world.

In 2002, the company strengthened its capability in environmental services by acquiring Geo-Eng in Australia and establishing joint ventures in China. The integration of Egis Consulting Australia, the most significant event for GHD’s environmental practice in the early 2000s, boosted operations particularly in land contamination assessment and remediation.
These mergers increased employee numbers to a total of 2300, and for the first time the environmental practice gained critical mass. More than 130 people were now employed across the disciplines of planning, environmental impact assessment and approvals, air modelling, aquatic sciences, natural resources, contamination assessment and remediation, waste management, and geographical information systems. As part of this unprecedented expansion, and in keeping with its tradition of staying at the forefront of technical knowledge, GHD introduced the concept of the service line leaders. The focus of this concept was to ensure technical knowledge is always recognised and rewarded as the cornerstone of its success in the market.

The three years to 2005 saw GHD tighten its go-to-market strategy. The company replaced demand streams with business streams, ensuring its expanding capabilities targeted emerging markets.

In 2003 GHD appointed Stephen Trainor, an environmental scientist, to lead the company’s Environment Business Stream. Under Stephen’s leadership, with the support of the service line leaders, GHD continued to shape its environmental practice in alignment with what environmental professionals call the ‘greening of engineering’. The environment management discipline stopped being an add-on to projects around 2005, and became a service in its own right. This is also true of GHD’s positioning in the market at the time. The company’s services were maturing fast, and the environmental practice began winning substantial standalone commissions as opposed to add-ons to infrastructure projects. With the contaminated lands business well established through the Egis integration and rapidly growing under Service Line Leader Dr Fouad Abo, GHD focused on expanding the rest of the practice offering a full turnkey environmental offering, from planning and assessment to closure and remediation.
GHD was appointed to the Australian Government’s Department of Defence panel to provide environmental services bolstered with a large team of accredited environmental auditors, some of whom have established a respected profile in the industry, including Dr Peter Nadebaum, Jonathan Crockett, and Dr Fouad Abo. Today, GHD is one of only two consultants to have remained on the Defence Force’s (CSIG) Environmental Panel for three consecutive cycles.

Other major assignments during the decade included drought relief measures in Western Australia, the Jervoise Bay marine complex in Western Australia, EIS projects in Queensland for both the Port of Gladstone, and the Hay Point Coal Terminal (and including subsequent environmental monitoring, and environmental assessments), as well as approvals and monitoring for Abbot Point. In parallel, GHD liaised with environmental and licensing authorities on the Aurukun bauxite project south of Weipa, and assisted with Indigenous land use agreement negotiations.

Work on environmental impact assessments (EIA) became a core speciality for GHD, with the company completing some of the largest commissions in the industry for the Sydney and Melbourne Desalination plants – two projects that demonstrated GHD’s extensive understanding of the complex links between water, energy, and the environment.

GHD established a presence in the Middle East in 2001 following the acquisition of Minehart Middle East. Recognising that the burgeoning opportunities for development in the region needed to integrate greater sustainability, GHD established an environmental practice in Dubai two years later followed by Doha and Abu Dhabi in 2006.
In 2003 GHD was engaged to undertake a comprehensive EIA to World Bank standards for the Ma'aden alumina refinery and smelter in Saudi Arabia. This project was the impetus for the establishment of its environmental practice in the Middle East. The practice went on to become a recognised leader in environmental impact assessments, aquatic sciences and environmental legislation and policy development, including the establishment of the environment, health and safety management system (EHSMS) for Abu Dhabi, a signature project that was completed with an international launch by Abu Dhabi Environmental Agency in 2008. More than 200 people from around the world attended the launch including representatives from US, Canada and Australian EPAs, as well as the United Nations Environment Program. This was the first project of its kind that GHD has completed.

During the decade, GHD went on to lead key environmental projects in the Greater Gulf Cooperation Council region, including environmental impact review/analysis and sustainability consulting for the iconic Palm Islands development. GHD carried out numerous ecological field surveys for the oil and gas sector, as well as airport developments including the new Doha International Airport.

One of the largest and most challenging EIS undertaken during the decade was for the Gunns Pulp Mill in northern Tasmania, a project that leveraged the company’s experience in water quality monitoring, hydrodynamic modelling, aquatic sciences, flora and fauna, as well as a comprehensive understanding of the legislative environment. This project positioned GHD to secure work in the resources development sector in both Western Australia and the Northern Territory as the focus of EIA work expanded into mining.

In 2005 Phil Baker was appointed as Environment Business Leader – Mining. Working with a now much stronger environment practice, GHD built its environment business within the mining sector. From being seen as a minor provider in 2006, five years later, a premium online mining magazine named GHD as the number one provider of environment mining services to the mining industry across Australia, as voted by over 200 of the industry’s mining companies. GHD’s engagement in the booming mining sector also grew through the 2000s with significant projects in the Philippines and Chile.

The 2000s saw GHD increase its use of innovative solutions including telemetry systems to remotely monitor subsea acoustics and water quality during the construction of a new outer harbour at Port Hedland. Another advance was the use of autonomous seagliders, which removed the need to risk human divers while collecting data on the Southdown project and in the Pilbara. This technology was later used on environmental projects throughout the Middle East, where extreme water temperatures restrict the time that divers can safely stay submerged.

The monitoring of air quality became an increasing focus, particularly in built-up areas and for environmentally sensitive projects. GHD carried out studies to ensure emissions from shipping, road and rail transport at the Kwinana Quay project in Western
Australia met national and international guidelines, and used custom-built equipment to cost-effectively monitor air quality and noise for Woodside on the Burrup Peninsula.

In the area of natural resources, GHD established a service line in 2000 with 12 people in four offices, with Dr David Petch appointed the initial service line leader. By the end of the decade, the team had grown to 150 people across 25 offices – reflecting GHD’s response to a changing trend in the market.

One of the company’s competitive differentiators in this market was the creation of an animals’ ethics committee to oversee any work that involves interaction with fauna.

In terms of signature projects, GHD was part of an alliance for the Eildon Dam Improvement initiative in Victoria to upgrade one of Australia’s largest dams, as well as contributing to the Christmas Island East Port in 2003.

From a remediation and rehabilitation perspective, GHD’s plan for the Beenup Minerals Sands project near Augusta, WA, brought its multidisciplinary experience to the fore. In WA GHD worked on mine closure plans for Fortescue’s Pilbara mines and in Queensland carried out mine closure planning studies for Xstrata Coal’s Collinsville and Newlands mines.
GHD’s work on remediating the Newstead Riverpark site in the Brisbane CBD, to accommodate a large apartment development, set a new benchmark in the scale and scope of remediation services delivered by the company.

Meanwhile GHD’s development assistance work accelerated across the Asia Pacific, as the company conducted a water resources management plan in China’s eastern Lake Tai region, and environmental audits for Coca Cola Amatil in Papua New Guinea.

GHD delivered two high profile projects in the Asia Pacific region to mitigate environmental impacts: a comprehensive study for Datong Cleaner Production Project in China (for which the company was awarded the 2005 Project of the Year by the Association of Consulting Engineers Australia); and in 2002 GHD was commissioned for the Persistent Organic Pollutants in Pacific Island Countries Phase II clean-up project (referred to as the “POPs in PICs project” for the collection and destruction of all Persistent Organic Pollutants (POPs) and other intractable chemicals across 13 Pacific Island countries. This led in 2005 to Phil Baker, POPs in PICs project team leader, being invited to speak about the project at the side event to the United Nations COP 1 of the Stockholm Convention in Uruguay. Both projects were funded by the Australian Government and administered through AusAid.

In Europe, GHD made its first foray into the environment sector in 2007. The company’s progress in this market has been steady, although hampered by the global skills shortage and a hyper-competitive environment. Nonetheless, GHD has leveraged a solid transportation consulting position, with one of the most significant projects completed to date being to assist the UK rail sector (RSSB and Northern Rail) to determine its greenhouse gas emission footprint.
In the Americas, the business in Chile began to gain momentum in the power, mining, water and environment sectors. GHD undertook EIAs, and other environmental studies for organisations including South World Consulting, Grupo Sat S.A., Rio Grande S.A., and Andina Minerals S.A. to name a few.

As organisations around the world came to the realisation that a climate-variable future was becoming the norm, GHD embarked on a raft of measures to minimise the impact of its own operations on the environment. The company introduced an Environmental Management System (EMS) in 2004, which was accredited to ISO 14001 by NATA Certification International one year later.

In 2007, GHD took a significant step to realising its own and its clients’ commitment to sustainability by hosting a world-class event in Australia entitled Our Planet: Leaving a Legacy, featuring former US Vice-President Al Gore. The event cemented GHD’s standing in the environmental market and attracted leaders from government and industry to engage in the debate and identify solutions to reduce the impact of the development footprint.

In 2009, GHD refocused its business on five core global markets – water, property and buildings, environment, energy and resources, and transportation. By the end of the decade, GHD had more than 700 environmental practitioners working in more than 100 offices in five continents and the company was ranked at the time as number 127 in the top 200 environmental firms around the world by Engineering News-Record magazine.
An environmental powerhouse 2011-13

By 2011, environmental management had reached heightened interest for governments and communities globally. The concept of what is economically, socially and ecologically practical in developments was being challenged and drove a higher demand for environmental services. GHD continued to expand its project throughput for EIA and planning services for major infrastructure projects in mining and resources, transportation and water. The company appointed Christine Wyatt to the position of Global Market Leader – Environment and Dr Fouad Abo to the position of Global Technical Leader - Environment.

In 2012, GHD completed contracts for the Port of Melbourne Corporation – a channel-deepening project for Port Philip Bay where 11 independent audits were conducted in the areas of dredging contaminated and non-contaminated materials, environmental monitoring, dredged material ground bund construction, capping and more.

In Townsville, GHD played a pivotal role in delivering a multi-use industrial precinct facility by completing more than 30 studies across onshore and offshore elements. These included examination of breakwater options, hydrological and sediment transport investigations, ecological and social impact assessments, in addition to an EIA.

For St Barbara Gold mines in Western Australia, GHD prepared mine closure and rehabilitation plans along with subsequent closure costs for its operations. Rising interest in coal seam gas in central Queensland has provided numerous opportunities for the company to assist organisations, including major industry player Santos, with regulatory and legislative approvals.

GHD significantly strengthened its environmental work in the transportation sector, completing major projects including the Pacific Highway upgrade for the Roads and Traffic Authority in NSW.

The company was also engaged by VicRoads to produce three environmental effect statements for the Western Highway and Princess Highway. Leveraging its multidisciplinary ability to integrate service delivery in transportation, infrastructure and environmental sectors, these projects validated the company’s leadership in this area. In 2009 GHD completed one of its largest commissions for the AUD 1 billion Western Corridor Recycled Water project in southeast Queensland, which included extensive environmental reviews and approvals.

In addition, GHD’s stakeholder engagement services with private and public organisations rose dramatically as did the work with Indigenous communities. GHD assisted the Dunghutti people in South Kempsey with an integrated social and master plan known as ‘One Community One Mob’, which received the 2012 NSW Public Engagement and Community Planning Award from the Planning Institute of Australia.
GHD helped the Wonnarua National Aboriginal Corporation establish Australia’s first Indigenous biobank site on a rail corridor between Hunter Valley mines and the Port of Newcastle in 2011. This project set the benchmark for working with Aboriginal people in Australia to manage their land, protect cultural heritage and benefit from employment opportunities.

In 2012, the ecology team in Western Australia identified a plant species considered to be extinct: Gyrostemon reticulatus, a one-metre tall shrub that has separate male and female flowers on different plants. This was recorded in the state’s mid-west during the spring of 2011 and incorporated into the Australian National Herbarium’s records.

In New Zealand, GHD helped the Ministry for the Environment to remediate the Tui Mine site, a former lead, zinc and copper mine that had been abandoned in 1973 due to high concentrations of mercury impurities in the ore concentrate. GHD managed the quality assurance and quality control of the remediation works and provided environmental monitoring, laboratory management, sampling, data management and reporting services.

In the Middle East, the environment team helped Abu Dhabi to develop its environmental regulatory framework, to progress sustainable developments including Masdar City. In Qatar, the construction of the new Doha International Airport, included monitoring of marine life, groundwater and noise during construction, demonstrating GHD’s strength in marine ecological and monitoring services across the region.

In Asia, the company’s work in the Philippines continues to expand, particularly with energy and mining companies. GHD worked with Orka Energy on a geothermal project for electricity production. In addition, GHD has been engaged by the
The Ysbyty Ystrad Fawr is one of the NHS facilities managing carbon in the UK.

Development Bank of the Philippines to provide technical advisory assistance services for the implementation of the Environmental Development Project to 2016. As part of this project, GHD will assist with improvements to air and water quality, sustainable management of fresh water supply, enhancements to water supply and sanitation services, implementation of ecological solid waste management, investments in renewable power technologies and cleaner fuels.

In a more mature market, the United Kingdom, GHD developed the Low Carbon Strategy for the UK’s National Health Service (NHS) in Wales. This framework to reduce carbon emissions has been implemented through various regional and organisational functional units.

In South America GHD helped HidroAysen in Chile on a project to harness the power of the Baker and Pascua Rivers to create five hydroelectric power stations. The work involved an EIA of the power transmission line spanning 67 communities along its 2000 km length.

In the USA, the environmental practice has grown fast and has built a good footprint in a short period. GHD helped the San Francisco Public Utilities Commission restore a 66 acre watershed protection area in San Mateo Country known as the Adobe Gulch Grasslands. The team prepared a mitigation and monitoring plan and outlined specifications to restore the site to a diverse mosaic of native grassland, oak woodland, wetland and riparian habitat for species under the US Endangered Species Act. GHD’s considerable experience in nutrient removal led the company to work with more than 30 wastewater treatment plants in Chesapeake Bay across six states, to implement cost-effective methods for biological nutrient removal and updates to improve water quality of the watershed in alignment with Environmental Protection Agency guidelines.
In 2014 GHD merged with Conestoga-Rovers & Associates (CRA) which substantially expanded the company’s footprint in North America and globally. The CRA business was heavily invested in the environment market with substantial Fortune 500 clients. The merger has allowed the global environment service offering to grow substantially, with a broader blue-chip client base overnight and has elevated GHD to 26 in the list of Top 200 Environmental Firms 2016, published by Engineering News-Record.

CRA achieved global prominence with its landmark Love Canal remediation in Niagara Falls, New York. The company specialised in a wide variety of services, including environmental site investigation and remediation, environmental management, solid waste management, water and wastewater treatment and distribution, forensic engineering and sciences, geotechnical engineering, and data management. As well as bringing in a substantial environment footprint with major oil and gas players, the CRA integration added significant emergency response capabilities, including response to Hurricane Sandy in the USA in 2012, and the 2013 Lac-Mégantic derailment in Canada.
A green, brown and blue future

Stephen Trainor, Environment Market Leader - Australia, sees a bright future for GHD in the environment sector for decades ahead. "In 2016, GHD generated in excess of AUD550 million in revenue, which represents around a third of our overall business, whereas in 2001, the environment sector represented just one percent of our business," says Stephen. "In terms of outlook, we’re excited by our increasing footprint in the Americas and there are considerable opportunities for us to strengthen relationships with major global organisations in Asian countries."

Stephen believes the company’s environmental services will continue to be in huge demand - responding to global urbanisation and rising demand for natural resources. "By the end of 2020, GHD’s position as one of the world’s leading environmental practices will be truly cemented in the market place. Our multidisciplinary services combined with global reach and local presence is highly attractive to clients."

"We have credibility in undertaking projects of all sizes, irrespective of environmental discipline or geographic location. Our people are recognised as technical leaders, and we are fostering a whole new generation of engaged, enthusiastic and quite brilliant practitioners with a passion for global environmental stewardship."
Mylene was destined to lead our Environment Group in Manila. Born in the Philippines, she was brought up in the foothills of Mount Makiling, a dormant volcano on the island of Luzon which owes its name to Maria Makiling – the ancient sylph-like spirit which protects the mountain and its delicate natural environment.

Raised by parents who worked on forestry ecosystem research for the Philippine Government, Mylene’s affinity for environmental protection was nurtured at a young age. After completing high school, she attended the University of the Philippines, first studying agriculture, but dad thought a different path would suit his high-achieving daughter more. “Why not take up civil engineering, become a contractor, it’ll make you richer!” he said, and Mylene followed his advice.

During her five-year BS Civil Engineering course she became inspired by the topics discussed in class – sanitary engineering, solid waste management, water and wastewater treatment – disciplines related to environmental management. After graduating cum laude and top of her class in 2000, Mylene was immediately invited to teach sanitary and hydraulic engineering courses at her alma mater. Two years later, she was in Belgium undertaking her Master’s Degree in Environmental Sanitation at Ghent University, and completing her thesis in groundwater contamination in landfills.

Returning to the Philippines in 2004, she was promoted to Assistant Professor; and remained an educator until a holiday job with a firm wanting to secure environmental approvals for a landfill project whetted her appetite for consulting.

“I thought consulting was fascinating, you get to help clients satisfy the regulatory requirements and, at the same time, practice the theory learned in academia.”

Mylene joined GHD in 2008 as an environmental engineer. Since then she has delivered environmental and social reviews, and impact assessments for scores of the Philippines’ most crucial infrastructure developments.
Her work on hydroelectric projects in northern Luzon and the linear infrastructure development to support a copper-gold mining project in Mindanao have been her most testing projects to date.

“Both involved project management and dealing with indigenous communities, leading consultations, and making sure their concerns were considered in environmental management and social development plans,” she says.

In 2012, newly-elevated to head the Environmental Management Group, Mylene had one other new and vital responsibility: she became a mum. With 12-hour days in the office a regular feature of the weekly cycle, is it hard balancing the two roles?

“In the past four years I’ve been able to juggle team management and being a mum, thanks to our nanny and to my supportive team. GHD has given me the flexibility to combine both my roles. It’s a very positive part of ‘the GHD way’.”

In January 2017, Mylene was appointed Market Leader - Environment, focusing on client relationship and business development in the Philippines and the wider region.
The Western Sydney Airport demonstrates the very difficult political process that underlies the development of major infrastructure in Australia. It also demonstrates the value to Australia of GHD's corporate historic knowledge, experience and longevity, with an involvement that now spans more than 25 years across many technical and specialist areas.
9. 
New South Wales

Tom Pinzone / May Ngui

Introduction

GHD in New South Wales (NSW) is made up of a network of tightly-connected operations, delivering multidisciplinary services to clients from metropolitan Sydney and the state’s major regional towns, to the remotest rural shires. Our office in Sydney, Australia’s most populous city, has operated for nearly 80 years and can trace its lineage to the company’s founding fathers in the 1930s. Today it works alongside 14 regional offices, with clients benefiting from relevant local presence, our depth of experience in the region, and our ability to leverage GHD’s global resources.

The legacy of the 1980s

To understand GHD’s journey in NSW in the last decades of the twentieth century, a sense of the political environment of those times is instructive. In 1988, Australia’s bicentennial year occurred in a period of solid economic growth, and heralded a number of major projects for the company. That year, the Darling Harbour redevelopment started, the Sydney Monorail opened, and work began on what is now an icon for the city, the Sydney Harbour Tunnel. It was also the year that saw a reforming Coalition government returned at the NSW state election – an administration that inherited a weak financial position and needed to make spending cuts in its first budget, resulting in significant changes to state government policies for infrastructure. Its new approach reduced the size and changed the function of many agencies such as the Public Works Department, Hunter District Water Board, Sydney Water Board, the State Rail Authority and the Electricity Commission. Many of these were GHD clients and the impact of their corporatisation was far-reaching.
GHD helped George Weston Foods by designing and supervising construction of Australia’s largest bakery in Chullora, New South Wales, Australia.

GHD’s client base in the years that followed changed from a portfolio that was government-dominated to one that had an increased private sector component, and by the end of the 1980s, methods of procurement and delivery had begun to change radically. New acronyms were invented that transformed the infrastructure landscape from that point onward, offering new methods to deliver and pay for vital infrastructure. The brave new world of ‘BOTs’, ‘BOOTs’ and ‘PPPs’ had arrived, not only in NSW but across Australia. Consortiums comprising financiers, contractors, consultants and operators were being formed to Build, Own, Transfer (BOT), Build, Own, Operate and Transfer (BOOT), or as a Private Public Partnership (PPP). In this model, GHD was normally part of a Design and Construct (D&C) team led by the contractor. This was significantly different to the traditional approach working directly for the government agency that was the asset sponsor and owner. Corporatisation brought with it a need for new specialist services, such as the conduct of due diligence and independent verification, and GHD increasingly found itself commissioned to prepare due diligence reports for projects and to act in the role of independent certifier.

The Sydney Harbour Tunnel, providing a second vehicular crossing of Sydney Harbour to alleviate congestion on the Sydney Harbour Bridge, was Australia’s first significant BOOT project, privately financed to the tune of AUD750 million. The 2.3 km tunnel project began construction in 1988 and opened in 1992. GHD delivered the project together with its joint venture partners Maunsell and Parsons Brinkerhoff International (PBI), covering the design of the power supply, lighting, fire protection, communications and control, radio rebroadcast and ventilation systems which comprised significant technical achievements at the time. Safety is a key aspect of the Tunnel’s operation and the high-tech systems enabled the tunnel to be controlled and monitored efficiently. With the environmental sensitivity of the project, the joint venture team also developed
a ventilation system using an underground station at Bradfield Park and in the northern pylon of the Harbour Bridge. For the technology geek in the reader, it is interesting to note that sixteen fans in the pylon evacuate car exhaust fumes, while 14 supply fans in the park supply fresh air to the tunnel. Neil Wyles, who led Sydney’s electrical practice at the time, commented that the electrical systems, designed by the joint venture team, were at the leading edge of technology. The award-winning lighting design involved six different levels of operation depending on outside lighting conditions, with more than 3700 fluorescent lights and 870 high pressure sodium lights. Such systems are now standard equipment in any modern road tunnel, but the inherent nature of technological evolution meant that GHD’s involvement continued into the mid-2000s, with the company providing project management and advisory services for the necessary upgrades of the tunnel technologies.

A very significant project for GHD in NSW that spanned two decades was the provision of water, sewerage and trunk drainage services for the 9400 ha Rouse Hill Development Area in north-west Sydney. The state government had identified the Rouse Hill Development Area (RHDA), which covers the suburbs of Riverstone, Box Hill, Kellyville, Parklea, Quakers Hill and Schofields, as a new urban release area to accommodate the city’s growing population. In 1989 the Rouse Hill Infrastructure Consortium was created to finance and manage the provision of infrastructure through an agreement with Sydney Water. A key element of the consortium’s approach was to progressively provide infrastructure to match development paths and population growth. In this way, major elements were deferred and built in stages, reducing the up-front capital expenditure and smoothing cash flows. The project saw a fundamentally different approach to financing and project delivery.
From the outset, GHD's Don Dwyer and Tim Smyth had been working closely with Norbrik (a brick and tile business in the area), Hooker Rex Estates and the NSW Department of Housing – all major landowners in Sydney's North West Sector growth area. With development stalled due to funding and implementation delays for major water, sewerage and drainage infrastructure, GHD and the landowners devised an innovative scheme whereby private landowners in lieu of Sydney Water financed and built trunk water, sewerage and drainage infrastructure. Subsequently, GHD was appointed technical advisor and project manager and was responsible for implementation of the AUD285 million first stage and for the AUD70 million second stage. Later, GHD provided planning, design and project management services for the AUD90 million third stage. Grahame Sproats and Gavin Wood played key roles in leading the GHD teams on these subsequent stages.

As well as natural growth, the period from the mid 1990s through to 2009 included a number of mergers which had a lasting impact on the NSW region – with Works Australia in 1997, LongMac in 1997, EGIS in 2002, Baker Saran in 2004, Cameron Chisholm & Nicol (NSW) in 2007, and Meyrick and Associates in 2008. These mergers added new skills and expanded existing skills. Some of the new sectors included architecture, environmental audits, geotechnical and infrastructure economics. The merger with LongMac demonstrates the effectiveness of GHD's mergers and acquisition strategy at the regional level. LongMac was a leading geotechnical consultant with highly regarded expertise and a very strong client base, which included the Roads and Traffic Authority, RailCorp, Newcastle Port Authority, to name a few. These were also longstanding GHD clients and the merger enabled the company to expand its geotechnical and environmental services, and also extend into both specialist early investigatory roles and specialist construction monitoring, thus adding to its 'whole of life' service offering.

GHD's NSW leadership changed to meet the growth and increased range of services. The period from the mid-1990s to the late 2000s was also one of generational change for the leadership, with the retirement of a number of directors who had forged the various parts of the NSW business – Roger Smith (who was a former Chairman) and Don Dwyer, the founder of DJ Dwyer and Associates, both retired in 1994. Tim Smyth (who led the NSW Water practice) stepped down in 1998. John Planner and Ted West, who founded Planner West, also retired in this period, as did Brian Mahony who led NSW’s mining and plant engineering practice. Ken Conway (who was Managing Director from 1999 and Chairman from 2002) retired in 2003, and Michael Polin in 2009. Mike was significantly involved with GHD’s mergers in the 2000s and led GHD’s expansion into the Americas. Tom Pinzone who led the transportation practice and helped establish GHD’s UK business retired in 2010.

Gearing up for growth

Despite the difficulties of recession in the Australian economy during the early 1990s, GHD in NSW weathered the storm – responding to a changing marketplace driven by continuing population growth. During this period, a ‘bedrock’ of commissions was
undertaken, including the Sydney 2000 Olympics, infrastructure at Kingsford Smith Airport, the major upgrade of the electrical systems at Malabar Sewage Treatment Plant, the coal terminal expansion at Kooragang Island, CityRail’s train radio system, and the Pyrmont light rail. Federal Government-initiated projects saw GHD play a major role in the redevelopment of the Ultimo/Pyrmont area of Sydney and Newcastle’s Honeysuckle Creek. With increasing demand for new housing, developments such as the Rouse Hill Infrastructure Project and Norwest Business Park reaffirmed GHD’s capacity to meet the ever-growing needs of Australia’s largest city.

Transport infrastructure demands in Sydney saw GHD commissioned to provide services for upgrades for the Pacific Highway and the M2 motorway – a significant PPP for which the company was the primary designer. Mike Polin and Abigroup’s Managing Director, John Cassidy, worked closely on the tender for the M2 and led their respective teams through the development phase. With some people in the local community averse to the project, our designers had to cross a picket line of protesters for many weeks to access the site office. GHD was a member of the Hills Motorway Consortium and provided all design and engineering services. Once opened, in 1997, the 21 km four-lane expressway was seen as a major success. In the Japanese tradition, Obayashi, the project’s financier, broke a barrel of sake to mark the occasion of the commencement of construction. A commemorative wooden hammer is still proudly displayed in one of GHD’s Sydney offices.

The redevelopment of the Ultimo Pyrmont area also generated the opportunity to utilise the existing freight rail line for light rail. There was considerable interest in “bringing back the trams” and GHD joined a consortium with AIDC (as financier, then Babcock and Brown), TNT (as operator) and ABB (as builder and vehicle supplier). GHD’s role was consortium manager, project manager and designer. These positions were held by Tom Pinzone, Frank Castino and David Roberts respectively. The consortium was the successful tenderer and was appointed in 1994. The completion of the first stage from Central to Wentworth Park in 1997 was followed by an extension to Lilyfield and numerous proposals for extensions to Circular Quay, mainly along Pitt and Castlereagh Streets. Meanwhile, the completed stage received the Engineers Australia Sydney Division Excellence Award for Project Management.

In 2009, GHD developed concept designs for an extension to Dulwich Hill, still utilising the existing freight rail corridor. At the same time GHD undertook further studies and concept designs for extensions along George Street to Circular Quay. The Dulwich Hill extension was built and opened in 2014, resulting in a 12.8 km system with 23 stops. Tom Pinzone recalls the excitement of many Sydneysiders at the opening of the first stage in August 1997. There were many people who “really loved trams” and had protested in the 1950s and 1960s at the demise of the original Sydney tram network (which totalled 291 km at its peak) and waited patiently for its return. Chatting to one elderly gentleman on the first new “tram” journey, Tom was told that his father (an ex-tram driver) predicted the return of trams but died before it happened. So his son, to honour his wishes, carried his father’s ashes with him to ride the first “new tram”.

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So strong was GHD’s reputation in infrastructure that we were engaged by Engineers Australia to produce and co-author the highly influential series of Infrastructure Report Cards in the early 2000s. This work was a collaborative effort by GHD’s national network of offices, led by Tom Pinzone.

Since those early years of light rail development in Sydney, there has been a major upsurge of support for new light rail throughout Australia and in December 2012, the NSW Government announced the extension of light rail from Circular Quay to Kingsford and Randwick, through the heart of the Sydney CBD via George Street. This AUD1.8 billion project will be delivered as a PPP and the winning Consortium ALTRAC has appointed GHD as one its designers in a design joint venture with Jacobs. This continues GHD’s 20-year involvement with Sydney’s light rail. Throughout this period, many of our people provided valuable continuity of knowledge of light rail development, most notably, Garry Taylor who contributed his deep electrical engineering expertise including the arcane subject matter of ‘stray current mitigation’.

Building on its early successes with privately funded infrastructure, GHD’s work continued to the present day. Other notable projects included concept design for the Airport Rail Link, engineering advisor to Deutsche Bank and Westpac on the sale of Sydney Airport and AMP for the development of the 40 ha Cross Roads Industrial Park near Liverpool. As well as working on design, GHD provided due diligence and independent certifier services.

The first two due diligence projects in the early 1990s were water projects: the Illawarra and Woronora water treatment plants, and, the sewerage collection and disposal system for Gerringong and Gerroa, all within the operational area of the Sydney Water
Corporation. In the mid-1990s, the focus shifted to the 2000 Sydney Olympic Games, and GHD was appointed to prepare the due diligence reports for the Olympic Stadium and the Multi Use Arena. Both consortia were successful. GHD provided independent certifier services up until the games in September 2000, and was subsequently engaged as owner’s engineer for the modification of the Olympic Stadium to remove the end stands and make the venue suitable for other sports.

As well as organic growth, building the NSW employee base to 400 by 1997, this period included two key mergers which had a lasting impact on GHD’s NSW operations. The assimilation of LongMac in 1997 enabled the company to expand its geotechnical and environmental services, and extend into specialist early investigatory roles and construction monitoring. The merger of Works Australia had a significant impact on the NSW operation, with many of the former federal government agency’s architects and building engineers coming under our wing. Based in offices across the eastern states, these skilled recruits became the pioneers of GHD’s global property and buildings business.

The 1990s also saw the beginning of a period of some 20 years of major investment in coal and energy in the Hunter Valley and GHD’s projects included the Bengala Coal Mine, the ARTC Minimbah Bank Third Rail Line and Sandgate Flyover, Port Waratah and Kooragang Coal Loaders in the Port of Newcastle.

GHD’s Sydney office moved to new premises in Bond Street in January 2000. The move from Regent Street to Sydney’s financial district ushered in the new millennium. A new office was opened in Parramatta in 2004, following in the footsteps of two major clients, Sydney Water and the Roads and Traffic Authority (now Roads and Maritime Services) who had relocated their head offices there. Both these moves, four years apart, were significant and recognised Sydney’s changing client base.

Increasing community standards for the environment, water and wastewater treatment and the need for greater water supply security generated a number of significant projects. The early 2000s saw projects to improve water quality at tourist havens such as Port Stephens on the mid-North Coast and Batemans Bay on the South Coast, By the mid-2000s, the worsening drought in Sydney led to the development of the desalination plant in which we saw the value of partnering with a desalination technology partner, Fichtner from Germany. Two other major pipeline projects followed soon after – the Liverpool to Ashfield Pipeline in 2006 and the Mardi to Mangrove Water Pipeline in 2009.

Sydney 2000 Olympics

The International Olympic Committee’s announcement in September 1993, that Sydney would host the 2000 Olympic Games, ushered in a period of unprecedented urban renewal and redevelopment for Australia’s most populous city. Situated in the western
suburb of Homebush Bay on the south bank of the Parramatta river, 16 km from the CBD, the Sydney Olympic Park area – planned, developed and operated by the Olympic Coordination Authority (OCA) – was to be the centrepiece of the 2000 Games, comprising a 110,000-seat stadium and a 21,000-seat arena, plus six smaller stadia and other key infrastructure.

By 1995 a master plan had been established which divided the site into four zones: an urban core containing sporting venues and entertainment facilities, the Olympic Village for athletes and team officials, a recreational park providing several ecologically distinct areas and nature corridors, and a waterfront development and parklands providing public access to the Parramatta river shoreline.

Leveraging our involvement in the Rouse Hill Infrastructure Project and the redevelopment of Darling Harbour, GHD led by Ken Conway and John Barrow and, against fierce opposition, won the jewel in the crown, the project management of the AUD400 million Homebush Bay infrastructure development. Homebush Bay, the site of Sydney’s largest abattoir and a land where soil contamination was a by-word, was to be the highlight of the games, hosting the track and field, swimming and diving, gymnastics, basketball, archery, hockey, baseball and modern pentathlon events. The Project Management commission was but one of many won for this spectacle; other commissions included the preparation of design and construction briefs for 11 D&C contracts with a combined value of over AUD400 million, input into the Olympic Road and Transport Authority, installation and removal of the temporary Olympic overlay at Homebush Bay and site management during the actual event in September 2000.
One of the challenges for the GHD team was managing the expectations of client, design review panels, master planners, government architect and design consultant urban planners and architects. All wanted the public domain including parks and water features to be world-class and setting new standards in terms of environmental sustainability, and accessibility (especially as the Paralympics were also scheduled to be held at Homebush Bay). For this highly complex project with multiple stakeholders, over AUD3 billion was spent by the public and private sectors on the construction of venues and infrastructure built specifically for the games. In spite of the myriad of stakeholders and their expectations, the GHD team managed to deliver a quality outcome on time and within budget, with all team members very proud to have made their contribution.

The project cemented GHD’s position as a major project management consultant and its key team members, David Wunder, Grahame Sproats, Gavin Wood and Richard Fechner went on to lead many other important GHD projects. Projects such as the Epping to Chatswood Rail Line, the Doha Asian Games, various mining projects in the Hunter Valley, and an enhanced reputation in the areas of soil remediation, all owe their genesis in some way, to the Olympic contracts.

GHD maintained a close relationship with Sydney Olympic Park for over 10 years, being involved in many design assignments including the concept design of new roads and services for their 2025 master plan.

Trains, planes and automobiles

The shifts toward asset privatisation within NSW led to the development of a number of toll roads; population growth increased the need for public transport, and economic growth generated the need for freight rail and port developments. There was also a significant backlog of infrastructure, particularly in roads and passenger rail. The duplication of the Hume and Pacific Highways progressed slowly due to lack of funding, and Sydney’s suburban expansion stressed the already under-capacity arterial and sub-arterial road network. Similarly, there was the need to both improve and expand the suburban railway system.

The joint venture with British company Transmark first established GHD as a major railway consultant in the late 1980s. Similarly, the mergers with DJ Dwyer and Associates and Egis greatly boosted GHD’s roads capability. The merger with Planner West led to a number of important freight rail and port projects and mergers with A J McKnight and Meyrick developed the company's capability in the ports sector.

From from the mid 1990s onwards, the railway sector played an increasingly important part in GHD’s work and by the middle of the next decade, the focus on infrastructure turned once again to trains and railway systems. GHD delivered a wide range of rail-related work, such as studies for the new CBD Metro and Harbour Crossing and Southern Sydney Freight Line, design and project management services for upgrades of stations
and interchanges including Hornsby, Fairfield and Chatswood, specialist electrification and communications work such as the Train Radio project and major roles on most of the significant railway concepts and expansions over the last 25 years – including Epping to Chatswood Railway, Airport Rail Link, Sydney to Canberra High Speed Rail, Dapto to Kiama Electrification, and the South West Rail Link.

Today, when passengers on Sydney’s public transport system use their Opal cards (as the smart card ticketing system is known), little would they know of GHD’s historical connection with the system. Led by Mike Nelson who retired in 2015, GHD provided a rail network-wide project management of the railway station fit-out in the game-changing automatic ticketing system roll-out in the early 1990s, the forerunner of today’s Opal card, for the State Rail Authority.

In 2006, GHD was awarded the contract to be the independent certifier for the delivery of 78 train sets for the Sydney rail system. The successful consortium was Reliance Rail, the main builder Downer EDI, and main suppliers Hitachi and Chinese coach builder Changchun Railway Vehicles Company. These trains were successfully delivered into the system by mid 2014. GHD has gone on to be the independent certifier, in a joint venture with the French firm Systra, for the Sydney Metro Northeast Project which will deliver eight new railway stations by 2019 to the growing north-western suburbs of Sydney. According to David Hickie, who worked on all of these projects, these roles expanded GHD’s skills and client base significantly.

In July 2002, a D&C contract was awarded to the Thiess Hochtief Joint Venture (THJV) for the Epping to Chatswood Railway Civil, Electrification and Systems works. GHD with Parsons Brinckerhoff (PB) undertook the tender design. Following the successful bid, GHD was appointed principal consultant responsible for detailed design and construction
phase services undertaken by the GHD-PB team and technical specialists. Led by David Wunder, GHD’s team included David Roberts, Peter Stone, Rick Pilz and Garry Taylor. The AUD900 million 12 km rail link was one of the most significant rail projects ever undertaken in Sydney – providing an alternative route for train services from the city’s outer west and Central Coast to access the Sydney CBD, and enabling the connection of rail network into Sydney’s north-west. The route comprises a 24 km twin-bored running tunnel including a cut and cover crossing under the Lane Cover River and three new underground stations. GHD’s work included complex geotechnical investigation, modelling and design as well as permanent way, structural and civil design. The rail link opened in February 2009.

Six years later the South West Rail Link was opened – an AUD2.1 billion twin track 11 km railway, including two new stations and fourteen bridges extending the East Hills line from Glenfield to Leppington, and providing services for Sydney’s fast growing south-west region. GHD provided tender and detailed design services (in association with SMEC and KBR) to the D&C contractor John Holland Group for rail, civil, structural, bridge and roadworks. This project continued GHD’s long involvement with the line, having undertaken the project management of the East Hills to Glenfield railway in the early 1980s.

Following the success of the M2 motorway, GHD expanded its work for major roads in NSW. These included City West Link road between Balmain and Haberfield, the West Charlestown Bypass in Newcastle, project management of 20 km of roads for Sydney Olympics, tender designs for the M5 East and the Western Sydney Orbital, concept designs for the Great Western Highway at Linden Bends in the Blue Mountains, design of the Windsor Road upgrade at Castle Hill and a significant upgrade of the Northern Road, a main arterial transport corridor for Western Sydney.

Over the same period GHD was also involved with a number of town planning and transport studies in the South Western Sydney Region and acquired a considerable amount of knowledge and expertise.

In 2016 GHD, with its partner BG&E secured its most significant road design project in NSW - the 48 km dual-carriageway section of the Pacific Motorway between Glenugie and Maclean in northern NSW. Delivered as part of the Roads and Maritime Services’ Pacific Complete program of work led by Laing O’Rourke, the project included over 70 bridges and at its peak employed 100 people.

The need for and the location of a Western Sydney Airport has been debated for nearly 70 years. The site at Badgerys Creek was selected by the federal government in 1986. Over the next few years, land was acquired and in 1989 the federal government announced the decision to develop a third runway at Kingsford Smith Airport (KSA) and to begin the development of a second airport at Badgerys Creek. GHD was appointed by the Federal Airports Corporation (FAC) as project management consultant for the
concept design phase. Grahame Sproats was GHD’s project manager and Graham Moss in GHD’s Canberra office assisted FAC with the master plan. Concept designs were prepared and some earthworks were undertaken, however momentum was lost due to political and funding issues and the extra capacity provided by the KSA third runway which opened in 1994. Following release of the Badgerys Creek EIS in 1997, there was significant opposition from the NSW Government and several Western Sydney federal MPs. By the early 2000s plans were being deferred and the federal Labor opposition withdrew support. Although the then federal Labor government did not support the site at Badgerys Creek, the 2012 Joint Study on Aviation Capacity in the Sydney Region concluded that Badgerys Creek was the best site. Finally, in 2014 the federal Coalition government confirmed the location at Badgerys Creek and committed initial funding.

In 2014, 25 years after completion of the original concept design, GHD is once again working on this project, which is undoubtedly the most significant airport development for the country in decades. As part of a consortium with EY, GHD was appointed by the federal government to provide business advisory services for the Western Sydney Airport project. Our partners include Landrum & Brown, RPS Group, WT Partnership and Wilkinson Murray. GHD has since gone on to prepare the reference design and environmental impact statement for the airport.

The Western Sydney Airport demonstrates the very difficult political process that underlies the development of major infrastructure in Australia. It also demonstrates the value to Australia of GHD’s corporate historic knowledge, experience and longevity, with an involvement that now spans more than 25 years across many technical and specialist areas.

‘Water, water everywhere’

Historically, the water sector has been the mainstay of GHD’s NSW practice. In the 1980s and 1990s, this work continued apace with upgrades and expansions of systems. NSW was not immune to the droughts regularly suffered by this arid continent and unsurprisingly a number of our major projects in the past 25 years relate to the securing of water supplies.

Some of the most significant in this period included work on the Rouse Hill Infrastructure Project with major water and wastewater infrastructure and treatment facilities, the Sydney Water Sewer Fix program, and the Sydney Desalination Plant. GHD also undertook the concept design of water, sewerage and recycled water facilities for the Olympic Co-ordination Authority at Sydney Olympic Park, which involved negotiations and liaison with Sydney Water prior to approval for construction.

In the early 2000s, in addition to work for the Rouse Hill Infrastructure Consortium, GHD’s water team in NSW carried out a number of minor pipeline and pumping station projects and minor wastewater and water treatment plant projects. The largest of
these was the Lower Clarence Water Supply project for NSW Public Works and the North Coast councils.

In 2002 the GHD water division in Sydney expanded significantly with the Egis acquisition, allowing the company to access significantly larger projects. At this time there was a shift in the way projects were delivered, with D&C overtaking the traditional prime consultant approach.

The first of these was the Georges River Wastewater Project involving the upgrade of Liverpool and Glenfield Sewage Treatment Plants and the Georges River Carrier with the Walter Construction Group (2002–05). This was followed between 2006 and 2014 by the Liverpool to Ashfield Pipeline Project (with Leighton Contractors), the Rouse Hill STP Stage 2 Upgrade, Hoxton Park Recycled Water Plant Upgrade, Warriewood Wastewater Treatment Plant Upgrade, and the West Camden Biosolids Treatment Upgrade (all with John Holland).

D&C projects required a different approach to consulting as the client was the constructor and the consultant had limited involvement with the ultimate owner. The projects carried out in this period were very successful for GHD in Sydney, nurturing strong and effective relationships with contractors/constructors and the detailed design skills within the office. Neville Hutton (ex Egis) and Liong Khoo ably led GHD's Water group through this transition.
Other notable projects in this period include:

- The Mardi-Mangrove Pipeline Link Project - a major project for the Central Coast and the combined Gosford City and Wyong Councils to link Mangrove Creek Dam with Mardi Dam and secure the water supply for the region. It was recognised as the Regional Project of the Year in the Newcastle Division Engineers Australia Engineering Excellence Awards. Neville Hutton, Nigel Bedford and Rory Waddell led a core team of 20 across Sydney, Tuggerah and Newcastle offices, with many hundreds of other GHD people contributing to the project.

- The Sydney Desalination Plant Technical Advisor Role completed for Sydney Water. GHD was integrally involved in the development and implementation of the project from its inception in 2005 through to the sale of the asset by the NSW Government in 2012. The Plant is a good example of the way GHD adds value to complex multidisciplinary projects. In 2005 Sydney’s water supply was threatened by drought and GHD, Fichner and Sydney Water prepared an options report which considered the feasibility of a desalination plant. With its partner Fichner, GHD was able to provide international and local expertise and ‘state of the art’ solutions. Our commitment to this project is exemplified by the tenure held by Peter Eccleston and Andreas Broeckmann who were assigned to the team from the feasibility study phase through to the completion of design, construction, testing and commissioning. Both went on to assist Sydney Water with the due diligence during the sale of the asset in 2012.

Another approach to project delivery was the use of alliances in which all parties ally to achieve ‘best for project’ outcomes, and who all bear a degree of risk and reward.
In 2014, GHD was awarded the Malabar PARR (Process and Reliability Renewal) project with John Holland and UGL – the first alliance and first major ocean plant project for our water team.

Other regional projects of significance completed in NSW include the Bulk Water Alliance with John Holland, covering the Cotter Dam Upgrade, the Murrumbidgee to Googong Pipeline; the Coffs Harbour Infrastructure Alliance with Abigroup and John Holland; the Bowraville Dam; the Illuka Sewerage Scheme; Ballina Water Reuse and Augmentation Program; Brunswick River Sewerage Augmentation Scheme; the Highland Source Project; and the Reclaimed Water Management Scheme (including the upgrade of Nowra and Bomaderry Treatment Plants).

City shaping

Since the late 1980s, GHD has played a major role in the delivery of urban development and associated infrastructure in greater Sydney and the region. Growth centres around Sydney and the regional cities were driven by the need to provide residential land and employment lands to meet its ever increasing population.

The lack of any infrastructure in greenfield sites, and ageing infrastructure in brownfield sites, posed many challenges and opportunities for GHD, and the company's ability to offer a 'one stop shop' – providing continuity of services from planning consent to completion of construction, and ensuring the seamless delivery of projects – has been key to our success in urban development over the past 25 years.

Greater Western Sydney, in particular, is forecast to have a population of over three million by 2036 and more than four million by 2056. GHD has had a Western Sydney presence since the 1940s when the company first worked on Penrith Council’s sewerage scheme (a relationship which lasted into the 1980s when the scheme was transferred to Sydney Water). Our office in Parramatta, the second largest business district in NSW, was formally established in 2004. The boardroom in the office has a view of the Barry Wilde Bridge across the Parramatta River, designed in 1975 under the direction of Roger Smith, project-managed by John Sheean, and the first to use a French invention of having reinforced earth for the retaining walls.

With our involvement in numerous urban development projects in the greater Western Sydney area, such as Norwest Business Park, Rouse Hill Development Area, Wonderland Theme Park Redevelopment, Menangle and Edmondson Park master plans, Oran Park, Western Sydney Employment Lands, GHD is proud of its historic and continuing role in the shaping of greater Sydney.

It is hard to travel anywhere in Newcastle, Lake Macquarie, Port Stephens or the Lower Hunter regions without passing a suburb in which GHD undertook the design of the land development. These include major estates (and new suburbs) at Eleebana, Valentine,
Ashtonfield, Thornton, Maryland, Raymond Terrace and smaller developments at Medowie, Boat Harbour, Cessnock, Elermore Vale, Jesmond, Tingara Heights, Redhead, Dudley and other locations.

Similarly, GHD’s planning and infrastructure studies influenced the region’s future development. These included Vineyards District Planning Strategy, West Lake Macquarie Sewerage Strategy and the Newcastle Airport Masterplan to name a few.

In many of these projects, GHD devised innovative solutions to enable staged or sequential development of the towns and cities. In a number of instances, GHD has been able to identify spare capacity in existing infrastructure or created temporary works which enabled initial development to ‘kick start’ the project.

Caring for future generations

The past 25 years have seen a significant shift in the community’s standards and expectations concerning environmental protection, sustainability and town planning.

By 2015, in responding to community needs, and recognising GHD’s important role in helping maintain a sustainable footprint for the future, our NSW practice had expanded its specialist team in the environmental, planning and community sectors.

In the late 1980s, GHD had a team of some 12 specialist planners and landscape architects. Over the next decade, the group expanded into the environmental area and undertook a number of major environmental impact assessments including for the Albury Wodonga Bypass, the Associated Paper and Pulp Mills Paper Mill in Nowra, and the Three Towns Sewerage Scheme in the Hawkesbury area. These projects established GHD as a major environmental consultant, as well as a town planning consultant.
Major growth occurred from 2000 onwards. The merger with Egis brought specialist skills, and NSW's population growth added demand for more land and infrastructure development. The community demanded better solutions and a greater say leading to more extensive environmental studies and enhanced community consultation. Sustainable development became the catch cry for land releases and rezonings. One such project was GHD’s study for growth in Sydney’s south-west “Developing Sustainable Communities”, which was recognised as a model for smart urban growth and awarded the Royal Australian Planning Institute’s President’s Special Award for Excellence.

A small community and stakeholder consultation group was established in Sydney by Jill Hannaford in the late 1990s. Their importance within project teams, and a standalone service, grew significantly over the next 15 years as projects became more complex and communities demanded greater involvement and consultation. In 2015 GHD employed more than 50 dedicated stakeholder engagement professionals throughout the world specialising in social sustainability, social impact assessment, community consultation, stakeholder engagement and research services, communications and risk management. Examples of our award-winning work in this area are the Murrumbidgee Irrigation Area Renewal Alliance and Sydney Water’s South West Growth Centre Wastewater Servicing Project.

In the last 15 years, under the leadership of David Waddell, David Chubb, Monique Roser and currently Kate Day, the environmental approvals group has undertaken many important projects including a number of environmental impact assessments (EIA) for the Sydney Desalination Plant for Sydney Water Corporation, Sydney CityGrid 132kV Cable Project (Ausgrid), extension of shipping channels for the Port of Newcastle, and Bamarang Gas Turbine Power Station for Delta Electricity. Most recently, the team prepared the environmental impact statements for the Western Sydney Airport project, WestConnex M4 East, and the North West Rail Link (concept plan).
Projects that highlight GHD’s regional focus include the environmental impact assessment for the Koondrook-Perricoota Forest Flood Enhancement Project led by Pete Carson. It involved constructing infrastructure to water about 16,000 hectares of vegetation that is part of Australia’s second largest River Red Gum forest, and is listed as a wetland of international importance under the Ramsar convention. This assessment was very different to most, in that the entire driver for the project was to improve the condition of an important part of the natural environment that had been in a state of decline due to the long-term effects of river regulation. GHD also prepared the EIA for the Broken Hill Emergency Water Supply project and the Newcastle Light Rail project.

In 2001, there was not a single person working full-time in solid waste management in GHD. The growth in our waste business in Australia – to about 40 full-time people in 2016 – has coincided with ever greater importance being placed on recycling and resource recovery by state governments and local councils, and increased regulatory compliance pressures for landfill operators.

Key waste projects in NSW include environmental approvals for a number of Alternative Waste Technology (AWT) facilities. The Ecolibrium facility at Jacks Gully, which was based on a unique water based separation technology from Israel was one such project. GHD provided concept design, detailed design and project management services during construction for this AUD60 million project, and the plant was built and successfully operated for a number of years. With a fee of more than AUD2 million, this was the largest single waste management project ever undertaken by GHD, and drew on the resources of many other service groups.

Lower than expected growth in the number of new AWT facilities in Australia has meant the community continues to rely on landfilling as the primary waste disposal method. Landfills that were thought not to be needed in future are having to be extended, and community expectations are much higher than in the past. GHD is heavily involved in developing new landfill cells and upgrading existing sites, such as the Lucas Heights landfill and the Awaba Waste Management Facility near Lake Macquarie, to meet new environmental standards.

In 2016, Inside Waste magazine, named GHD the best large consultancy in the waste sector in Australia for the fifth consecutive year. GHD’s Service Line Leader for Waste Management, David Gamble, commented that GHD’s success was due to a combination of factors.

“GHD has a very stable team of specialists, which has been together for more than 10 years,” says David. “Some have formerly worked as regulators or at waste facilities, so their industry knowledge is highly valuable. GHD’s specialised waste management services are also closely integrated with other services needed on projects, and GHD’s wide network of offices enables people to be located close to clients, whose projects can be managed locally and supported by companywide specialised skills.”
Our merger with CRA, which is very strong in North America in solid waste management, means there are now more than 100 full-time people working in waste management across two continents.

Regional New South Wales

Like other Australian states, GHD in NSW has a tradition of establishing regional offices. Today these can be found in Dubbo, Tamworth, Coffs Harbour, the Hunter Valley, Nowra, Orange, Port Macquarie, Tuggerah, Singleton, Wagga Wagga, Bega, and Wollongong, as well as our major office in Newcastle. For many years GHD provided its services in southern, central and western NSW from Sydney, however as these regions developed, so did the range of projects and the need for local ‘on-the-ground ‘services. Local offices offered regional employment for people who preferred living away from Sydney, and provided clients with access to the whole of GHD.

Wollongong has long been a focus for GHD. Representation there began in the mid-1980s and grew significantly with the mergers with Egis and Meyrick. Coal, land development, heavy industry and transport and economics have been GHD’s core business areas in the Illawarra/South Coast regions. The office at Nowra, which celebrated its tenth anniversary in 2015, has expanded its range of services to include environmental and bushfire management.

Our Orange office opened after a merger with local consulting engineer Baker Saran, with Jim Saran as the original office manager. The office, which initially concentrated on structural services, has now developed into a truly multidisciplinary practice servicing local government and private clients including major gold and coal mining developments in the region.

One of GHD’s strengths is the way its leaders are prepared to move from office to office thus spreading and reinforcing GHDs management skills and leadership culture.

A sampling of our people who had uprooted their families in their service to GHD in NSW included Michael Polin (who succeeded Ken Conway as Sydney Office Manager in 1994) and was previously GHD’s manager in Kuala Lumpur and then Canberra; Michael Brouwer, who in 2002 moved from New Zealand to take up the Sydney operating centre manager role, followed by Ian Dawson, who had worked in Perth, Townsville, Newcastle and Canberra offices. David Kinniburgh originally worked in GHD’s Melbourne office and then managed the Tasmania operation until 2008, when he was handed the baton to manage the Sydney office. Tasos Katopodis succeeded David Kinniburgh in 2013. Tasos, originally from Melbourne, spent seven years managing the Newcastle operation prior to his appointment to Sydney.

While there are notable experiences in all of our regional offices to be shared, our experiences on the Thredbo Alpine Way in the Snowy Mountains, in Newcastle and the
Hunter Valley, exemplify the GHD spirit as much as any, not just in terms of their core business of delivering innovative and thought-leading outcomes for our clients, but in their services to the community.

For the Thredbo Alpine Way, GHD provided a wide range of specialist services over a period of three years. In 1997 the road failed, causing a landslide which destroyed buildings and killed 18 people. GHD-LongMac was retained immediately after the tragedy to advise National Parks and Wildlife Service on stability and rectification. The brief was then expanded to include the design and project management for reconstruction of the road, carparks, landscaping and pathways. The work had to be undertaken over a very short period to both avoid construction during the snow season and to enable the reopening of the road for the 1999 ski season. Over this period, GHD investigated the causes of the landslide and Laurie D’Ambrosis and Mike Polin spent many hours writing reports and giving evidence as expert witnesses at the coroner’s inquest which reported its findings in 2000. The final Supreme Court judgement was handed down in 2004.

The Hunter Valley is one of the most productive regions of Australia. As well as being a leading agricultural centre, it is also notable as an industrial powerhouse due to its bountiful reserves of high-quality coal. The Port of Newcastle is the world’s leading exporter of seaborne coal, while its four major power stations supply much of the NSW grid. Prior to 1980, nearly all of GHD’s services for Newcastle and Northern NSW were provided by the Sydney office, but mergers with Planner West and DJ Dwyer, and the scale and importance of local projects, led to the establishment of the Newcastle office, with Tom Pinzone as its first manager.

Demand for our consulting services led to a sustained period of growth which necessitated the firm to move offices some four times before arriving at its current address on Honeysuckle Drive. Over that same period offices were established in Tuggerah, Singleton, Port Macquarie, Coffs Harbour and Tamworth.

GHD’s role in the Hunter Coal Industry commenced in the 1970s with the expansion of the Basin Coal Loader project. This resulted in a long association with the export coal industry through the Port of Newcastle. The port output rose from about 4 Mtpa in 1970 to over 100 Mtpa during this period, and by 2015 Newcastle was the world’s largest coal export port. GHD was significantly involved through harbour deepening and port freight simulation projects, and the development of the three main coal terminals at Carrington, Port Waratah and Kooragang Island.

The expansion of coal exports through the port was reflected by a growth in coal mining projects up the valley. GHD played a significant role in the development of the Hunter Valley coal industry in the following roles:
• The development of new railways including the Mount Thorley Branch Line, Drayton Branch, Jerrys Plain Railway, the Vales Point Spur, and most recently the Minimbah to Maitland 3rd track.

• Colliery and coal handling projects including Project Management at Mt Arthur North, Ravensworth Washery, Vales Point Coal conveyor and unloader, MacGen rail unloader; coal handling designs for Bengalla, Wambo, Liddell and Bulga collieries and a major expansion study for BHP Billiton at its Mt Arthur coal mine.

• Managing exploration and undertaking the prefeasibility study for Shenhua’s proposed Watermark Mine near Gunnedah.

Since its merger with Planner-West in the early 1980s, and through the thought-leadership provided by John Planner and Brian Mahony, GHD has had over 30 successful years of involvement with the Hunter Valley coal chain, the largest coal export operation in the world consisting of some 35 coal mines owned by 11 producers.

GHD’s community spirit was never more evident than at 10:27 am on Thursday 28 December 1989, when Newcastle was hit by one of the worst earthquakes in Australia’s history. That morning the city was thrown into chaos and engineers were needed urgently. GHD’s Newcastle Office Manager at the time, the late Denis Pout immediately mobilised GHD’s people into action. There was evidence of severe damage to the city’s main fire station at Cooks Hill, not far from the ill-fated Workers Club. By 11 am the site had been cordoned off and the fire station structure propped up where necessary. An emergency telecommunications crew, directed by Denis, relocated the station’s switchboard out of the damaged control room to safer quarters. The switchboard functioned as the main call centre for the city’s urgent fire calls and it was
essential that it remained operative. By this time, GHD’s Newcastle senior structural engineers Alan Wilgoose and Glen Mounser had arrived at the scene. When the Cooks Hill station had been restored to temporary stability, they were rushed away to check on damage to other fire stations at Tighes Hill, Hamilton, Carrington and Waratah. The Public Works Department called the GHD team back to the Newcastle Workers Club, the site of the city’s worst devastation. There, they joined the contingent of engineers already assessing damage and helping with rescue operations. Later that afternoon, the GHD team was called out to the Grain Handling Authority facility at Carrington. The immense concrete structure had been shut down since the impact, pending structural examination. A preliminary inspection was conducted and followed up the next morning, permitting the operation of the terminal to restart.

GHD’s Newcastle office was reopened from its Christmas/New Year break on Friday 29 December. Although its own offices suffered some damage – collapsed and cracked parapets, broken glass panels and dislodged ceiling tiles – Denis prepared the rest of GHD to come to Newcastle in response to the huge demand for on-the-spot assessments of damage. Life started to return to normal for Newcastle when most of the city centre reopened on 8 January, but clean-up operations were to continue for some time, with GHD continuing to support the operations in remedial and inspection works. At the peak of activity, more than 40 GHD staff were involved and worked with great dedication to assist a speedy recovery.

Successive leadership of Newcastle office under Tom Pinzone, Denis Pout, Graeme Lockett, Scott Campbell, Tasos Katopodis and currently Phil Pigram, has established GHD as leader providing consulting services from the Central Coast to the NSW North Coast and North West Regions. These extend way beyond clients in the coal industry and land development sector and included such diverse projects as preparing 800 structural assessments reports as a consequence of the Newcastle earthquake, EIS for the F3 Highway (Wakefield to Minmi), design of the West Charleston Bypass, John Hunter Hospital Pathology Building design, University of Newcastle’s Student Accommodation Project design, master planning for the Honeysuckle project and associated with the redevelopment of the old BHP Steelworks site, Tourle Street Bridge duplication design, and the concept design and approvals for 600km of the proposed Melbourne to Brisbane Inland Rail project in north-western NSW.
The Australian Defence Force and associated industry have been long-term valued GHD clients. The Integrated Logistics Services (ILS) group in our Newcastle office is somewhat unique in the company, and for many years we have had a core logistics group permanently stationed at RAAF Williamtown. The group, who primarily services Defence’s Capability Acquisition and Support Group (CASG) and associated prime contractors, was originally established by David Lennox in 1982 who recruited a number of ex-RAAF personnel. Initially the group provided support services for training, and maintenance manuals and publication writing, such as for the Black Hawk helicopter. These services expanded into project management and asset management and now the group now has people ‘virtually’ located in Brisbane, Sydney, Canberra and Adelaide. Recent projects include provision of ILS and project management services to the Future Frigate Program and planning for the disposal of the F/A-18 Hornet fighters. Infrastructure projects have included the design of airside works associated with the F-35 Joint Strike Fighter at RAAF Williamtown, and project management of the Enhanced Land Force works at Singleton Army base.

GHD was engaged by the Department of Defence to deliver the Enhanced Landforce (ELF) Stage 1, ELF Stage 1 Deferred Works at the Singleton Army Base, New South Wales, Australia
Born in Kuching, Sarawak, the former kingdom of the ‘White Rajahs’, May Ngui was educated in Canada, and first worked for Exxon in Malaysia before migrating to Australia in 1985. Like many women forging an engineering career in the 1980s, May faced challenges that were often way beyond a project’s technical requirements.

It was while working with a major resources company (her first job in Australia) on a plant upgrade for a mine site in central Queensland that the 25-year-old graduate came across the kind of unconscious bias that was rife in those days. Having designed the upgrade and wiring diagrams, and programmed the software, May was taken aback when one of her supervisors baulked at the idea of her commissioning the project and going live with the system. “He was your typical ‘blokey’ person. I suppose he had misplaced protective ‘fatherly’ motives behind him, but it was just the fact that he hadn’t encountered such a situation,” says May. “Those who’d worked with me knew I’d poured my heart into it and that I wanted to see it through.” With the backing of colleagues, that supervisor overturned his decision, but it’s an incident that stayed with her; a lesson in how unconscious bias can permeate the workplace. When May joined GHD in 1991, gender diversity also wasn’t greatly in evidence.

“There was always a smattering of female engineers, but we all knew who we were,” she says. “There’s a much heightened self-awareness now, but there’s still a way to go. I think unconscious bias is always there.” A former chairperson of the Technical Services Group, May was GHD’s first female director when elected to the board in 2009. She uses the word ‘leaderful’ to describe a philosophy she feels is key to success at GHD.

“Being ‘leaderful’ is about personal accountability. If something’s wrong you speak up, rather than saying, ‘Well, my job here is just engineering, I’ll just worry about that and not concern myself with the bigger picture.’
“We always need to be ahead of the game in terms of delivering really great ideas for our clients, whether they’re within our brief or not.”

May cites her upgrade work on the Sydney Harbour Tunnel central computer system, which manages the tunnel’s control devices and sensors, as her most challenging project to date.

“It’s a critical infrastructure and the challenge was that we were replacing a piece of obsolete technology. It wasn’t because the system was failing, it was a judgement call – replacing the old VAX IT systems with personal computer-based technology, which at the time was still in its infancy.”

Another defining experience for her was the Hills M2 motorway – a key part of Sydney’s orbital motorway network. “For me what’s so special about that project is the longevity of the association we had and still have with it – from design and construction, through to its operational phase in the mid-1990s under different asset owners, right up to today.

“That’s what I love about working for GHD – this constancy and the depth of relationships with our clients through the years. It makes me so proud to be part of this organisation that plays such a huge role in leaving tangible legacies for future generations.”
The 2000s reflected a coming of age for GHD in Canberra. A focus on leadership and business development saw GHD take key roles in major local infrastructure projects across Canberra and southern NSW.
Expansion in Australia’s capital

GHD has retained an office in Canberra since it began operations there in 1966. Like Gordon Gutteridge, who moved to the capital in 1928, prior to setting up his private practice in Melbourne, and Peter Manger, the former GHD Managing Director who led the practice from 1968 until 1977, it seems that a period of time in the cool, clear air of Australia’s capital was beneficial for the development of a number of engineering careers. In the 1990s the Canberra office was led by Michael Polin (1988-1990), Ian Dawson (1990-1992), Graham Sproats (1993-1996), Richard Fechner (1996-1997), Dean McIntyre (1997) and, following the merger with Works Australia, Michael Brouwer (1997-1999).

Up until the 2000s, Canberra business was focused on civil and structural engineering, predominantly in the areas of water and urban development. Some of the notable projects included the Gleneagles Golf Course Estate, the Lake Crackenback resort development and the Jindabyne expansion studies. Other projects in the southern NSW region included the Wollondilly Retirement Village (Goulburn), the Tallawarra Subdivision (Wollongong), asset management assignments for Queanbeyan City Council, and wastewater treatment plant for Royal Australian Navy’s facilities at HMAS Albatross in Nowra.

Graham Sproats recalls one of his more significant projects shortly after he arrived in Canberra as the Stage 1 of the Gungahlin Golf Course Estate for MBA Land. It was a challenging job, as it involved designing a display village subdivision with several urban design features never previously incorporated in Canberra before, with the subdivision being built at the same time as the construction of the buildings. GHD went on to undertake the flood planning for the golf course and the masterplanning of one of the future stages. Dean McIntyre drove the project with assistance from Guido Warner, and Ian Brodie, all of whom came down from Sydney and are still with the company 20 years later.
The big break came in 1994 when Russell Board, then managing the Darwin office, asked Graham Sproats to be project manager for the Royal Australian Airforce (RAAF) Base Tindal Stage 3C Pavement Works Construction Management, which the Northern Territory team had won. Someone needed to be close to the Air Force facilities project manager in the national capital. The pavement works were designed by Works Australia personnel who later joined GHD. Work for the Department of Defence (DoD) opened the door for the introduction of Graham Moss, who had joined as GHD’s Airport master planner based in Canberra. Graham went on to prepare masterplans at nearly every RAAF air base in Australia, commencing with RAAF Base Tindal. GHD also undertook a number of other major facilities planning exercises at Tindal and Darwin. Following on from the Tindal work grew a range of Defence projects delivered out of Canberra, and the early development of Defence into a major national client.

Meanwhile GHD was developing relationships with ACT Electricity and Water (ACTEW) and undertook the design for major expansion of the Googong Dam Water Treatment Plant (led by Richard Fechner, with assistance from Liong Khoo and May Ngui from Sydney). Another significant project was the design of a massive emergency sewage overflow storage device – the brainchild of Lindsay Mott from the Melbourne office.

Structural work in the Canberra office in the 1990s was undertaken by Jan Ruckschloss who designed two bridges for the M2 project in Sydney, besides many other structures in Canberra, including projects for the Australian Institute of Sport.

One of the other interesting projects during this period was the design of specially sealed and ventilated glass houses for the Commonwealth Scientific and Industrial Research Organisation (CSIRO) at Black Mountain, to enable genetic engineering of wheat and
other plants. The glass houses involved automatically retractable sun screens within the building. Alan Irwin, a mechanical engineer from Sydney, was responsible for all the Heating, Ventilation and Air Conditioning (HVAC) work and the innovative design was highly successful.

In 1997, the tragic landslide in the New South Wales alpine village of Thredbo destroyed part of the upper road to the village and two lodges. GHD was responsible for the restoration, with engineering geologist Greg Kotze responsible for the subsequent site investigation and Tim Chapman leading the road reconstruction project.

**Australian Government business**

The divestment by the Australian Government of Works Australia, its national architectural, engineering and project management business, provided a unique opportunity for GHD to expand its services for government clients across the nation. GHD had been responsible for project management of a number of DoD airfield development projects for which Works Australia was the design consultant, and it was that positive working relationship which led to the Department of Administrative Services accepting GHD’s offer for the business, in response to a tender for the business sale in August 1997.

Works Australia added 120 multidisciplinary staff across Australia to the GHD team, which at that time totalled 900. Michael Brouwer, Assistant General Manager - Planning and Preliminary Design for Works Australia, became the new leader of GHD’s Canberra office. One of the first tasks undertaken was setting up a new office in Belconnen to co-locate GHD and Works Australia people. The Works Australia team brought with it strong project management skills and an integrated architectural and engineering design track record on iconic projects throughout Canberra and elsewhere in Australia. The merger began a national and international focus for the Canberra office, targeting the major capital investment budget programs of the Australian Government.

In 2005 Garth Chamberlain and Tony Ryan completed the project management of one of Australia’s largest hazardous waste clean-ups with the remediation of the Maralinga nuclear test site in South Australia. Mervyn Cole was responsible for the program management for a number of national aboriginal health programs of work in remote regional communities. His project management experience also included the iconic Black Mountain communications tower that overlooks Canberra, and the development of the Department of Foreign Affairs and Trade campus.

Jenny Perrin had a leading role in project management of major building refurbishments in Canberra, including the National Library, Old Parliament House, the Treasury Building, the DoD headquarters, and the Australian War Memorial.
In addition to providing leadership to the Canberra office, Michael Brouwer was involved in the management of a number of projects for the DoD, including EASTROC, DLRP- Air Force aspects, Wagga Wagga Medical Centre and RAN Fire Training Facilities. GHD’s architects continued to play a significant role in the development of specialist facilities for the Department of Foreign Affairs and Trade – developing and refurbishing Australian embassy facilities in India, Vietnam, China, Malaysia, Singapore, New Zealand, Laos, New Caledonia, and Tonga. GHD also expanded its services to provide specialist security services to the DoD and the Australian Taxation Office. Geoff Hayes led the High Security team, which was one of a select number in Australia able to achieve Type 1 security accreditation with the DoD.

When Michael Brouwer relocated to Auckland at the start of 2000 to look after the transition of Manukau Consultants Limited into GHD, Bob Rosenbauer took on the leadership of the Canberra office. It was during this period that GHD in Canberra purchased the building services engineering consultancy of Lindquist and Johnson, and the forestry consulting business of R L Newman and Associates, which set the scene for further growth and diversification.

GHD’s architectural practice was possibly one of the first connections that the company made with mainland China. Through local Australian China Trade Associations, GHD in Canberra took on consulting work in Changsha in China’s Hunan province. Architectural concepts by Andrew Raszewski won international competitions for the Hai Chuang Victory Plaza retail and residential development, and the Baishui office tower. This began a relationship with Bin Min and a local Chinese architectural and engineering design firm, who even took the liberty to proudly display a GHD sign in their Changsha office for years afterwards, until the business was formally acquired by GHD.
These were early days for GHD’s dealings in the world’s most populous country and, at first, there was limited understanding of the local mechanisms for payment. In fact, full payment for the work undertaken was never received from some of the clients and the amounts that were recovered were brought back by the architects responsible as cash! This hands-on approach brought a whole new meaning to the concept of the job manager being responsible for the collection of payments.

Growth through diversification

The first decade of the new millennium marked a period of unprecedented growth across Australia. GHD set its sights on growth and globalisation, guided by two visionary plans, the 2000 Solutions and Delivery Strategy and the 2005 Realising Opportunities Strategy.

For Canberra however, the tragic local bushfires of January 2003 shook the community. With four people killed, 488 homes destroyed, and 435 people injured, that day will never be forgotten by those who experienced it. The recovery efforts created opportunities for GHD to become involved in the clean-up of contaminated residential sites, and the redevelopment of the Mount Stromlo facilities that had been destroyed by the fire storms.

In late 2003, Rob Knott, who had joined GHD as the leader of the Works Australia business in Queensland, moved to the ACT to lead the Canberra operations. Rob had strong relationships with the DoD and Department of Finance, and had led GHD’s integrated architecture and engineering buildings group in Brisbane since the Works Australia merger.

It was during this period that the power of a ‘stretch goal incentive’ was demonstrated. Ian Shepherd, General Manager – Australia, at the time, met with the leadership teams in a number of the smaller operating centres, including Canberra, and challenged them to identify just how many people they could add to the business, one group at a time. When the incremental growth of each area of the business was added up, it represented a significant organic growth target. In the light-hearted spirit of the discussion, Ian agreed to reward the teams that achieved the stretch with half a dozen bottles of Penfolds Grange. Suffice to say that the stretch targets were exceeded across Australia, and the Canberra office entered a sustained period of compound growth of greater than 25 percent per annum. While there was a celebration at the end of that financial year, Ian was reluctant to ever again repeat the offer of such a reward, although he has acknowledged it was one of his better returns on investment.

Diversification from the small and singular market of the Australian Capital Territory economy was considered key to building resilience into the Canberra office, which had been growing and contracting regularly since its inception. Finding a sustainable balance of federal, state, and local government investment and private industry drivers in regional NSW centres led to GHD establishing an office in Nowra on the state’s South Coast in 2005. The move was made on the back of winning the design of the Shoalhaven Entertainment Centre for the local city council.
Mike Rodd returned from Chile to recruit key people for the Nowra office. With limited competition in the region and an attractive coastal lifestyle, the Nowra office grew rapidly. In 2006 GHD in Canberra repeated the formula for regional expansion and began a permanent operation in the regional NSW community of Wagga Wagga. Gavin Morrison initially commuted from Canberra, a two-and-a-half-hour drive, to start the business, with Stuart Clark relocating to establish a sustainable consulting business.

Wagga Wagga is of course bound to GHD’s early history as it was here that company co-founder Geoffrey Davey, after being four hours late for a meeting with the local council, charmed the town’s civic fathers into making him their consultant engineer and play a key role in the early development of the town’s water infrastructure. Our warm client relationships have endured in the town ever since.

While Department of Defence Infrastructure Division had been our client for many years, it became apparent that the most significant Defence expenditure was on the procurement of military capability and equipment. GHD had maintained some capability in the integrated logistics support area for a number of years in Newcastle, however the Canberra team was keen to focus on ways to increase its share of the federal government spend.

KBR had a few years earlier outbid GHD for the purchase of a niche consulting firm called Total Logistics Management, and there were a few murmurs that the team were dissatisfied with the transition to the KBR operating environment. Christine Allard, a key leader of the logistics team was attracted to join GHD and within a few months a number of key specialists followed. Diversified skills, including Christine's leadership and experience, enabled GHD to establish a registered training organisation, which
continues to provide specialist training services to the Australian Defence Force (and many of their overseas equivalents) in integrated logistics and project management.

Following significant works on Jindabyne for Snowy Hydro Ltd (SHL) in 2007, the Canberra office took a strategic decision to focus on building a stronger relationship with major clients located within the Southern NSW region. The development of this client relationship, led by Pete Dunn, began a long program of projects with SHL.

In 2008 an opportunity arose to purchase the long-established international development assistance and rural economics firm Hassall & Associates. The business was active in the delivery of donor-related (e.g. AusAID) projects in Indonesia, China, Philippines, and the Pacific islands. It also included an agribusiness and economics team based in Sydney. Thanks to this acquisition, GHD’s ability to contribute to Australia’s regional overseas aid programs was greatly enhanced. This shift of focus to international development projects also led to the Canberra business taking responsibility for the re-establishment of GHD’s office in Papua New Guinea.

During the 2000s GHD’s globalisation strategy was providing increasing opportunities for our people across the world, and the Canberra team was prepared to let go some of their skilled practitioners to assist the global growth. Following the Boxing Day Tsunami in 2004, Garth Chamberlain relocated to support GHD’s expansion in Indonesia in the redevelopment of Aceh. Tony Ryan moved to Abu Dhabi to lead the major residential developments that were underway in the Middle East. Wayne Francisco relocated his family to the United States to start up an asset management business based in Charlotte, North Carolina. Ian Lindquist moved first to Egypt then to Qatar. Peter Rodda relocated to
Abu Dhabi to manage some of our largest projects in the Middle East, and Gavin Morrison relocated to Chile to assist in the development of our South American operations.

The 2000s reflected a coming of age for GHD in Canberra. A focus on leadership and business development saw GHD take key roles in major local infrastructure projects across Canberra and southern NSW. These projects included the design of National Convention Centre redevelopment, the design of the Gungahlin Drive Extension, project management of the first Commonwealth Public-Private Partnership (PPP) project – Defence Headquarters Joint Operational Command, the modernisation of the Royal Australian Mint, project management of the new headquarters for Australia’s intelligence agency ASIO, and the refurbishment of new headquarters for the Australian Federal Police.

Meanwhile Canberra and the surrounding areas were responding to the impacts of the drought which put pressure on water supply systems across the region. The Canberra team linked with GHD people across the country to be successfully appointed as designers for the ACT’s major water infrastructure projects. One of the largest projects was ACTEW Water’s AUD605 million Bulk Water Program alliance. The program included the upgrade of the Googong Dam spillway, the construction of a new 80 m high roller compacted concrete dam on the Cotter River, a new transfer pipeline between the Murrumbidgee River and Googong Dam, and an upgrade of the Cotter Pump Station infrastructure. The progressive alliance model delivered value for the ACT community, and allowed the program to deal with significant geotechnical and flooding disruptions.

Richard Frost relocated from Sydney to lead the Cotter Dam design team and the personal sacrifices made by all those who delivered this ground breaking project for the Canberra
region were many. Each team member made a commitment at the beginning of the alliance project that they would be there at the end. To a person, four years later, that was the case.

Success in the Canberra region allowed GHD to relocate from its basic office accommodation to a new sustainable office tower located on the edge of the CBD. The office was named the Barrandi Centre - *barrandi* being the local Indigenous word for ‘yesterday and tomorrow’ – as apt a description for GHD’s philosophy as one might hope to find. It was a proud day in August 2009 when our new office was opened by the then Governor-General of Australia, Dame Quentin Bryce.

As Australia continues to recognise its responsibilities to its Indigenous people and heritage, GHD has played a part in those efforts. Since 2010, Peter Dunn in Canberra has led the influence of national policy in transferring principles learned from global development assistance into national Indigenous programs, resulting in seven national awards for GHD in Indigenous leadership. Together with Michael Bissell, they have engaged politicians and department heads to direct attention to building capacity within Indigenous communities and supporting Indigenous-owned enterprises.

Early in 2010, however some dark clouds formed, that would have an impact on both the Canberra office and GHD’s business as a whole. GHD, through the acquisition of EGIS Consulting, had acquired an operation in Indonesia, and (separate to the work being done by Hassall & Associates), some years later this Indonesian operation was the subject of a complaint to the World Bank.

An inspection of the project records was conducted by the World Bank which identified inconsistencies in the substantiation of disbursements for accommodation and vehicle expenses. The conduct of a subcontractor and the project team in a remote and challenging environment had consequences that impacted our business around the globe.

GHD, committed to doing the right thing, arranged to rectify the discrepancies, however the World Bank was determined to commence sanction proceedings. GHD fully cooperated throughout the World Bank processes and sought to reach a fair outcome. Keith Christiansen and Rob Knott, spent significant time in Washington DC to represent GHD, and also engaged with its global clients and the Australian Government to be fully transparent with regard to the issue. After appeal to the Sanctions Board, GHD was subject to a 12-month sanction in 2013.

The issue had a significant impact on GHD’s development assistance business and the experience galvanised the company to develop improved integrity management programs and to reinforce integrity as a core value. Transparency over the allegations and a clear resolve to do the right thing increased GHD’s reputation with its clients over this testing period.
Like every GHD operation, our Canberra people have made a significant contribution to their community. Always active in fundraising, the team have supported a swathe charitable causes, including the Multiple Sclerosis advocacy organisations, Habitat for Humanity, Movember, and CEO Sleepout for homeless people. Sharing its foundation birthday with the National Library of Australia, GHD is a donor to the Australian National Treasures Gallery.

Growth in Canberra and the region slowed significantly after 2010, following the trajectory of Australia’s economic slowdown and a declining regional spend. However, GHD in the capital has continued its journey of diversification. The opportunity to purchase the Water Sciences Group of ALS in 2012 increased GHD’s freshwater ecology capabilities in Canberra as well as Melbourne, Sydney and Brisbane.

One may continue to reflect on the essence of a smaller team that continues to make a contribution of national significance from Canberra. Why is it successful? How does the office grow to consistently outperform its local competitors? What makes the key difference? The answers to those questions relate to many factors, but the critical elements are the commitment, passion and diversity of our people. Not just in the way they are recognised within GHD, but also the way that they are recognised outside the company, as leaders in their areas of practice, leaders in their professional communities, and leaders in their local community.

Notable examples include Jo Metcalfe who served on the Division Council of the Property Council of Australia and the board of the National Professional Standards Council for more than a decade. Hamish Sinclair was a Director of the Planning Institute of Australia. Suzanne Moulis was appointed Vice President of the Australian Institute of Landscape Architects. Viv Straw nominated as President of the Planning Institute of Australia. Sheila Hughes was ACT President of the Australian Institute of Architects. Melinda Dodson was National President of the Australian Institute of Architects. Jacque Comery, a leader in the environment and water business, was selected in 2014 to lead an 18-month scientific expedition to Macquarie Island in Antarctica.

The ACT Telstra Business Women’s awards hall of fame tells its own story. Jo Metcalfe won recognition in 2009 and Anita Borella was named Young Business Woman of the Year and received the Private and Corporate Sector Award in 2013. The diversity, calibre and passion of people who are leaders in their respective communities, add a different thinking to that of engineering.

In a team that, for almost 20 years, had a cohort of senior female leaders, it was no surprise that in 2012 Jo Metcalfe in Canberra was appointed as GHD’s first female operating centre manager in Australia.

The foundations for the next chapter already include the extension of Canberra’s role in regional development with of a unique partnership with Shoalhaven Water for project
management and engineering of water and sewage projects, the expansion of services with Queanbeyan City Council, and the establishment of a new office in Bega. Meanwhile GHD in Canberra continues to build on international development work in the Pacific and Papua New Guinea.

The Canberra team has also continued to build a connected network assisting GHD’s ongoing global development. Technical Services Leader for Property and Buildings, Paul Murphy, relocated to the US to assist with the due diligence of the CRA merger and to lead the integration of PE Group in the Mid-Atlantic region. Therese Flapper enabled the development of the wastewater capacity of the Philippines Centre of Capability, and Katrina Povey relocated to the Abu Dhabi office to work on the interior design of Etihad’s first class airport lounges.

There are many personal and team stories that have been omitted in the short narrative, and many more will continue to be written over the coming years. From the changes in mature business areas to the rapid growth of new initiatives, new horizons will continue to emerge. We are very proud to have been privileged to share just a small part of the journey with so many outstanding people in our GHD family who were motivated to create their own future.
After 35 years working for GHD, Michael Polin retired in 2010. These days you’ll rarely find him in Sydney, the city of his birth, and where he spent most of his time with the company. And who could blame him? He’s most likely on his 4000-acre cattle farm in the rich grazing country of New South Wales, or at the Hunter Valley winery he founded back in 1996.

The eldest of eight children (most of whom followed their father’s profession in law), brought up in Balmoral and schooled at St Aloysius’ College, Michael’s path to engineering began with a degree in engineering at the University of Sydney.

In the ‘GHD way’ Mike was given responsibility early in his career. In the late 1970s, left largely to his own devices for three years to improve Dubbo’s water treatment system, he made the most of the opportunity before joining the wastewater division of GHD’s Sydney office in 1981. Three years later the Board had such confidence in the technical and management skills of their new recruit that he became one of our earliest international pioneers, moving to Malaysia to take the helm of our joint venture Angkasa-GHD.

After three years in South East Asia, Mike returned to become manager of the Canberra office in 1988, before managing the Sydney office, a position he held for a decade. As a GHD Director from 1994, and General Manager – International, his focus shifted to nurturing our operations outside Australia, including China, the Middle East, the United Kingdom and Ireland, South America, and North America.

While his area of technical expertise – the development of large water systems and treatment plants are perhaps his most visible legacy – it’s his candid and hugely successful approach to our international growth that defines his time at GHD. From the 1990s until 2010, Michael brokered the deals which delivered many of our most significant mergers and acquisitions, and is largely responsible for nailing the arrangements for GHD’s expansion in the United States thanks to his skillset including an innate and priceless ability to forge enduring relationships with clients and partners.
Mike’s reflections on the situation that faced the company in the 1990s tell an important chapter in the story of GHD’s growth.

“In those years, US and UK companies started establishing themselves in Australia and clients began saying, ‘if you haven’t got international experience you don’t get the job’, so it became a choice: sell out to one of these companies, or create our own international operations,” says Mike.

“Every one of our mergers was different, there’s no template, but the key to all of them was finding someone locally who you can trust, whose culture was similar, and who could run your business.

“It’s about mentoring, not managing from the top down, and that’s why our mergers have been successful. It’s about empowering the local networks to function.”

Mike Polin left an indelible mark on GHD, not least as dedicated mentor to many young engineers. Today, like many of the pioneers of the last 25 years, a second Polin generation is putting its mark on the company. Son John has been with the firm for more than a decade.

“It sends a message,” says Mike. “GHD is a company that gives you a lot of opportunities, and a lot of support. It’s a company that functions the way companies should, and I’m very proud to have played a part in its ongoing story.”
Infrastructure has been core to GHD Victoria’s practice since its inception in 1928, and the span of activity has encompassed major sporting event facilities, roads and railways, educational facilities, ports and harbours, water and wastewater systems, water resources and resorts.
11. Victoria

Tom Fricke / Dean McIntyre

GHD has been operating in Victoria for almost 90 years, providing a comprehensive range of consulting services across the markets of water, energy and resources, environment, property and buildings, and transportation. Having major involvement in a host of landmark projects such as the Melbourne Cricket Ground floodlights and Great Southern Stand, the Victorian Desalination Plant, CityLink Tollway, the Sugarloaf Pipeline, the Princes Freeway Upgrade to Geelong, and the Level Crossing Removal Program, GHD’s capability in the state has grown significantly in the last 25 years. Today that capability is delivered by more than 700 engineers, architects, planners, scientists, drafters, project managers, economists and support staff. Operating from our central Melbourne office, and offices in Geelong, Mildura, Traralgon and Wodonga, we pride ourselves in being able to provide the strength of GHD’s global knowledge and resources to meet client needs at the local level.
Growth and diversification

In 1988, the Victorian operation numbered around 140 people. The practice was essentially civil, structural, mechanical and electrical engineering-based, with an emphasis on water and wastewater, and servicing local government clients. Land surveying, photogrammetry and town planning also featured. Instigated by Peter Manger, then state manager, it was decided in the late-1980s that the practice should diversify. Capability in planning was expanded by strategic recruitment and a team mobilised to focus on industrial clients. Strategic appointments were made in the environmental area and in management consulting. The growing practice segment of asset management was spearheaded by Roger Byrne, initially in Australia, and later in the USA.

Melbourne first hosted the Olympic Games in 1956 and three decades later the Victorian Government together with the business community, resolved to bid for the right to hold the Games for a second time in 1996. In March 1989 the Melbourne Olympic Committee appointed GHD as project manager for the study of all communications requirements for the games. GHD coordinated the combined resources and expertise of 20 private and public sector organisations to enable completion of this major study within an extremely tight program. Study deliverables included, inter alia, schematic design and cost planning for a 100,000 square metre media centre and concept design of a communication and data network serving all 22 sporting venues, accommodation centres, administration locations and media centre.
By the early 1990s, when the Australian-wide recession “we had to have” took effect, rationalisation of less-strongly performing areas was necessary, and with surveying and photogrammetry closed down, a leaner, more responsive business emerged, under the new state manager, Clive Weeks. The integration of the Works Australia practice in 1997 not only expanded the client-base to include federal government clients, but also, particularly in Victoria, introduced a critical mass of architectural skills especially for institutional buildings. For the first time, GHD was able to promote architectural services as a practice segment. The following year, the small but highly-regarded structural engineering practice of Corcoran Shepherd joined the fold, providing core skills in structural design, particularly in relation to construction engineering and long-span bridges.

Soon, GHD in Victoria began benefiting from the downsizing and outsourcing of engineering arms of the state government, including the State Electricity Commission, the State Rivers and Water Supply Commission, the Melbourne and Metropolitan Board of Works (now Melbourne Water), the Public Works Department, and the Country Roads Board (now VicRoads). Some GHD practice groups expanded significantly, and new groups were established, dedicated to municipal engineering, roads and drainage.

In 1999, with the Victorian operation comprising about 150 people, Tom Fricke was appointed state manager and developed a strategy, considered ambitious at the time, to expand the business to 250 people by 2005. By early 2002, the plan was on track by means of organic growth which had built employee numbers up to 175, and was further boosted by our merger with Geo-Eng.

Geo-Eng, which had been formed 10 years earlier as a management buyout of the State Electricity Commission of Victoria’s Geotechnical Group, specialised in brown coal mining technology. Most of its people were based in Morwell in Gippsland, and the outer eastern Melbourne suburb of Notting Hill, with smaller offices in Perth, Sydney and China. The merger’s effect on GHD’s Victorian operations was immediate, with 75 additional people delivering skills and competency in mining technology, dams, water and environment. Former Managing Director of Geo-Eng, and later GHD Director, Peter Wood, says what struck him about the merger was GHD’s willingness to adopt a new approach.

“There was a very genuine attempt to say, ‘We have our own team sitting in Victoria, let’s look at the whole and work out what structure we want. Let’s get the right person for each role, irrespective of where they came from’. It was about merit. Some people missed out, that was inevitable, but there was a willingness to do the right thing and take the flak, which takes sensitivity and courage.”

Even greater change was around the corner. In June 2002, Egis joined GHD, bringing a further 125 new people to the Victorian practice, bringing with them skills in environment, water, roads, urban development and international development.
assistance. The Egis integration surprised many; both companies had been competitors for decades and the challenge was how to bring together two businesses of comparable size. A leadership team of Tom Fricke, Peter Wood and David Ryan (former State Director of Egis) set about the task of running the greatly expanded business. Rather than try to fit new people into the existing GHD structure, a new organisational model was built around the best combined talents now available. Environment skills were brought together under the leadership of Phil Duthie (ex Egis). Water skills were consolidated under Mike Muntisov (GHD) and dams under Adrian Graham (ex Geo-Eng). By 2004, Peter Wood was at the helm as state manager, and the Victorian practice continued to expand with environment and international development assistance projects leading the way. A year later, Qest Consulting, specialists in risk assessment, joined GHD. Further recruitment enabled growth in stakeholder and community consultation, landscape architecture and groundwater, the latter filling a long-standing gap in our water group skillset.

By 2007, with Phil Duthie as state manager, a concerted effort was made to build critical mass in transportation, particularly in roads, rail and ports. Meanwhile appointments to the leadership of our property and buildings group further matured this area. In 2008, the Meyrick & Associates merger brought nine new people to the Victorian practice – specialising in economics and related disciplines. By the end of the decade, people numbers had reached around 800 in Victoria, a figure that was subsequently pegged back slightly as the state’s consulting market contracted, and GHD withdrew from international aid and management consulting markets.

In 2011, Dean McIntyre assumed the state manager role, and over the past five years GHD has continued to grow its brand and capacity to provide detail design and technical, environmental and planning adviser roles on major infrastructure projects such as the
Level Crossings Removal Program in Melbourne, the Western Distributor Tollway and the Regional Rail Link. There has been a continued investment in our client relationship management program and in expanding the range of the services we offer, including power, architecture and stakeholder engagement.

Clients for life

While the story of GHD in Victoria has featured a number of major signature projects, the backbone of the practice, virtually since its inception in 1928, has been its relationship with long-term clients – relationships nurtured in a plethora of projects – small, medium and large.

At GHD’s 75th anniversary in 2003, those anchor clients who had entrusted their confidence to the company for 50 years or more were officially acknowledged. They included Barwon Water, Central Highlands Water, Coliban Water, Department of Defence, Gippsland Water, Glenelg Water (now part of Wannon Water), Grampians Water (now Grampians Wimmera Mallee Water), Melbourne Water, North East Water, South East Water and South Gippsland Water.

Thirteen years later these eleven clients remained vital to GHD’s practice, and to such a list one could add VicRoads, AGL Loy Yang (formerly Loy Yang Power), ENGIE (formerly GDF Suez), and Energy Australia, Wannon Water, Yarra Valley Water, Goulburn Murray Water, the Victorian Government’s Department of Economic Development, Jobs, Transport & Resources and the Department of Environment, Land, Water and Planning.

These long-term relationships have been in many forms. GHD has been a member of Melbourne Water’s consulting services panel since 1993, and between 2008 and 2013,
together with contractors Fulton Hogan and Jaydo, GHD formed an exclusive alliance with Melbourne Water to deliver a major program of pipeline projects. GHD has been Wannon Water’s exclusive sole provider of technical consulting services since 2006 and was reappointed for a further five-year term to 2018. With the Geo-Eng merger in 2002, GHD inherited and continues to this day, the long-standing exclusive relationship to provide mine planning, geological, geotechnical, risk and hydrogeological services for Loy Yang. Ongoing relationships were also successfully established for varying periods of time with several major sporting organisations such as the Melbourne Cricket Club and the Royal Melbourne Golf Club. More recently, long-term relationships have been established with a range of clients, including RMIT University, Metropolitan Trains Melbourne and Powercor.

Melbourne infrastructure

Infrastructure has been core to GHD’s Victoria practice since its inception in 1928, and the span of activity has encompassed major sporting event facilities, roads and railways, educational facilities, ports and harbours, water and wastewater systems, water resources and resorts. The story since 1988 is testament to GHD’s central role in developing Melbourne as the most liveable city in the world. A number of landmark projects stand out which reflect GHD’s role in the remarkable and continuing narrative of Melbourne as a world-class urban environment. Between 1988 and 1992, GHD was the Melbourne Cricket Club’s project manager for the construction of the Great Southern Stand at the Melbourne Cricket Ground (MCG) – a natural follow-up to the renowned light towers erected at the stadium in 1984, for which a GHD team, including Miles Pierce, was responsible for approvals, detailed design and construction management. The Southern Stand project, led by Peter Manger and Clive Weeks, made extensive use of large scale off-site prefabrication of major components – a solution driven by the extremely limited construction working area offered by the stadium.
The project was completed with minimal disruption to the MCG’s event schedule, on time and on budget at a capital cost of AUD150 million.

Between 1993 and 1998, GHD implemented 9 km of the two and three lane dual carriageway Western Ring Road as designer to Leighton Contractors, under a design/construct contract for VicRoads. Tom Brock was our lead designer for this project and the total capital cost was AUD53 million.

The mid-1990s would see GHD (led by Clive Weeks) appointed technical adviser to the Melbourne City Link Authority to oversee, on behalf of the Victorian Government, the construction of CityLink - one of Victoria’s largest ever infrastructure projects. CityLink is the name for Melbourne’s network of tolled highways built between 1996 and 2000, which, with a capital cost of AUD2 billion, was eight times larger than any other road project in Melbourne at the time. It comprised 21 km of three and four-lane dual carriageway, 5 km of tunnels, 4 km of three-lane elevated dual carriageway, and the 490 m Bolte Bridge. The project was completed via a Private Public Partnership (PPP) and now operates as a tollway, owned and operated by Transurban.

Later in the 1990s, GHD consolidated its position in Victoria with an increasing number of major state government contracts, including appointments from the Department of Education to upgrade 60 primary, secondary and technical schools at a capital cost of over AUD90 million.

Between 2000 and 2004, GHD designed and oversaw construction of upgrades to one of Melbourne Water’s two major wastewater treatment plants – the Western Treatment Plant located at Werribee. Overseen by Jonathan Crockett, this involved the conversion/construction of aerated secondary/tertiary wastewater treatment facilities of capacity 450 ML/d at a capital cost of AUD110 million. Around this time, GHD’s urban
drainage team, under Steven Young commenced a long-running program as Melbourne Water’s designers of major drainage and waterways upgrades to relieve stormwater flooding in many suburbs.

In the 2000s, Victoria experienced more than five years of successive below average rainfall and Melbourne’s four million citizens faced the prospect of running out of water if the drought continued. The Victorian Government decided to act, and two major water supply upgrade projects were put in motion. The first, led by John Ware, saw GHD together with SKM form a design team as consultants to Melbourne Water to design and oversee construction of the 70 km long, 75 GL/y, AUD750 million Sugarloaf Pipeline – delivering water from the Goulburn River over the Great Dividing Range, to Melbourne’s Sugarloaf Reservoir. The consortium teamed up with John Holland Group for the construction phase. The Victorian Government also decided to proceed with the 150 GL/y Desalination Plant Project at Wonthaggi, on the state’s south coast. GHD was appointed technical and environmental advisers for this PPP project, which was completed in 2012 at a capital cost of around AUD3.5 billion. Mike Muntisov and Greg Finlayson were heavily involved in this project for many years.

As the decade wore on, a host of projects emphasised GHD’s credentials as Victoria’s most trusted and respected infrastructure player. As technical adviser for EastLink - an AUD3 billion PPP project, GHD contributed to the delivery of the 40 km multi-lane carriageway through Melbourne’s eastern suburbs. Together with Leighton Contractors, GHD as designer, completed the 9 km Deer Park Bypass Freeway at a capital cost of AUD230 million. In 2010, the AUD1 billion Port Phillip Channel Deepening Project, for which GHD provided environmental auditing services, was completed, thus enabling the Port of Melbourne to accept larger container ships. From port facilities to central railway stations, the work continued. Led by Bernard Shepherd, GHD participated in
the signalling, overhead power and communications upgrading of Melbourne’s largest railway hub, Spencer Street Station, to emerge as Southern Cross Station, which was completed in 2006. Reflecting the firm's growing environmental practice, GHD was engaged to provide investigation and remediation services to the Yarra Precinct of commercial/residential development at Docklands.

As the second decade of the 21st century began, GHD in Victoria completed the AUD100 million Tarago Water Treatment Plant and the AUD20 million Werribee Outfall Aqueduct. Paul Davis was involved in both projects.

Between 2002 and 2012, GHD carried out the flow modelling, project planning, detailed design and contract administration of the Melbourne Main Sewer Replacement project with John Holland and other companies. This comprised the boring of a 2.3 km long 3 m diameter tunnel through Coode Island silt and other difficult geology, into which was placed a 1.8m diameter glass-reinforced plastic sewer to replace the original brick-lined sewer constructed in the 1890s. Delivered ahead of schedule and under budget, with a safety record of more than 1.3 million hours lost time injury-free, the total cost of this technically challenging project was AUD220 million. Key project team members were Colin White, Ken Keam and Malcolm Dixon.

From 2012 to 2014, GHD was designer for the CBD to Maribyrnong River package of the Regional Rail Link, which was the first new major rail line in Melbourne for 80 years. The AUD600 million project was led by Darren Self, and won numerous awards including the 2014 Infrastructure Partnerships Australia, Project of the Year Award.

GHD has worked on some of the most profound city-shaping projects in the Melbourne region over the past 20 years. The company’s roles for the former Linking Melbourne Authority (and its predecessor bodies) have included the Melbourne City Link Project (1994), technical advisers for engineering – EastLink Project (2002), technical advisers for engineering and environmental – Peninsula Link (2007), and joint authors of Environmental Impact Statement – East West Link Project (2013-14).

Since 2015, GHD has been the technical services partner for the Level Crossing Removal Authority, which was established to remove 50 dangerous and congested level crossings in Melbourne over seven years, and deliver the Mernda Rail Extension project. The total value of this work is expected to be around AUD6 billion. GHD’s services have included sight investigations, community consultation, urban design, approvals, environmental assessment, engineering and project management. Also since 2015, GHD has been technical adviser to the state government for the AUD5.5 billion Western Distributor project which will be delivered jointly by the government and Transurban. In recognition of our contribution to infrastructure excellence, GHD won 40 industry awards for metropolitan projects carried out over the period 1988-2016.
Regional infrastructure

In Victoria, GHD has had a tradition of establishing regional offices to serve the needs of longstanding clients, with a vast number of projects having been carried out in regional Victoria over the past 25 years. Regional offices continue today at Wodonga, Mildura, Geelong and Traralgon. Transforming Geelong’s water supply is a case in point. Water for the city of 150,000 people had been largely unfiltered since the supply system was originally built in the nineteenth century. Geelong’s supply utility (now Barwon Water) made a decision to improve water quality in the 1980s, and following investigatory reports, GHD was appointed to design and oversee construction of the 240 ML/d Wurdee Boluc pressure filtration water treatment plant which began in 1988. The project was commissioned five years later at a capital cost of AUD25 million, making it one of the largest such filtration plants in Australia at the time. Alan Strom and Tom Fricke oversaw this major project.

In the early 1990s, the 100 m wide by 10 m high Torrumbarry Weir across the Murray River, downstream of Echuca, in northern Victoria, was overdue for replacement. GHD, led by Chris Lloyd, teamed up with Thiess Contractors in a design/construct consortium and was the successful bidder to Goulburn Murray Water with its AUD38 million tender for the project. Notable features in this technically challenging project, which involved demanding geotechnical conditions, included the installation of six 8 m high, 11 m wide, automated radial gates, to replace the manual trestle gate system; retention and refurbishment of the ship lock; a migratory fish ladder and a visitors’ centre.

From 1992 until 1994, a team led by Lindsay Mott successfully conceived, designed and oversaw construction of an innovative 850 m long, 1600 L/s capacity pump-boosted
wastewater syphon crossing of the Barwon River at Geelong. During the same period, GHD won the project to design and oversee construction of the City of Horsham's first full water treatment plant. The dissolved air flotation and filtration process was selected for this facility, to be situated adjacent to the existing Mount Zero storage basins at the foot of the Grampians Range. The plant was designed by a team led by Mike Muntisov and constructed by local contractor Plazzer Bros. It was commissioned into service in 1993. The citizens of Horsham could for the first time fill a bath with clean water and make a tastier cup of tea than they had been able to before.

Numerous water treatment plants were engineered by GHD in the late-1990s and subsequently managed to commissioning, by Kevin McGlinn, for the then Grampians Region Water Authority. Both Build/Own/Operate Transfer (BOOT) and Design/Construct (D&C) procurement processes were successfully employed for many towns, including Ararat, Stawell, Great Western, Halls Gap, Dimboola, Rainbow, Murtoa, Birchip, Edenhope, Rainbow, Warracknabeal, Ouyen, Hopetoun, Charlton and St Arnaud.

In the 1990s, a GHD team, led by David O'Byrne, successfully engineered and procured wire extruding mill facilities for Bekaert and BHP (mill expansion) at Geelong. At the turn of the millennium, the company, together with Leighton Contractors, successfully won two D&C contracts to widen the Melbourne to Geelong Freeway (Werribee to Geelong section). This increased the freeway’s capacity to three lanes in each direction over 27 km of road. The project, which included three new bridges, was completed over three years at a capital cost of AUD120 million, all under the leadership of Tom Brock.

In 2002, together with John Holland Constructions, GHD as environmental and engineering design consultant successfully completed the AUD50 million Wodonga Rail Bypass Project
for the Victorian Government's Department of Infrastructure. Our growing property and buildings team became involved in the upgrade of leisure facilities for the Royal Automobile Club of Victoria (RACV) from 2001 onwards with the work including upgrading the RACV's Healesville resort in the Yarra Valley and the construction of a 240-bed resort at Inverloch. Paul Thatcher was heavily involved in both projects.

Also in 2002, GHD formed a three-year alliance with Goulburn Murray Water, John Holland Constructions and Hazell Brothers, to upgrade the 85 m high Eildon Dam, one of the largest in Victoria and the key storage in the Goulburn irrigation system. GHD provided design, planning and environmental services for embankment raising, spillway modification and strengthening, upgrade of the spillway gates and strengthening of the intake tower. This was one of the largest alliancing type projects of its kind at that time and was successfully delivered on budget at a capital cost of AUD52 million. David Ryan and Adrian Graham oversaw this project.

The company has been involved in projects along the Murray River dating back to 1970, when GHD’s landmark River Murray Salinity Investigation Report was completed. In recent years, the Hattah Lakes area of the Murray River system has been studied in detail by a GHD team led by Steven Roach. Hattah Lakes, located within the Hattah – Kulkyne National Park, southeast of Mildura, is a system of approximately 20 lakes which receive flood water from the River Murray. Between 2008 and 2013, GHD was involved in a range of projects to enhance the biodiversity and ecological values of the waterway systems through the construction of flow control structures, and a 1000 ML/d pump station within the national park.

With the privatisation of the Victorian power industry in the mid-1990s, GHD provided technical advice to parties involved with the sale of Loy Yang Power (now AGL Loy Yang).
Following the Geo-Eng merger, GHD became intimately involved with the development and operation of the Loy Yang mine, providing a wide range of services.

Appointed by Engineers Australia in 2005, GHD assessed the capacity of Victoria’s overall infrastructure network to serve the current and future needs and aspirations of the Victorian community. This engagement followed an earlier review in 2001. The report, which was overseen by Tom Pinzone and David Schultz, concluded that much of Victoria’s infrastructure was barely adequate for the state’s current needs, let alone the future. On a rating scale of A (very good) to F (inadequate) the state’s infrastructure capacity was assessed as: Roads C / C-, Rail C- / D, Water & Wastewater B / B-, Stormwater C-, Irrigation D, Ports C, Electricity C and Gas C. The report also found that funding commitments were largely inadequate to support the substantial costs of renewal and replacement, and that planning and political processes created a short-term focus in areas where a much longer focus is required.

In the late 2000s, GHD was commissioned to provide the full range of professional services to relieve extreme water supply shortages being experienced by Bendigo’s Coliban Water and Ballarat’s Central Highlands Water, by designing and overseeing construction of a pipeline from Waranga Basin to Lake Eppalock. The Goulburn-Campaspe Link Project or GC Link was completed in record time (13 months), comprising 46.5 km of 1050 m diameter, mild steel cement-lined pipeline, two 150 ML/d, 6 MW pumping stations, for a total capital cost of AUD98 million. GHD’s engineers, planners, environmental scientists, and project managers – including Doug Hammerton, Russell Hawken, Micheal Woods, Tony Llewellyn and Lisa Driscoll – pulled out all stops to come to the rescue of Bendigo and nearby towns with the first water flowing on 31 August 2007, just as the Lake Eppalock storage had fallen to the four percent ‘dead storage’ level.
In 2008, GHD was engaged to undertake work on a feasibility study to expand the Loy Yang mine output to some 53 Mt/a in order to meet prospective electricity supply demands. Three alternative mine plans were developed for a mine life up to the year 2070. The project considered the mine and dump drainage system, fire protection, roads, groundwater extraction, electricity distribution, surface drainage and other services. The study recommended widening the mine (increasing the operating face length), creating a second mine outlet, an additional overburden excavator, two new coal mining systems and a new stockpile. Paul Currie played a key in this engagement.

Following the disastrous 2009 Victorian bush fires, GHD’s ecologists were engaged by the Department of Sustainability and Environment to sample and assess the condition of large areas of native vegetation across the state. The data collected was vital to inform fire hazard mapping and to assist in the design of prescribed burning programs aimed at reducing bushfire risk.

From 2009 to 2014, Barwon Water formed an alliance with GHD and John Holland to deliver its capital works program of around AUD350 million in Geelong and the surrounding Barwon region. GHD’s team was led by Peter Meyer, and delivered around 140 projects including water supply, wastewater and recycled water systems.

In recognition of GHD’s contribution to infrastructure excellence, 20 industry awards were won by the company for regional projects carried out between 1988 and 2016.

Professional, community and social contribution

GHD’s contribution to the communities in which it operates, and to the professions represented by its people, have been far-reaching, ranging from professional client forums to breakfast seminars for disadvantaged young Melburnians. We have developed a reputation for thought leadership via our ongoing series of annual executive forums, the first of which was held in 1993. Forum speakers have included state government ministers, opposition leaders, government department heads, corporate CEOs, and professional society presidents.

GHD has long supported the Committee for Melbourne, both as a foundation level member and by in-kind contributions of intellectual input to the committee’s policy and project activities. The committee is an apolitical not-for-profit member network that unites a cross-section of Melbourne’s leaders and organisations to work together to enhance the city’s prosperity and liveability.

One example of GHD’s contribution to the Committee’s work was input provided by our engineers, planners and scientists to the “Melbourne Beyond 5 Million – Shaping Melbourne” report series between 2009 and 2011. GHD is also an active contributor to the Committee for Geelong and the Committee for Gippsland. A valuable contribution to GHD’s positioning in the Melbourne business community has been through the
Big End of Town engagement program, where GHD executives have been allocated a portfolio area in which they are required to be professionally active. GHD people have long contributed on a voluntary basis to professional associations and societies in the state. Such contributions have been made to Engineers Australia, Engineering Education Australia, Australian Water Association, Property Council of Australia, Consult Australia, Australian Institute of Land Developers, and the Urban Development Institute.

Linkages to local universities have been long-standing, and have included such roles as guest lecturing, student mentoring, industry advisory group membership, research support, innovation collaboration, the awarding of prizes and scholarships, and sponsorship.

The Gippsland Resources Infrastructure Development (GRID) group is an industry reference group comprising 13 private sector companies. The focus of the group is the development of an infrastructure solution in the Gippsland region to improve access to market for resources and other products. GHD provides pro-bono services, providing secretariat support to GRID and has been engaged to carry out technical studies scoped by the group.

GHD people are known for their support for community organisations and charitable projects in Victoria and globally. Recent examples from Victoria include providing support to Engineers Without Borders, Australian Volunteers Abroad, Guide Dogs Victoria, Indigenous Leadership Program, RedR Australia, Conservation Volunteers Australia, One Care Geelong, Disabled Wintersports Australia, Plan International, Fitzroy Library Tutoring Program, Movember, the Victorian Cancer Council, and Loud Shirt Day. Most of the input to these initiatives has been supported by our people at their own cost and in their own time, with GHD providing coordination and logistical support.
Joyce Darmanin is a living legend. Having worked for more than 36 years in our Melbourne office as executive assistant, there’s not much Joyce doesn’t know about our company, where we’ve come from, and where we’re headed.

Born in Melbourne of Maltese descent, Joyce traces her outlook on life and work to mum and dad (Rita and Emmanuel), who migrated to Australia from the Mediterranean in the mid-1950s. Like many migrants downunder from southern Europe, Emmanuel was the pathfinder, first finding work in the sugar cane fields of northern Queensland. With three siblings, Joyce remembers how her father – an unskilled migrant worker with little formal education – worked hard to improve his family’s lot.

"Mum and dad saw Australia as a land of opportunity, with the promise of success if you worked hard. Success was measured by owning a home, being without debt, getting food on the table, and the children having a good education. From a very modest start, dad and mum achieved all those things and more,” says Joyce.

Growing up in Melbourne’s north-western suburbs, she applied the lessons learned from her parents – kindness to others, diligence, and making the most of opportunities presented. By the time Joyce left school, higher education had to wait; uppermost was the need for paid employment. Twenty years later she would gain her diploma in administrative management, but her first job in 1977 was in banking – as a clerk and typist in the international department of the National Bank of Australia.

Three years later Joyce applied for her second job – with GHD. On Christmas Eve 1980 she attended the interview at the Melbourne office. After being offered the position of senior typist, when asked if she had any questions, Joyce asked if the company allowed maternity leave. “Ah, I’ve never been asked that before,” replied the male senior manager. “Put it this way, if you’re good, we would want you back.” Thankfully times have changed.
So began an illustrious GHD career – a path which has seen her provide support – with her hallmark good humour and generosity – to a couple of chairmen and managing directors. From meeting logistics to conference planning, from diary management to database construction, from creating client events to coordinating communications between operating centres around the world – Joyce has done it all. A sounding board and mentor for many of our people in Australia and beyond for more than three decades, she continues to play a unique and central role in the GHD story.

“I’m passionate about helping people, assisting them to do their job well,” says Joyce. “In my role I’ve been lucky enough to develop my skills, grow in confidence, and make the best of the opportunities that have come my way. If I can help others do the same, that’s great.

“I feel hugely privileged to have worked at GHD all these years. I particularly value my collaborative relationships with other executive and personal assistants. People often ask me why I’ve stayed so long, and my answer remains the same – the people here have always supported me – in my professional aspirations, and in my personal life. That’s what makes GHD such a great place to work.”
The early 1990s saw reforms in local government, reducing Tasmania’s 49 councils to 29. As a consequence the GHD practice changed; now the larger councils employed engineering staff and undertook more work in-house, but there was an upside: the councils had more income, enabling larger projects, which were increasingly awarded through tender procedures.
As the 1980s drew to a close, the historically steady Tasmanian practice was largely unmoved by the tumultuous events taking place outside the island state: the global stock exchange crash of 1987, the fall of the Berlin Wall, and in Australia, the sweeping reforms of the Hawke-Keating government.

David Skillington had been the Tasmanian Manager from 1969, with Don Cameron the Hobart Manager from 1970, and Ken Tabart the Launceston Manager from 1972. This was a stable team in a relatively stable environment, building on long-term client relationships and undertaking a variety of general engineering projects, mostly for state and local government infrastructure and planning, occasionally manufacturing, property and mining as well as some iconic projects.

David began with GHD in Sydney and at Mount Isa before heading to Tasmania and being seconded to Clarence Council, Hobart, our largest local government client. During his tenure, GHD in Hobart and Launceston provided engineering services for many of the significant engineering works carried out for state and local government clients. Notable projects undertaken include the Curries River and Craigborne Dams, the Meander Dam feasibility studies and the Margaret Street stormwater mitigation scheme. David continued the company’s active support of the learned society activities of the Institution of Engineers Australia, initially as Chairman of the Tasmanian Division, as a member of the Institution Council, culminating in his election as National President in 1987. David also provided leadership in the Association of Consulting Engineers Australia, (now Consult Australia) and later in the engineering member role on the Environmental Appeals Board. In 1988 he was appointed Officer in the General Division of the Order of Australia, in recognition of his service to engineering, before retiring in 1992.

Don Cameron was appointed Tasmania Manager mid-1992. Don began as a cadet engineer in Launceston, added a structural component by working with state government for two years, and became a generalist practicing in buildings and the water industry. He led
projects such as the Hobart Casino, Sheraton Hotel, Royal Hobart Hospital extensions and upgrades, Launceston police headquarters and numerous school projects. Don also developed a nationally recognised competency in water and wastewater treatment. Widely appreciated as a great mentor to GHD people and his peers, clients appreciated Don’s open approach, clinical assessments and pragmatic solutions, sometimes with the touch of innovative adventure – but always displaying the ‘art of the good practitioner’.

Ken Tabart joined GHD in Hobart in 1969. Transferring to Launceston in 1971, he became office manager in 1972. The northern Tasmanian team had a close relationship to local government and Ken was consultant engineer, town planner, architect and building surveyor to seven councils as required by the Local Government Act. There was a lot of work in the local government sector between 1970 and 2000, as the Tasmanian Government aspired to provide a sewerage scheme to all towns, then a treated water scheme, followed by environmental improvements to wastewater treatment plants to improve the quality of effluents entering receiving waters.

The early 1990s saw reforms in local government, reducing Tasmania’s 49 councils to 29. As a consequence the GHD practice changed, with larger councils employing engineering staff and undertaking more work in-house, but there was also an upside; the councils had more income, enabling larger projects, which were increasingly awarded through tender procedures.

New consultants in Tasmania meant greater competition. When Don Cameron became Tasmanian Manager, Scott Clennett took up the Hobart Office Manager job, bringing his strong structural and buildings background. Smaller work offerings and a larger pool of consultants presented Don with a dilemma and a solution. His friendship with Jack Smith enabled a merger in 1993 with Smith, Sale and Burbury (SSB), a smaller group with strong mining, industrial and buildings background. GHD’s offices in Hobart
and Launceston were stretched to accommodate extra people, while the addition of the SSB office in Devonport took GHD back to its pre-1970 period when it had a presence in the north-west part of the state.

Tim Burbury became Tasmanian Manager in 1994 on Don Cameron’s retirement. Tim, at the time of the SSB merger, was promoting a chairlift project from Hobart city to the top of Mount Wellington. It was ambitious and far-sighted, but also provoked a strong environmental protest. While the chairlift proposal was unsuccessful, it indicated a change in GHD’s Tasmanian practice; Tim led the cultural change towards a more entrepreneurial approach, from primary reliance on state and local government projects, to proactively winning other local and international work – but it also involved greater risk.

Ken Tabart relocated from Launceston to become Morwell Office Manager in 2002. Two years later, higher mainland land and housing costs were driving a Tasmanian property resurgence and the state’s economy was changing. David Kinniburgh from the Melbourne office moved to Hobart in early 2004 and became Operating Centre Manager. David was quick to seize the emerging situation and in his words, it was “a combination of opportunity, judgement, risk and luck”, which saw GHD’s numbers in Tasmania rise from about 50 to more than 170 people by 2008.

During this time, GHD won a long-term service agreement with the Department of Infrastructure and Energy Resources (DIER) for transport works, expanded the town planning and stakeholder solutions group to be the largest in Tasmania, developed an architectural group, expanded the fledgling environment group into a multidisciplinary team, facilitated mergers with Thompson and Brett (2005), Pacam (2006) and made other strategic staff appointments.

Alex Brownlie and Lucas McVey were appointed as managers for Launceston and Hobart respectively to manage this expansion phase, with Launceston growing from about 12 to 35 people and Hobart from some 35 to over 135. David’s contribution as driver and encourager for this rapid expansion reinforced GHD’s position as a leading Tasmanian consultant.

When David moved on to Sydney as Operations Manager in 2007, Lachlan Gibson stepped into his shoes. The business now had a large number of experienced practitioners distributed across its teams. But as GHD celebrated 70 years in the state storm clouds had gathered. The Global Financial Crisis’ (GFS) impact in early 2008 ended the Tasmanian economic boom. GHD in Tasmania now had to painfully readjust to changed circumstances.

During these tough times the business continued rebuilding with Alan Johnson and his team joining GHD in 2009, confirming Burnie as the location for the North West Coast office. Alan Johnson Design brought a significant depth of building services experience to the business. Rohan Koenig was appointed office manager in Burnie. For a number of years the working environment continued to be influenced by significantly reduced spending in both the private and public sectors in the wake of the GFC.
Healthy communities

Since first establishing operations in Tasmania, GHD has helped deliver community public health infrastructure, largely for non-metropolitan towns and local authorities. Until the 1990s, Hobart and Launceston had to suffer with water supply and sewerage schemes dating back to the late-1800s. Smaller towns generally had river water supply, sometimes chlorinated, to a reticulated system and septic tanks for sewerage treatment.

Long-term relationships, dating from before the establishment of GHD’s Tasmanian offices (Hobart in 1937 and Launceston in 1948), meant GHD engineers travelled the project journey with client councils, including providing ongoing advice through feasibility studies, and advocacy to state government and stakeholder meetings to argue for public health improvements. Councils had to assess the merits of such improvements, which were usually the largest capital investment decisions they had made. Typically, such improvement schemes took years before a final decision was made. Attending public meetings to explain the proposed scheme and its cost to a community was all part of the job. Some communities were sympathetic to improving public health and accepting the cost impost that came with it, while others objected strongly, resulting in rowdy situations with the GHD engineer sometimes being a prime target. A few wounded engineers would later reflect that such experiences were character-building.

GHD’s relationship with Tasmania’s Rivers and Water Supply Commission (RWSC) continued over many decades, with the company providing feasibility studies and design and construction phase services for a host of major projects. These included the Risdon Brook and Flagstaff Gully dams; the Bryn Estyn Water Treatment Plant in Hobart;
the West Tamar scheme, the Trevallyn Water Treatment Plant, the North Esk scheme, the Chimney Saddle Water Treatment plant in Launceston; and the Curries River dam. Other commissions from the RWSC include feasibility studies for a North West Coast scheme.

The projects represent innovation in water treatment processes specific to Tasmanian waters, such as the use of activated silica as a flocculant and field trials of multi-media filter materials to test direct filtration opportunities. All of these projects resulted in significant improvements to public health in Tasmania’s two largest cities with flow-on effects for the rest of the state.

GHD’s water treatment work was carried out under the iconic leadership of Alan Strom, David Skillington and Don Cameron, who in turn mentored many others. Initially, treated water was available in Hobart and in Launceston but few other towns. In the 1980s, spreading these benefits became a state priority. The North West Regional Water Scheme (NWRWS) which had been mooted for the previous 20 years became a reality, with six treatment plants, reservoirs and trunk mains. The design and construction of this scheme ran for some 10 years and was a career highlight for Don Cameron, GHD’s Project Manager. This project delivered treated water for the first time to communities along the North West Coast.

By the late 1980s, most towns had reticulated, chlorinated and fluoridated water supplies as well as reticulated sewerage schemes with at least secondary treatment. More than half of these schemes had been developed, designed and constructed by GHD.

In the 1990s environmental issues were emerging strongly, particularly for wastewater discharges to inland streams, with concerns from downstream town users and recreational interests as well as sustainability of the river health. Most plants already provided secondary treatment to meet the state standard for waste discharge, but now nutrient reduction, lowering nitrogen and phosphorous levels, or tertiary treatment, was required.

GHD’s long association with these wastewater treatment plants, together with our national and international knowledge provided an important level of comfort and confidence to our clients. Ken Trebilco, Ross Cumming and Mike Graver in Hobart, together with Ray Dodson and Ken Tabart, led this work, often attracting awards and industry recognition for such projects, which included upgrading Launceston City council plants – a decade long program, the Clarence Council long-term sewerage strategy along the eastern Hobart shore (resulting in the Rokeby plant), and a study which resulted in an upgraded Blackmans Bay plant.

Industries were now required to treat discharges to higher levels at significant cost, and sought to partner with councils to achieve solutions. Scottsdale food wastes and Longford abattoir wastes were examples of pioneering innovative solutions for economic sustainability and improved public health. Georgetown wastewater treatment plant, which opened in 1992, is an Australian-unique solution to mixing metalliferous industry
and town wastes. This project was awarded for achieving acceptable levels of discharge to the Tamar River. For more than 10 years GHD supervised the plant’s operation, trained operators and reported on its performance. During that time, the plant was adapted to accommodate fibre board wood waste as well.

Environmental regulations driving the disposal of solid waste in a healthy and environmentally sustainable way, caused councils to reconsider joint or regional operation for collection, recycling, large landfill operation and leachate control, together with the potential for future gas collection. GHD provided part or all of the cradle-to-grave services for the North West Regional Waste Authority, the southern Coping site and others. Industrial waste disposal was equally problematical and reduced the life of council landfill sites until innovative composting solutions made some industrial wastes attractive: another case of sustainability goals driving innovation.

The community health essentials of clean running water and sewerage attracted state attention during the 10-year drought from the late 1990s to the end of the 2000s. Water was a scarce resource due to the depletion of storages, the backlog of infrastructure and the need for demand management. The creation of three regional water authorities provided more funding for the planning of immediate and long-term strategies to secure supplies. GHD made significant contributions to Cradle Mountain Water (the North West Authority) using its national resources and also secured the sole provider role for engineering services to Ben Lomond Water (the Northern Authority). Significant projects during this period include the Cradle Mountain Sewerage Scheme, the Hoblers Bridge Wastewater Treatment Plant (WWTP), Margaret Street Detention Basin, Pardoe (Devonport) WWTP Upgrade, Latrobe WWTP Upgrade, and many other WWTPs and treated effluent reuse projects.
With the acquisitions of SSB (1993) and Egis (2002), the expanded GHD dominated services to councils and could be said to have provided most of the consultant-delivered essential services in Tasmania.

**Wealth for toil – harvesting resources**

With a population of about 500,000 and dependence on agriculture, mining, processing and tourism, Tasmania has a fluctuating economy depending on seasons, commodity prices and investment decisions often made from afar. Periodic economic injections since the 1960s to the present day have seen new irrigation schemes at Longford-Cressy, Richmond and Meander Valley, where GHD had significant roles including the design of roller-compacted concrete dams for the Coal and Meander River valleys. The subsequent more dependable water supply for crops has noticeably improved volume and quality for the local and export vegetable markets.

As a result, the food industry was able to introduce a range of new crops such as essential oils and truffles, as well as expanding the state’s award-winning cool-climate wine production. In the resources sector, investments have included new and upgraded mines for increased raw material production, downstream processing plants and tailings dam wall raisings.

GHD had a relatively small role in engineering for the West Coast mines until the acquisition of SSB in 1993. Thereafter GHD had a significant role in mining resources development in the state. The major boost to GHD’s involvement with the energy and resources sector came about in 2005 and 2006, with acquisitions of Thompson & Brett and Pacam – local consultants active in mine waste management and process engineering. Thompson & Brett’s acquisition returned David Brett and Brendan Boon to GHD. David had built up a significant client base in the mining water and environment area, with clients such as Copper Mines of Tasmania, Renison, Savage River, Beaconsfield Gold, Henty Gold, Hellyer Mine and Ballarat Goldfields, all of whom became clients of GHD.

This work was mainly associated with tailings dam design and construction, but also expanded into the broader field of mine waste management. A particular focus was the control and prevention of Acid and Metalliferous Drainage (AMD), which had been a major issue for several local mines including the Mount Lyell Mine at Queenstown.

The Mount Lyell moonscape is a well-known environmental impact of mining over the initial 100 years of operations, until the closure of Mount Lyell Mining and Railway Company in 1995. The new owners of the now Copper Mines of Tasmania have an operation that complies with modern environmental requirements. GHD engineered many of these initiatives, including the Princess Creek Tailings Dam, which ended the previous practice of tailings discharge directly to the Queen River.
Through David Brett’s work, GHD gained the respect of both the mining clients and the government regulators for its technically sound and practical approach in the waste management field. Subsequently GHD became a trusted advisor to both the Mount Lyell Rehabilitation Project and the Savage River Rehabilitation Project. The latter in particular had great success in repairing environmental damage caused by past mining practices. These skills enabled GHD to significantly expand its services to mining and irrigation within Tasmania, and as well as serving clients on the mainland and overseas, with projects in the Philippines, China, Africa and South America. David has continued to mentor the next generation of geotechnical and dam engineers with Rob Longey, Matt Daley and Ben Hanslow all making a significant impact in the industry.

Tasmania is well known for its seafood and in the late-1980s GHD designed the fish meal plant at Triabunna. It then assisted Salmon Enterprises of Tasmania (SALTAS) to develop its fish farms growing Atlantic Salmon and Sea Trout. An extended relationship with Tassal Tasmanian Salmon added engineering and related services contributions to this growing industry.

GHD’s contributions to downstream processing include wastewater and lightweight coated paper plant feasibility at the ANM-Boyer paper plant, along with extensive projects for Pasminco Metals EZ, later known as Zinifex (now Nyrstar), such as the research and documentation of their existing stormwater system, gas purification site works, and smelter upgrades. Forestry products contributions include services to Tasmanian Veneers, the Hampshire wood chip mill, and the Ta Ann log processing centre.

Roads to wealth

As an island state, Tasmania is dependent on good access to markets via its roads, airports and seaports. Light freight can be flown from its major centres at Hobart and Launceston,
with shipping from smaller ports at other centres and the Bass Strait Islands. However, most freight passes through its major seaports at Hobart, Launceston and Burnie.

The highway system – vital to Tasmania’s economy – is powered by four major routes which circle the state – Hobart to Launceston, Launceston to Burnie (and on to Smithton), Burnie to Queenstown, and Queenstown to Hobart. Secondary highways connect various tourist and industry or agricultural centres, some over challenging terrain. Until 1993, the state’s Department of Transport provided all road system services – investigation, feasibility, design, tendering or day labour construction, commissioning and ongoing maintenance. However, when the federal government halted the Gordon Below Franklin project, other road projects were introduced to compensate. GHD was awarded the Cradle Mountain to West Coast design over sensitive wilderness terrain. Eventually driven by a national initiative for improving efficiencies through compulsory competitive tendering, some services were offered to the private sector and GHD was awarded several projects.

In 1997, the Department of Infrastructure, Energy and Resources (DIER) put up for sale its design section to the private sector. GHD was not successful in its bid, however it continued to provide services to DIER, and in 2004 the company was appointed to the consultant panel which provided growth in the transport team to some 30 people.

The partnership element of this appointment has yielded benefits to both parties, with GHD people undertaking secondments to aid the delivery of capital works program within DIER. In 2009, Mike King returned from a five-year project management secondment to DIER to lead the civil infrastructure group in delivering roads projects. Panel membership has also delivered national and international knowledge sharing, joint training seminars and events, graduate placements, shared design teams, and system improvements.

The panel’s performance on 172 projects, 67 of which were delivered under budget, has received recognition from DIER. Credit is due to Mike King, Greg McGuire and Derek Pearce for this achievement over a long period of time.

During this time, GHD, led by Greg McGuire, was the designer of the Northern Section of the AUD124 million Brighton Bypass; initially for the road and bridge concepts, followed by an ‘early contractor involvement’. Kevin Bourne completed a further investigation and concept design was completed for a proposed Derwent River crossing at Bridgewater. This concept and study involved many additional service groups across GHD, including flora and fauna, stakeholder engagement, geotechnical, and planning. Significant challenges involved the land and environmental matters, and the impact on the adjacent historic Bridgewater bridge and causeway.

We have delivered other roads projects of significance including Perth to Breadalbane (one of Tasmania’s largest road projects in recent times), led by Kevin Bourne and
Chris Monty, and Tasman Ramps improvement and the Brooker Highway upgrade, with the involvement of Mike King and Grant Stewart.

Wider or ‘one GHD’ involvement has included Peter Selby Smith, and other Melbourne people, contributing expertise to bridge design, including restoration of the historic convict-built Red Bridge at Campbell Town, and an innovative solution for the Sorell causeway.

In 2014, DIER (now the Department of State Growth) appointed GHD to deliver Contract Administration Services on select roads projects. The roads team have now developed substantially, providing resources for major projects in other states and private sector clients including Hobart International Airport. Transport planning is a growing service within the Hobart office, with Erin Jackson, Tim Bickerstaff and Mathew Brooks, completing projects for the Department of State Growth, Hobart and Launceston City Council, and other regional centres.

**Capacity and prosperity through the built environment**

From its earliest days in Tasmania, GHD has contributed skills to creating the built environment, often providing solutions for the education, health and aged care sectors. The Royal Hobart Hospital has used GHD’s building services, as has the North West Private Hospital in Burnie, while schools across the state have benefitted from our civil, structural and building services.

Other projects include the redevelopment the Hobart Police Headquarters in a historic Georgian building, and refurbishing the Hasting Caves swimming pool, where a thermal spring enters through the natural rock bottom of the pool. The acquisition of Works Australia in 1995 provided architectural and building project management skills, which led to the refurbishment project of the 14-storey Commonwealth Centre in Hobart and redevelopment of No. 3 Warehouse on Hobart wharf for CSIRO laboratories.
The Sheraton waterfront hotel in 1988 (now Hotel Grand Chancellor) was the iconic Tasmanian project of its day and attracted attention when its proposed pink bricks were considered environmentally unacceptable and were replaced by decision of the state premier, creating a glut on the market of pink bricks. GHD provided engineering services for this project, rather than the bricks.

In the mid-1990s GHD pioneered the use of geothermal systems for air conditioning in aged care facilities and the Ansett and Westpac call centres in Launceston. The resulting reduction in running costs was attractive for 24/7 operations which could recoup the higher capital costs over three to five years. The same system was used for the Antarctic Adventure Centre in Salamanca Square in 1998. For these call centres all engineering services were delivered by GHD using the alliance delivery method due to completion constraints. Higher Education projects included the Hobart TAFE in 1994, as well as variety of work for the University of Tasmania and the Australian Maritime Colleges campuses in Launceston.

In 1999, the Hotel Grand Chancellor agreed with the state to relocate the Tasmanian Symphony Orchestra to a new concert hall as part of its upgraded conferencing and exhibition centre complex. GHD provided the project management and all engineering services for the 1100-seat hall that opened in 2001.

Aldersgate Village in Launceston is a 52-bed low and high aged care facility in Launceston for Uniting Aged Care. In Hobart the same group built Queenborough Rise with 72 beds and 30 apartments overlooking the Derwent River. GHD provided the project management to initiate both projects and provided engineering services.

With the global economy expanding in the early 2000s, David Kinniburgh, Operation Centre Manager for Tasmania, embraced the concept of an integrated architecture and engineering design group. In 2004, Launceston architect Eric Richardson was recruited to head the group. Major projects followed in health and education including the Launceston General Hospital site redevelopment master plan, and the upgrade and expansion of the North West Regional Hospital. GHD also provided services to the North West Health Services through designs and feasibility studies for groups including ambulance, mental health and integrated health care services.

The Building Education Revolution (BER) program following the GFC required accelerated project delivery for 10 schools ranging from Smithton in the north-west, to Richmond in the south-east. Other projects included the capital upgrade of the Silverdome (Launceston velodrome), redevelopment of the heritage-listed Albert Hall in Launceston, and a child and family centre for East Devonport. An unusual challenge involving many GHD skills, The Castle was a football field-sized demountable backdrop for a military tattoo at York Park, Launceston.
The breadth of experience and skills of GHD people in Tasmania has contributed to projects interstate and overseas, including the Cultural Village residential development in Doha, Qatar, where GHD provided urban design, planning, infrastructure and landscaping services.

**Planning sustainability**

The award-winning Dorset Sustainable Development Strategy and Planning Scheme, created in 1997, is an example of environmental and planning principles workshopped across the municipality to develop a grass-roots strategy on which to base the scheme. George Ward in GHD’s Melbourne office worked with Launceston colleagues to provide planning reports, amendments and general advice for more than 10 years.

In the 1980s, environmental services in Tasmania were initiated by Alan Sann and then John Wadsley, primarily for project statutory evaluation with a Development Proposal and Environmental Management Plan (DPEMP). Engineering projects required a DPEMP to apply for an environmental licence which was a condition of the planning approval. This type of work resulted in the growth of environmental services to clients.

Approvals required by our Japanese client in 1995 for a Medium Density Fibreboard (MDF) plant in Georgetown, included a DPEMP, planning approval, trade waste agreement for discharge and the federal Foreign Investment Review Board approval. These requirements were achieved in six months, which broke all known records at that time.

In the mid-1990s GHD needed a senior Tasmanian planner, and the Woolnorth Wind Farm project by Hydro Tasmania provided the answer. Alex Brownlie, an independent planner, was advising the Circular Head Council on the planning permit and GHD was advising the council on road asset management for 17 km of single-lane gravel public road to be used as the construction access. Road improvement became a planning condition which sparked considerable developer angst, much media coverage and a good deal of nervous energy. It was finally settled by the Deputy Premier in the council’s favour and cemented a good working relationship with Alex.

In 2001 Alex joined the Launceston office to head the planning practice. Market growth in 2005 fuelled additional appointments, with Anahita Jungalwalla heading the environment team and Frazer Read the planning group. In 2009 Sarah Fitzgerald joined to create the stakeholder engagement team. The AUD2.3 billion Bell Bay paper pulp mill proposal by Gunns attracted state and national media attention on the basis of two conflicting interpretations of the project; it was projected as either an economic driver or environmental disaster for Tasmania. Between 2004 and 2007, GHD provided services for the preparation of an initial integrated impact assessment for the project, which was proclaimed a project of state significance. As it progressed, GHD’s involvement grew to provide a wider suite of services, including social, environmental, economic, traffic and visual assessments, as well as engineering for supporting dam and pipeline infrastructure.
The relationship with Gunns deteriorated, partly due to differences relating to the environmental requirements of the controversial project. Gunns withdrew from Tasmania’s independent planning and development assessment process, the Resource Planning and Development Commission (RPDC), in March 2007, after RPDC panel members cited the mill design as “critically non-compliant”, at which point GHD’s services ceased and the project did not proceed.

Recent contributions to Tasmanian councils’ sustainability targets include retainer arrangements for in-house statutory planning services to West Coast, King Island, Waratah Wynyard, Circular Head, Dorset, Hobart, Glamorgan Spring Bay, Clarence, Glenorchy, Sorell and Kingborough; and a range of services for others. GHD has supplied heritage inventories for Burnie, Southern Midlands, and New Town, and conservation management plans for The Gorge and Albert Hall are benchmark contributions to sustainability. GHD and Huon Valley Council set a new standard for strategic planning in 2007, taking out two major awards for their work on the Huon Valley land use and development strategy.

More recent projects include the assessment of Heemskirk and Mussellroe wind farms for the West Coast and Dorset councils, the Tamar River Sedimentation Study (an evaluation of the environmental, economic and social costs/benefits of sediment removal), the Paranville and Craggy Ridge multidisciplinary and masterplanned projects (including architectural, environmental, planning and civil disciplines), masterplanning for the JAC Group; and the Social Housing Stimulus Independent Planning Assessment Role for Housing Tasmania and the Commonwealth.

**GHD in Tasmania today**

We continue to operate in a subdued business environment. Tourism and agriculture are the growing markets in Tasmania, however these have little direct impact on the services we provide. Our services rely heavily on investment in infrastructure by private, federal, state and local government clients. Property, roads, water, irrigation, dams and industrial clients form the mainstay of our current client base. These clients allow us to provide additional services in stakeholder engagement, environment, planning, structural, architecture, geotechnical and mining.

The current team is led by Rob Lowther who became Operating Centre Manager in December 2010. Rob, a mechanical engineer; moved from Brisbane, where he previously had management responsibilities for the oil and gas, mining and water groups.

GHD has much to look forward to in Tasmania. In 2017 we celebrated 80 years of continual operations in the state; the strength of our operations due to a long-term, stable workforce, with excellent technical skills and a deep understanding our clients’ business.
Appointed a trainee draftsman with the company at the age of 18, Greg’s contribution to GHD – from our Launceston office – spans more than three decades and the transformation of his craft.

He was born on the north west coast of Tasmania and like most families in this remote and richly fertile environment, the Scolyers’ livelihood depended on agriculture. Dad was a farm equipment mechanic, and when Greg and his two siblings were old enough to look after themselves, mum supplemented the household income by picking fruit and vegetables for commercial farms nearby.

Fascinated by technical drawing at high school, Greg went on to gain his Civil Engineering Diploma in Launceston before joining GHD in 1978. He was mentored by two of the company’s most legendary draftsmen – Kel Clark and Mike King – and his first years were spent honing his skills with drafting tools that date back to GHD’s incarnation – a drawing board, set square, and a fine ink pen.

An early adopter of the digital revolution in computer-aided design (CAD), Greg enrolled at a local college in 1990 to learn AutoCAD when the software was in its infancy. Proudly taking possession of his first PC a year later – with a whopping 40MB Hard Disk – Greg was one of the first GHD drafters to use CAD. Towards the end of the 1990s, he became a passionate advocate for greater recognition of drafting as a career within the company, and with the digital revolution bringing new capabilities for collaboration between GHD offices, Greg’s work as a pathfinder in this area was vital.

Ensuring consistency was key, and through Greg’s work which included authoring GHD’s first digital version of the company Drafting Manual, by the mid 2000s drafting staff were able to work on projects using a single drafting standard – irrespective of where the drawings were being produced.
In 2005 Greg was appointed Service Line Leader – Drafting, a role he held until 2012. In that capacity he trained a new generation of drafters in Australia, the Middle East and South East Asia. In 2013, as the company moved into North America, the Service Line Leader – Drafting position was split, but Greg remains an active senior advisor to the Design Documentation Service Line.

He says, “Drafting’s still my core passion. I still get such a kick out of seeing infrastructure being constructed from the drawings we produce. I’ve been very fortunate to have worked on so many major projects.”

In 2010, Greg and his wife Margaretha, “my best friend for 30 years”, and their two children, moved to Tasmania’s Tamar Valley. Famous as a cool-climate wine region, Greg designed and built a new home there and established a small vineyard. In 2015 he produced his first Pinot Noir vintage.
Chapter 13.

Sentiment in the marketplace suggested that the practice would not last 12 months. GHD proved the doubters wrong...
Prior to 1997, GHD had several forays into South Australia, principally on a project-by-project basis. One of Gordon Gutteridge’s first projects in 1928 was the design and documentation of the Glenelg Sewerage Treatment Plant, which continues to be a major element of wastewater treatment infrastructure in Adelaide today.

The plant was commissioned in 1932 and heralded GHD’s association with South Australia that now spans almost 90 years. A significant number of key projects over this period including:

- Council aquatic centers that remain in use to this day
- Waste management strategies
- Water and irrigation projects
- Alignment and corridor definition for the Noarlunga to Seaford rail extension. This early work formed the basis of the recent Seaford rail extension project
- Preliminary design of the tramline extension along King William Street and onto Tea Tree Gully. This project was subsequently delivered in a different form, as the O-Bahn guided busway
- Options study for improved pedestrian access to the Adelaide Railway Station

These projects were supported by project teams working in Adelaide on an as-needs basis.

In 1997, GHD’s South Australian practice as we know it today, was born through the company’s acquisition of the Australian Government’s Works Australia. Thirty people working in architecture, building engineering, civil engineering and airfield engineering became the foundation for the new practice which began to expand immediately. The
new office was located at 68 Grenfell Street in one of Adelaide's early multi-storey buildings, which was soon graced with GHD signage announcing our presence in the heart of the CBD. Located at the start of ‘consultants row’ (centred around Gawler Place), the premises had been the home of the Department of Works, a forerunner to Works Australia, in the 1960s.

Sentiment in the marketplace suggested that the practice would not last 12 months. GHD proved the doubters wrong in what many described as a tough, parochial, and highly competitive Adelaide market. It is notable that a number of major national and international consultancies had their roots in South Australia, growing by necessity into wider and more sustainable marketplaces beyond the state. That experience talks to the ambition, capability, determination, and possibly the need of these firms to find bigger markets.

**Laying the foundations 1997 - 2004**

GHD was not new to a number of the Works Australia people who were involved in the ACS-GHD-DBC Joint Venture that was formed in 1996 to pursue the Muara Naval Base Expansion Project in Brunei.

During this project, some Works Australia people worked on secondment in GHD’s Melbourne office and set the foundation for the strong relationship between the Melbourne and Adelaide offices.

In the early days, the Adelaide office operated as a division of GHD’s Melbourne practice, with management support from the executive team in Melbourne. Then Managing Director of GHD, Peter Manger and other principals, including Doug Hammerton, regularly visited Adelaide to guide the new practice in GHD’s methods and procedures.

The Works Australia business brought with it a strong forward order book and a small but dedicated client base, including the Australian Bureau of Meteorology, Australian Customs, the Department of Foreign Affairs and Trade, and the Department of Defence, reflecting a heritage of service to federal agencies.

The new Adelaide office flourished under the leadership of State Manager Sam Koukourou, a former General Manager in Works Australia, who set about establishing the identity of the new business by engaging in industry associations and introducing the business to a wide range of industry players in commerce and government.

Substantially a buildings-based practice, the team had strength in architecture, building services, structural engineering, civil engineering and project management. It also had specialist skills in aviation pavement, airfield lighting, security and communications engineering because of their long relationship with Defence Infrastructure as a client. The calibre of the personnel at the time is reflected by the fact that a number of the Adelaide-based people went on to hold service line leadership roles in GHD's global business.
Having long-standing anchor clients and projects enabled the practice to seek out new customers and project opportunities with confidence. In 1999, Sam Koukourou retired from the business and Phillip Biggs, who had transferred from GHD's Perth office as the Principal Structural Engineer, became the new Operating Centre Manager.

Organic growth, diversification and acquisitions saw the business more than triple in size in its first five years. This early period included the integration of four smaller consultancies into the Adelaide office, each lending character, skills and experience that contributed greatly to the strength and diversity of the business today.

In March 2000, Graham and Tasker, a structural and civil engineering consultancy brought new skills and a wider client base. Two years later, the merger with Egis Consulting (formerly CMPS&F) added 21 people to the Adelaide office, including a cross-section of civil, structural, building services engineering and environmental professionals.

In May 2004, Resource Development – a niche development firm with commercial architecture, project and construction management expertise, joined the Adelaide team. The practice continued to diversify acquiring the architectural practice of Drew Architects in July 2004 who specialised in aged care and health services.

Whilst some of the acquisitions were small in terms of staff numbers, each brought new skills, long-standing client relationships and valuable experience. During this time frame, GHD's base in South Australia diversified with more private clients and significant growth in services to local government.

A growing practice 2005 – 2008

In 2005, Phillip Biggs seized the opportunity to relocate to the Middle East to lead GHD’s growing practice in Dubai. David Luscombe, who had relocated from GHD’s Mackay office to Adelaide, became Operating Centre Manager. This new appointment coincided with emerging confidence and the ambition to further grow the business and establish GHD as one of the leading consulting practices in South Australia.

Diversification and growth of the shareholder base in South Australia at that time provided additional drive and empowerment to GHD’s people.

Reflecting GHD’s practice of delivering services locally, the Mount Gambier office opened in January 2006 to service what was known as the Green Triangle in southeastern South Australia and western Victoria – one of Australia’s major forest regions. The office provided environment, waste management, project management and municipal infrastructure design services at a regional level. Staff numbers in Mount Gambier peaked at seven people within 12 months of opening.
Key projects include:

- Blue Lake infrastructure upgrade
- Mount Gambier Library and Community Centre Redevelopment (structural and civil engineering)
- Restoration of historic Lake Condah
- Allendale wind farm development approval and environmental studies
- Redevelopment and expansion of Kraft Foods processing facility

As a result support of strengthening relationships and growth in project work with BHP Billiton, the Roxby Downs office opened in March 2007, providing services to the Olympic Dam mine and the broader community. Key projects included:

- Multipurpose building at St Barbara’s Parish School
- Olympic Dam primary water supply - pre-feasibility study
- Roxby Downs Civic Centre redevelopment – concept design

In June 2007, the architectural team further diversified with the acquisition of leading interior design firm Harben Design, which had a strong reputation in workplace, hospitality and retail design.

The same year GHD formed a strategic relationship with Connell Wagner (now Aurecon) and Woodhead International to pursue the Hardened and Networked Army Edinburgh
Defence Precinct (HNA EDP) project, which provided accommodation for a new Army Battle Group (7 RAR) as well as major redevelopment of RAAF Base Edinburgh.

The GHD-led team was successful in winning all design packages for the AUD623 million project – the largest Defence infrastructure design consultancy awarded up until that date. A hugely successful project, it was claimed to be an exemplar in Defence facility procurement by the client.

In January 2008, GHD commenced work on the Concentrate Leach Tanks and Thickeners Study for BHP Billiton at Olympic Dam. As the company’s largest single commission in the mining sector to date, this was a defining project for GHD in South Australia. It enabled the creation of a dedicated project team, which became the forerunner to Adelaide’s strong energy and resources team.

Our skills and expertise in environmentally sustainable design were further enhanced in January 2008 with the acquisition of TEQman, a highly-regarded local consultancy in sustainability.

With the Adelaide practice having outgrown the Da Costa building accommodation, and with the commercial focus of the city moving progressively southward, GHD relocated and took up naming rights for the former SGIC Building at 211 Victoria Square in March 2008.

The office was strategically located across the square from the Department of Premier and Cabinet in the State Administration Centre, and SA Water’s Headquarters. With the Department of Planning, Transport and Infrastructure’s Building Management
Authority occupying two levels within the GHD branded building, we had easy access to three of our key client groups.

The new accommodation had been refurbished to a 5-Star Green Star rating and the interior design team created a distinctive home that became a benchmark for new GHD offices across Australia. The bright and vibrant office space, with views across Victoria Square, promotes professional collaboration and provides a workspace that enables integrated project-based teams.

In April 2008, GHD was appointed to the five-year role as Owner’s Engineer by SA Water for the Adelaide Desalination Plant project. This provided a steady flow of stimulating and demanding work for a dedicated project team. Tasks included due diligence review during project development, preparation of the environmental impact statement, development approvals, water quality integration review, risk reviews and the review of groundwater monitoring for this major project.

Over the first ten years of the South Australian Operating Centre, a number of key people held technical leadership roles across the company, including:

- Architecture       David Pinnock
- Aviation      Van Tang
- Communications engineering    David Taddeo
- Intelligent transport systems Graham Ackers
Through the continuing development of our capabilities, the South Australian Operating Centre grew to employ 220 people and become one of the “big four” building and infrastructure consultancies in the state.

Consolidation 2009 – 2013

As the noughties reached their conclusion, the Adelaide office and regional South Australia offices were providing consulting services across all five GHD market sectors of water, energy and resources, environment, property and buildings and transportation. Our specialised aviation pavements and airfield lighting team had grown to become the world wide centre of excellence for these niche services within GHD, and was delivering projects across Australia and globally.

In April 2009, GHD was awarded the structural and civil engineering consultancy for the AUD150 million SA Aquatic and Leisure Centre, GP Plus Medical Centre and associated multilevel car park. This award-winning project was the first of such a scale, completed...
by the structural/civil engineering team and became the stepping stone for other significant projects.

The Global Financial Crisis severely affected the South Australian economy and lowered levels of investment in the state, resulting in staff numbers being reduced in December 2009. Despite the challenging economic times, exciting, large scale projects were still being procured, and in April 2010, GHD and subconsultants SMEC and IBT were appointed by the Urban Superway joint venture (John Holland and Leed) to undertake the design of the South Road Superway project at Regency Park. This AUD800 million, 5.5 km elevated roadway between Regency Road and the Port River Expressway provides direct access to Port Adelaide for heavy vehicle traffic, and removes congestion from around the Grand Junction Road-South Road intersection.

The Superway was the first inner urban section of South Road to be upgraded as part of the South Australian Government's vision for a non-stop north-south corridor. At the time it was the government’s largest single investment in transport infrastructure. The project was unique in the state, consisting of 3.5 km of balanced cantilevered, post-tensioned box structure and 2 km of at-grade roadway. The elevated road section encompasses high quality urban design features such as the decorative noise walls and is characterised by the long spans and iconic Y-shaped piers.

The project team won the following awards for engineering excellence and innovation:

- The Concrete Institute of Australia, State Award for Excellence - Engineering Projects category
- Engineers Australia, South Australian Award for Engineering Excellence in Project Infrastructure
• Consult Australia, South Australian and National Award for Excellence in Design Innovation

In August 2010, David Luscombe returned to Queensland and Tony Norrish, a GHD employee for more than 30 years standing, and with a specialist background in water engineering, moved from Melbourne to lead the South Australian Operating Centre. Tony brought a renewed focus on water engineering and GHD was successful in being appointed to the SA Water Engineering Panel, which in turn became the catalyst for the sustained growth of the water engineering team.

A renewed focus on local government clients commenced in January 2011 with the strategic recruitment of key people from the local government sector. This resulted in expansion of the traffic and civil engineering team and local government became a top five client for the operating centre.

The following two years were difficult times for the South Australian business as industry wide conditions continued to decline. In December 2012, the operating centre was reshaped to increase efficiencies by removing layers of management. Aligning with the demands of the market, the local team reduce to 120 people. These changes proved to be a turning point for the Operating Centre and underpinned strong performance in the years that followed.

After Tony Norrish returned to Melbourne in February 2013, Jim Giannopoulos headed in the opposite direction, relocating from the Victorian capital to take up the role of Operating Centre Manager. With 20 years of national and global consulting and management experience, Jim brought a strong focus on client relationships, client communication and “delivering on time and on budget”. In the same period, the Adelaide office continued its close relationship with Defence Infrastructure, securing three of the four design packages for the AUD1 billion, multi-base AIR 7000 project which provided facilities and airfield works at a number of sites across Australia to support the RAAF’s new fleet of maritime surveillance aircraft. The building packages were delivered in conjunction with our sub-consultants Woodhead International and SKM (now Jacobs).

In line with the streamlining of the business and challenging market conditions, the Mount Gambier office was closed in March 2013.

**Building for the future 2014-2016**

In April 2014, the renowned architecture, urban design and interiors team of Woodhead joined GHD. GHDWoodhead was subsequently established as the business name for GHD’s architectural design practice. Adelaide was the birthplace of Woodhead International, and the Adelaide studio had previously successfully collaborated with GHD on the HNA EDP and AIR 7000 projects, leading to a relatively seamless integration of the two teams. This was a significant milestone for the architectural business that provided new opportunities, thanks to the additional skills and client relationships.
When Jim Giannopoulos moved on to Brisbane to manage the South Queensland Operating Centre in July 2014, Van Tang, our first homegrown Operating Centre Manager was appointed. With an established local network of contacts and a passion for all things South Australian, Van’s appointment was a positive step for the South Australian Operating Centre.

After a long period of completing ad hoc projects at Olympic Dam, GHD was appointed to the BHP Billiton Engineering Services Panel for work at the site in February 2015. This appointment created numerous opportunities and a steady flow of work, despite the closure of the Roxby Downs office in December 2014.

In May 2015, the architectural team was engaged to prepare the development application for a high-rise residential development on one of Adelaide most prominent sites: One North Terrace. In November 2015, the team was engaged to prepare the development application for a hotel and apartment building in Pirie Street. The client aspired for this to be the tallest building in Adelaide. These were benchmark projects for GHDWoodhead in South Australia and provided us with the opportunity to demonstrate design flair and skills on a grand scale.

By December 2016, people numbers at the South Australian Operating Centre had increased to 140 and notwithstanding the competitive and constrained nature of the market, the office was well positioned for the future. With many of the original people who were instrumental in establishing GHD in South Australia moving into full or part time retirement, opportunities for a new generation of GHD leaders have been created. The torch has been passed to the next generation who will carry the business forward.
A diverse project portfolio

In addition to the larger, signature projects mentioned, the work of the South Australian Operating Centre is characterised by the delivery of a diverse range of smaller projects that have been stimulating, challenging and rewarding for our project teams. The projects – often in widely spread locations – benefit from the ‘One GHD’ network.

*Meteorological office, Willis Island, Queensland*

In 2000, GHD was appointed by the Bureau of Meteorology to provide professional consulting services for the design and delivery of a manned meteorological office on Willis Island. The island is 500 m long by 150 m wide, and located approximately 500 km east of Cairns in the Coral Sea. Home to large numbers of sea birds, it is also a nesting area for the green sea turtle. The development required a sustainable design solution that minimised environmental impacts, ongoing maintenance and on site construction, whilst being able to withstand cyclones. The project included the meteorological office, mess and dining area, accommodation, recreational area, stores, services infrastructure and associated meteorological equipment. The passive environmental design featured maximisation of natural lighting and ventilation whilst also minimising solar gain. Water is provided by a desalination plant and wastewater is treated and used for garden watering. The hybrid energy system integrates four sources of power generation including photovoltaic panels, wind turbine, battery pack and diesel powered backup generators.

In February 2011, category 5 Tropical Cyclone Yasi passed directly over Willis Island. Despite wind gusts of approximately 200 km/h, and storm surges that reshaped parts of the island and removed every blade of vegetation, the main building sustained only minor roof damage and sand blast damage to the wall cladding.
**Vientiane Chancery, Australian Embassy, Laos**

In 2005, the Department of Foreign Affairs and Trade commissioned GHD to provide all consulting services associated with the design, documentation, approvals and construction certification of the proposed Chancery on a 10,000 m² site in Vientiane, Laos. The main three-storey building provides office accommodation for government agencies, various associated amenities and a medical clinic. The expansive grounds include numerous outbuildings, sporting facilities and landscaped areas within a perimeter security fence.

GHD focused on understanding the local approval processes, building relationships with Lao utility providers, and identifying local construction materials and techniques. In addition to numerous meetings and visits to construction sites, the ingenious team also followed a concrete truck (that was spotted on the street) back to the batching plant to better understand the local availability of premixed concrete!

**Starlight Express, Women’s and Children’s Hospital, Adelaide**

The Starlight Express project at the Women’s and Children’s Hospital touched the hearts of everyone involved. It was a very rewarding project that was the catalyst for an ongoing relationship between GHD people and the Starlight Foundation, a not-for-profit organisation that seeks to improve the quality of life and the hospital experiences of chronically sick children and their families. The Starlight Express, designed by GHD in 2009, was conceived as an environment of escape – away from the rigours of hospital life by maintaining a sense of another world for young patients. The space is linked by an imaginary path which affords glimpses of other worlds as families meander along it. Patients have the choice of raucous play, using the latest technology in the gaming room,
or for quiet reflection and relaxation in the art room. The technical hub and broadcast centre allows teenagers to explore and talk with friends across the world. GHD continues to work with the Starlight Foundation to deliver Starlight Express facilities in hospitals across Australia.

**Five-Star Green Star accredited office, Mount Gambier, South Australia**

In collaboration with the external project architect, the buildings engineering and sustainability teams designed and delivered GHD’s first office building to receive 5-Star Green Star accreditation in 2009. The design was recognised with a Commendation from Engineers Australia (SA Division) in 2010. The engineering design features water-filled Trombe walls on the northern and western facades to capture heat, a thermal plant with a large thermal energy storage facility, and extensive waste and stormwater treatment. The end result is a sustainable two-storey office building that provides a healthy working environment with a proven power consumption 40 percent less than would be typically expected for this type of building, and with no stormwater discharge from the site.

**Airside works, Sydney International Airport**

As GHD’s centre of capability for airside pavement engineering and aeronautical ground lighting design, the Adelaide team has been involved in many challenging projects nationally and internationally. The demands of working airside at a busy international airport such as Sydney International Airport are many and varied, but have become routine for the team. Between 2010 and 2013, GHD provided consulting services for the airside works associated with the extension of Pier A at Terminal 2 and the expansion of Domestic Apron 6. The scope of services included grading and drainage design, flexible and rigid pavement design, lighting, security and upgrading of associated services and infrastructure.

**Michael Herbert Bridge, Glenelg, South Australia**

In 2010, the City of Holdfast Bay engaged GHD to design and manage the delivery of a new bridge to replace the original 115 m long structure that crossed the Patawalonga River but had become unserviceable. GHD provided all consulting services in conjunction with early contractor involvement and streamlined the delivery of the project to reduce the demands on the client. The project was delivered within very constrained program and budget requirements.

**Community Land Use Structure Plans, ‘West Coast’, South Australia**

Between 2010 and 2013, GHD worked closely with the Department of Premier and Cabinet, Aboriginal Affairs and Reconciliation Division, to prepare community land use structure plans for the remote indigenous communities of Koonibba, Yalata and Oak Valley on the far west coast of South Australia. The project developed a framework to ensure the alignment of future development with the needs and priorities of the communities, to guide future land use, and to assist in responding to funding programs. This involved a comprehensive baseline study to understand the existing infrastructure, land use and links to services.
Submarine power cable, Kangaroo Island, South Australia

and the broader economy. This was followed by significant community engagement with residents, service providers and decision-makers to understand community issues and aspirations for the future. The team was proud to have worked collaboratively with the client and the communities to develop a plan for the community, by the community.

Submarine power cable, Kangaroo Island, South Australia

At 4400 km², Kangaroo Island is the third largest island in Australia. Located 13 km off the mainland, south of Adelaide, the island has a permanent population of 4500 and is a major drawcard for national and international tourists. In 2013, recognizing that the submarine cable from the mainland that provides electricity to the island was reaching the end of its design life, SA Power Networks engaged GHD to prepare a specification to replace the cable, and to undertake the environmental assessments and documentation required to gain development approval and funding for the project.

GHD provided planning and project advice, managed development of the detailed technical specification, undertook the necessary environmental assessments, and prepared the development application and the stakeholder engagement plan. This included optimum route assessment and addressing environmental concerns, including managing the potential impact on the marine park as well as issues surrounding endangered species, and coastal and marine processes. The project was delivered in 2014 with extensive regard for environmental, social and economic constraints.
The Bend Motorsport Park, South Australia

In 2014, Peregrine Corporation engaged GHD to provide ongoing engineering consulting services for the proposed SA Motorsport Park at Tailem Bend. The state of the art, facility has been designed to the highest international motorsport standards to provide a range of race circuits for cars and motorbikes, a drag strip, drift circuit, rally circuit, 4WD circuit, kart circuit and VMax strip, in addition to accommodation and event venues, On The Run service stations, and an industrial precinct. Construction is now well underway and expected to be complete towards the end of 2017. It will be one of the longest permanent race circuits in the world, second only to Nurburgring in Germany.

GHD was engaged as a trusted adviser and design consultant on the project, including design of access roads and intersections with the adjacent highways, stormwater management plan, event traffic management plan, traffic impact assessment, pavement and geometry design for the range of race strips and circuits, operational management plan, tender assessment and general technical support for the design and approvals associated with the project.

GHD is now established as one of South Australia’s leading multidiscipline design consultancies and the consultant of choice for many clients.
Van Tang challenges many traditional senior engineer stereotypes. Mother of two, Van is a former Vietnamese refugee who travelled by boat to Australia when she was three-years-old. In 2014 she took over leadership of GHD’s South Australian office, comprising 150 engineers, architects and scientists, and she’s never looked back.

“Traditionally, it has been a male-dominated industry but I feel privileged that I’m part of its changing face,” says Van. “The industry has changed and is still changing, and I guess I’m an example of that.”

With the size of the South Australia practice shrinking after GHD restructured in 2012, it wasn’t the easiest time to arrive at the helm in Adelaide. For Van, the job was about ensuring the company was ready for the inevitable turnaround.

A graduate of Adelaide University with a double degree in engineering and arts, her rise in the company partly stems from a focus on aviation – since joining in 2006, having worked on major defence jobs and projects at both Sydney and Melbourne airports. Prior to GHD, Van was a consultant at Dare Sutton Clarke, working on transport projects including Adelaide’s Port River Expressway and North Terrace redevelopment.

Van’s story is one of the great Australian migrant narratives. Born in Ho Chi Minh City, she arrived in Adelaide in 1980 by boat with her father, Xuan a former officer in the South Vietnamese army. While mum, also of Chinese-Vietnamese heritage, was still in Vietnam, dad found work in Broken Hill and Van lived with her Australian family, headed by parents Thelma and Ron Sudlow.

Later, her original family was reunited Down Under and bought a house nearby. An unorthodox childhood saw her growing up between the two homes, engaging in and celebrating her Australian and Chinese-Vietnamese cultures. “I’m very much the product of nature and nurture,” she says. “In my Australian family I’m one of four kids and in my Chinese family I’m one of five.”
“My Chinese-Vietnamese parents were incredibly hard working. They tried so many different business ventures, as migrants do, so my work ethic comes from them. In terms of my career, my Australian father was a metallurgist and draftsman, and it’s my Australian family that have probably been more influential.”

When Van returned to Vietnam 16 years after leaving as a refugee, a visit to her ancestral home confirmed for her how the environment you’re in can affect an individual’s potential. It’s an observation that has formed the bedrock of her commitment to GHD’s diversity and inclusion group and its policy, which began being implemented in 2014.

“The policy isn’t just about gender equality, it’s about flexible work hours, cultural diversity,” she explains. “It’s about embracing that diversity in our business so we are capturing the best out of all of our people. If everyone’s given an opportunity, they can do great things”.
The Queensland Combined Emergency Services Academy project involved pioneering work in developing training props, which attracted worldwide interest with various international fire brigades visiting as the project developed.
A time of transition

GHD’s Queensland operations are characterised by our involvement in projects that span the decades and nowhere is this more evident than in the state’s south. In the late 1980s, the winds of generational change were blowing with the retirement of pioneers Bob Rivett and Norm Traves. Old hands, such as Ray Rose, Bob Lloyd, Bob Macintosh, Glen Truscott, Trevor Hazlewood, Jim Callum, John Ryan, Rob Harrap, Brian Forbes, Geoff Hacquoil and Charles Guesdon were still at the wheel, delivering multidisciplinary services to clients in the public and private sectors.

Key infrastructure projects from this time such as the Rockhampton Airport Development, Hale Street By-pass and finalisation of the Main Line Electrification were undertaken, but inevitably the recession of the early 1990s hit hard. Between 1990 and 1993, the number of people in the Brisbane office declined from around 150 to fewer than 70. The office had relocated from 87 Wickham Terrace to 15 Astor Terrace in 1985, leasing three floors of a building that had been engineered by GHD. By 1993, the business had largely consolidated onto two floors.

Fortunately, the Queensland Government saw the opportunity for counter-cyclical investment, and the Main Line Upgrade project provided much relief. Using the rail experience of Ray Rose and John Buckley, supported by structural engineer Ron Owen and project manager Ray Maxwell, the Townsville to Cairns section of main rail artery was awarded to GHD. The company rose to the challenge of designing upgraded track and bridgeworks in Australia’s wettest tropical environment, complicated further by extreme and complex geotechnical conditions.

Difficult economic times meant belts had to be tightened. The network of one-person regional offices, from Bundaberg to the Gold Coast, was disbanded and operations centralised in Brisbane.
With the recession driving micro-economic strategic thinking at the state and federal levels, reforms in government procurement were rapidly freeing the market to competition in Queensland as elsewhere. GHD responded, targeting the liberalised sectors. Nick Apostolidis transferred to Brisbane in 1991 and revitalised our water and wastewater services into the new dynamic deregulated environment. For the previous 50 years, the same consultants had dominated local governments in the sector. GHD had benefited from this in some parts of the state, especially in north Queensland, but in south Queensland our market penetration was more limited. The changes in the market, combined with the dedication of our people, allowed the company to progressively expand in this area over the following years.

In 1992, Defence projects appeared on the radar with GHD winning contracts for the new Royal Australian Air Force (RAAF) base at Scherger and redevelopment projects at Oakey Army Aviation Centre, Gallipoli Barracks at Enoggera along with a host of other military bases in south Queensland. All are vital examples of how GHD thrived in liberalised market conditions.

Ultimately, the RAAF Scherger project on Cape York extended over nearly a decade. Part of a major long-term Defence project to provide additional northern air force capability, RAAF Scherger complements facilities at Curtin, Tindal, Darwin and Townsville, and was designed as a “bare base” by Works Australia, which was later to merge with GHD. The project included teams from Cairns and Canberra offices, with Ken White managing the project in Brisbane with oversight from Henry Adcock. Construction of the base by the Army commenced in 1993, with Dale Lorraway spending the dry season on site over several years. Construction necessarily stopped during the wet season. The project included a runway suitable for the largest aircraft, taxiways, aprons, ordnance facilities
and associated assets. Challenges included establishing an appropriate water supply, and sourcing the necessary pavement materials for construction in a difficult and poorly-accessible environment.

From 1994, market conditions began to improve, albeit slowly. Part of the market liberalisation included the ongoing downsizing of government departments and a trend towards greater outsourcing. While this had been commonplace in some sectors, such as main roads, other areas were slower to change. Ray Rose retired in 1995 with Des Whybird becoming manager, reporting to Henry Adcock.

**Building better schools**

In the mid-1990s the Department of Education in Queensland launched a five-year program to make improvements to primary schools across the state, so that each school could be brought up to a minimum standard. Considerations included the number of classrooms available versus the number of students, the availability of suitable ‘wet areas’ for learning activities, and the provision of shade in open play areas.

GHD was engaged by the department to manage the project, which required building professionals to be deployed to assess every primary school across Queensland, and then manage upgrades (by the government's construction arm, QBuild, and subsequently by private constructors) to scores of primary schools that were found to be in need. The schools were spread across the whole state, and a geographically diverse team was assembled. Initially led by Mike Rodd (then based in Brisbane), the team included John Baird, Brendan Madders, John Szczepanski, Anne Lavers, Brendan Sowry and Don Boynton.
It was the first project that GHD had undertaken that used a centralised electronic database to provide regular reporting and manage progress. A database was established using Lotus Notes and each team member was issued with a laptop computer, technology that was only just coming into common use at that time. After each school visit, details were entered on the laptop and then ‘replicated’ to the central server using a dial-up modem. The client was able to monitor the progress of the team and of the upgrade program as a whole on a daily basis. This innovative approach earned much kudos from the client.

Works Australia joined GHD in 1997 as part of the Commonwealth Government’s outsourcing strategy. Previously part of the Department of Administrative Services, Works Australia had been responsible for designing of a wide variety of federal facilities, ranging from airports (such as the new Brisbane Airport opened in 1988) through to Federal Court buildings and facilities for the government-owned Telecom Australia (now Telstra). GHD’s South Queensland team had also worked with Works Australia on RAAF Scherger. Led by Rob Knott in Brisbane, the team brought together a range of talent that reinvigorated the building services group, as well as adding architectural services, and confirmed our leadership in serving key clients such as Defence.

The Whyte Island project

In 1997, the Queensland Fire and Rescue Authority (QFRA) sought to establish a world-class training facility near Caltex’s oil refinery at Whyte Island on the mouth of the Brisbane River. The Queensland Fire and Rescue Academy, as it was then known, was officially opened in 2001 and is now known as the Queensland Combined Emergency Services Academy (QCESA).
Traditionally consulting services for the QFRA were provided by the Public Works Department through its consultancy arm, Project Services. By 1997 however, private consultancies were allowed to tender for works, competing with Project Services. Having outgrown its small existing training area, QFRA undertook a study to identify a new site and, after considering international best practice, identified near the Caltex refinery. The initial brief for the facility included Road Accident Rescue training (RAR), Urban Search And Rescue training (USAR), live fire training for various scenarios (props for aircraft, ships, chemical spills, as well as multi-storey buildings), lecture rooms and associated facilities for classroom training, and potential trainee accommodation.

GHD was engaged for project management, design and construction phase services alongside Project Services with John Baird and Satyajit Datar leading the project. We had some limited experience with minor fire training facilities in other states but drew extensively on our track record in complex industrial projects for the Department of Defence. The team also derived a distinct advantage from the recent acquisition of Works Australia: for the first time GHD was able to provide architectural services in-house rather than relying on sub-consultants. Capability was also added in delivering comprehensive services for government projects.

John Wachsner, Senior Architect, played a major role in the design of the training academy building along with architectural drafters Lyndon Clem and Clay Hickling who were very experienced in detailing and documentation for government buildings. For the first time, GHD used 3D architectural modelling and rendering, largely pioneered by Clay Hickling on this project. This was found to be extremely useful in ‘walking’ users through each facility, to help ensure GHD was interpreting their requirements into a world-class training facility. A full feature ‘walk through’ animation was produced to demonstrate the facility to the steering group and ultimately for seeking final approval from the commissioner.

The project involved pioneering work in developing training props. For example, QFRA employees had been experimenting with used shipping containers to provide robust and low-cost training simulations for situations such as ship fires. Clay Hickling did much of the modelling to show how the containers could be used to form various props and live fire experiments were carried out to prove concepts. This was an exciting time for the team to be part of the development of these new types of training aids, which attracted worldwide interest with various international fire brigades visiting as the project developed.

It is hardly surprising that a close relationship developed with the client as user requirements were identified and refined, and experiments were conducted to find the best training aids. In the early days, ideas were often incubated and discussed over lunch at the Port of Brisbane restaurant or at the Waterloo Hotel in Wynnum. John Baird, with independent advisor Mike Clancy and client representative Allan Musk were the usual culprits, but other team members joined in from time to time.
It was here that strategies were developed to seek approval and flesh out business cases for ground-breaking training scenarios and props. An example of this was the USAR area, which was basically an ‘engineered’ rubble mess that simulated a collapsed building, but allowed a safe and monitored training environment. The same applied for the RAR site, which represented the site of a major traffic accident and allowed for full incident command training. GHD people also had the opportunity to trial the facilities, with several donning fire-fighting suits to experience what it had to offer. GHD’s original commission continued until the facility opened in 2001, but the company has continued to provide a wide range of services on the site ever since.

**Growth and relocation**

By the turn of the century, more office space was needed. GHD had grown to occupy most of 15 Astor Terrace: five floors plus part of the ground floor. With the lease expiring in mid-2002, Charles Guesdon was tasked with finding a new lease for the office. A newly refurbished space at 201 Charlotte Street was identified and four larger floors were leased, sufficient to accommodate around 300 people. The lease included neon GHD logo signage on the top of the 14-storey building, which did not go unnoticed by past principals (“Cor blimey - look at that!”). It was a defining period for GHD. The company had been based at Spring Hill since its first office was established on Gregory Terrace in 1937, and it was now moving to the CBD for the first time. In some ways, it was reflective of the growth of consulting firms as significant businesses in the region’s economy.

On the eve of relocation in 2002, GHD’s merger with Egis was announced. As 200 Egis people came on board, South Queensland became the largest operating centre in GHD with some 450 people. Relocation plans were rapidly reformulated, and the two teams integrated across two locations: the new office in Charlotte Street and Egis offices in Eagle Street. Apart from a relatively short period in 2003-04 following the lease of two additional floors at Charlotte Street, the Brisbane office would be spread across multiple buildings until its consolidation into 145 Ann Street in late 2012.

Pat O’Dwyer became the new leader of South Queensland in 2003, succeeding Des Whybird following his appointment as General Manager for Australia. A time of rapid growth in the business ensued as the Queensland economy grew, with major expansion in mining, infrastructure and later coal seam gas development. Apart from a relatively small blip following the global economic challenges in 2009, the business continued to grow to a peak of some 1000 people in 2011. John Baird took over as the manager for South Queensland in 2006 and was later succeeded by Warren Traves in 2010 and Jim Giannopoulos in 2014.

This was undoubtedly a golden era in the consulting business. The growth of the late 1990s and the early 2000s only seemed to accelerate, to the point where the major concern of businesses such as GHD was finding enough of the right people to do the
work that was available. Many jobs were awarded by clients on a single-source basis without competition, and some projects were declined on the basis that the company had insufficient resources available to deliver them. The robust jobs market also led to some rapid increases in salaries, especially in the mining and coal seam gas sectors.

Roads and transportation

In addition to strong skills in the oil and gas industry, the merger with Egis considerably bolstered GHD’s capacity in roads. Egis had an established contract administration and construction management team, led by Ken Casley and Andrew King. This was a highly respected outfit who had been battle-hardened on the major Pacific Motorway upgrade delivered by the Department of Main Roads between 1998 and 2001.

In mid-2000, Egis had been appointed to be the project manager on the Bruce Highway Duplication between Yandina and Cooroy, and it was during this commission that the merger took place, beginning our ongoing involvement with the southern parts of the Bruce Highway.

The Yandina to Cooroy upgrade was completed in 2003, and GHD’s role in the project was acknowledged with three significant awards, including a high commendation for project management from Engineers Australia. The excellent work of the team helped develop a trusted client relationship with the department and led to over a decade of similar major commissions on the Bruce Highway that included ‘six-laning’ between Boundary Rd to Uhlmann Road (2005-2007), ‘six-laning’ from Uhlmann Rd to Bribie Island Rd (2007-2009), and the Cooroy to Curra upgrade sections A, B and C (2009-2018). Andrew King was GHD’s nominated superintendent on each of these commissions up to 2015.

The business of building roads occasionally took some interesting twists. On one occasion, the environmental sciences team was investigating the proposed route of a road diversion north of Cooroy. While looking for endangered species, the team stumbled across a far from endangered crop of marijuana, which was clearly being cultivated. Given the well-established nature of the crop, the team made a hasty retreat and reported the matter to the local police.

Egis also had a strong presence in undertaking road construction on the Gold Coast. When the merger occurred in 2002, Mike Bryett was managing the Surfers Paradise Traffic Management Scheme on behalf of Gold Coast City Council, which coincidentally had been designed by GHD. Mike would subsequently go on to run a very successful contract administration business on the Gold Coast, including a range of road upgrades including work on the Nerang-Broadbeach Road, Gooding Drive, and Hope Island Road, and a range of widening and interchange projects on the Pacific Motorway south of Nerang.
The design side of GHD’s roads practice also blossomed. Building on previous work, such as the Gateway Motorway Extension (between the Pacific Motorway and the Logan Motorway) completed in the late 1990s, major design projects included the Port of Brisbane Motorway extension, detailed design of Cooroy to Curra Section A on the Bruce Highway, and the Legacy Way project. GHD was part of the Horizon Alliance, which delivered an extension of the Centenary Motorway from the Ipswich Motorway to the Logan Motorway, and included an extension of Brisbane’s suburban rail system from Darra to Richlands. Martin Peelgrane, who had joined GHD with Egis, led many of these projects and was instrumental in their success.

Legacy Way, a landmark project for GHD, commenced in 2010 and the company formed part of a design alliance with two other consultants, Cardno and URS. Legacy Way was the third major tunnel project to be constructed in Brisbane, following the Clem 7 tunnel (under the Brisbane River) and the Airport Link project. Legacy Way included two 4.6 km tunnels, each with two lanes. Extensive modifications to the roads at ends of the connector were also designed for the Western Freeway and Inner City Bypass.

Tunnels are complex pieces of infrastructure. Apart from the tunnelling, led by Matt Norbert, our teams played a key role in the electrical design (including several underground substations and hundreds of kilometres of wiring), geotechnical design of some major cuts along the Western Freeway, and design of the road widening. The tunnel opened to traffic in 2015.

The breakthrough of the second tunnel provided some good entertainment at the time. Hundreds of workers and guests were assembled at the eastern portal of the tunnel ready for the breakthrough, with dignitaries in prime viewing position at the front. Sprayed
concrete had been carefully placed over the breakthrough location to help prevent any loose rock from falling into the ponded water in front of the breakthrough. But the structural integrity of the concrete had been underestimated. The face fell almost as one piece into the water, generating a massive splash as the tunnelling machine penetrated the portal. The crowd was safely distant to avoid any physical injury, but the assembled dignitaries were thoroughly soaked - much to the amusement of the workers who were standing in less prime positions.

Environmental services

One of the most significant changes to GHD over the last 25 years has been the growth of the environmental business. This has reflected significant changes in community expectations for improved environmental management and protection, and the corresponding changes in legislation. In 1990, GHD had no full-time environmental professionals, with environmental work largely undertaken by civil engineers with a few specialised sub-consultants. Today there are around 100 environmental professionals in the South Queensland Operating Centre, with myriad skills ranging from project management of major impact assessments, to flora and fauna identification and management.

Broadly, the environmental business can be divided into two parts: minimising environmental harm of new projects, and cleaning up the harm that has already been done – colloquially known as “green” and “brown” environmental work. There is a tendency for professionals to specialise in one or the other.

Early assessment work in south Queensland was spearheaded by Bryce Skarratt, who was appointed by Nick Apostolidis to grow GHD’s workload in this area. Initially, this tended to focus on dam and weir infrastructure, and included environmental impact assessments for the raising of Awoonga Dam near Gladstone, and a new weir on the Condamine River. The focus shifted later to the impacts arising from wastewater management and treatment, including projects such as the Noosa Overflow Abatement Project, which considered a holistic approach to sewer flow management.

A project to prepare and implement an impact monitoring program for the Great Barrier Reef Marine Park Authority (detailing water quality impacts from dredging at the Nelly Bay Harbour development on Magnetic Island) reflects the highs and lows of such marine work. The project was led by Riku Koskela and extensively involved his brother Tom as well as Angus Fraser. It involved daily water quality monitoring through scuba diving on sensitive marine habitats including parts of a federal marine park. At times, this was one of the most desirable jobs in GHD, spending the day in a boat on the waters off Magnetic Island, with the occasional dive and often a fishing line in the water. Such idyllic conditions were quickly forgotten though when the wind and the waves picked up. Unlike recreational boating, it was not possible to pick and choose acceptable weather. There were also some less obvious safety issues. On one occasion, a diver ended up with an extremely venomous Irukandji jellyfish wedged at
the back of his neck under the wetsuit. On another occasion, one of the team – despite following the accepted rules – developed a case of the bends, necessitating three days in a decompression chamber in Townsville and a train ride back to Brisbane.

In the early 1990s, site remediation work in south Queensland was spearheaded by Paul Morris under the stewardship of Nick Apostolidis. Early projects included a Telstra site at Bundamba, and the closures of a soft-drink plant and a brewery at New Farm. Contamination had not necessarily arisen as a result of the most recent use of the site and, in some cases, the owners were remediating the actions of others decades before. More recently, Stephen Trainor and Jason Scott led the GHD’s involvement in the remediation of the gasworks site at Newstead for a major urban redevelopment. The company has had a steady flow of site remediation projects over the last decade and is a leading consultant in this field today.

Oil and gas

GHD’s capability in oil and gas was established with the acquisition of Integrated Pipeline Services (IPS) in late 1999. IPS, led by Paul Bilston, was a boutique gas pipeline design company, and at the time of the acquisition, was completing the Wide Bay gas pipeline. The team continued to work on a range of pipeline projects and our capability was further enhanced through the merger with Egis in 2002.

Several significant projects ensued. These include the North Queensland Gas Pipeline (NQGP), led by Jim Thompson, delivered as an alliance with the client, Enertrade, and constructor Thiess NACAP. NQGP was highly successful, delivered on time and to budget without a single contractual letter being written. Other major projects included the Colongra Lateral – led by Tony Mills – the first 42-inch diameter on-shore gas pipeline in Australia, and the Patricia Baleen project near Orbost in Victoria – led by John Eijbergen and Steve Liddell – which was (and probably still is) the highest-pressure on-shore gas pipeline in Australia at a pressure of 19 MPa. The team also completed the Mereenie compression station – led by Tony Fitzgerald and Malcolm Rushin – and the Jackson-Moomba pipeline for Santos, again led by Tony.

Around 2007, there was a substantial shift in the industry dynamic with the announcement of several major Coal Seam Gas (CSG) developments in Queensland. Although CSG had been used for many years on a small scale for domestic applications, new technology and rising demand meant that the conversion of CSG to Liquefied Natural Gas (LNG) became viable. Three major CSG to LNG plants were constructed on Curtis Island at Gladstone, fed by gas collection fields across south-western Queensland and particularly around areas like Chinchilla and Roma. The new CSG projects led to a massive increase in demand for skills in the gas discipline, and the state was inundated with new players in the gas consulting market.
GHD continued to provide a wide range of services in the market. Significant projects included the Front End Engineering Design (FEED) for the Santos-GLNG 42-inch diameter trunk pipeline, an owner's engineer role for the Queensland Curtis Liquefied Natural Gas (QCLNG) 42-inch diameter trunk pipeline (both led by John Eijbergen), and a five-year engagement with Fluor to support the development of the upstream gathering systems of the Santos-GLNG project, led by Tony Fitzgerald, Theresa Weatherill and Peter Barnett.

The gas market was badly affected by the significant drop in oil prices in late 2014. Over a few months, the international price of oil halved to around USD50 per barrel. Gas contracts for the CSG projects were linked to oil price and, as a consequence, the proponents moved to minimise their expenditure on ongoing work, at a time when tens of billions of dollars in capital investment were also coming to a close. This led to difficult times in the industry and a number of the multinational players moved away. It is yet to be seen what outcomes will be realised for GHD, but with an eye on the long-term, whatever opportunities arise from the somewhat traumatic conditions in the industry will be seized.

**Brisbane City Hall**

One of the landmark building projects, which in some ways was a coming of age for our architectural services, was the refurbishment of the Brisbane City Hall. Working with Tanner Kibble Denton Architects from Sydney, the GHD team worked tirelessly between 2009 and 2013 on bringing Brisbane’s grand old lady back to life. Over many years the building had been modified, repurposed, and included a childcare centre in some of the upper floors, which no longer complied with fire regulations. The Tanner GHD team was tasked to bring the building back to its original condition, while also meet modern standards and to incorporate major new catering facilities.
Services, including lighting, air conditioning, plumbing, were provided and fire systems were renewed. The strengthening of the superstructure and the auditorium floor, to allow for increased stability and rigidity, involved removing the floor and excavating seven metres below. Here, a new commercial kitchen and air-system infrastructure have been installed. The excavation revealed some original stone blockwork drains which have been preserved.

The project also saw the reinstatement of one of Brisbane’s much-loved icons, the Shingle Inn. The interior of the Shingle Inn in Edward Street had been heritage-listed, but as a result of a legal loophole, the developers of the property were able to demolish the original cafe. It was carefully dismantled and stored in a warehouse before ultimately being reconstructed in the City Hall.

**Western Corridor Recycled Water project**

The Western Corridor Recycled Water project was a major endeavour in the late 2000s. Begun in 2006, the GHD team worked on this AUD2.5 billion recycled water infrastructure project until 2010. The company had several roles on the project as part of the Eastern and Western Pipeline Alliances and in the owner’s team. Our multidisciplinary skills came to the fore in assisting the owner with engineering, environmental management, land access and acquisition, and a range of related activities. In terms of fees, the project remains one of GHD’s largest ever.

The project was unique in many ways. Firstly, it formed part of a drought mitigation program responding to a low rainfall in South East Queensland that lasted from 2000 to around 2008. This meant that the project was on a strict timeframe embodied in legislation. Secondly, it involved large-scale processing of secondary treated wastewater effluent to produce more than 200 ML per day of drinking quality water. This was
described by some as a “process engineer’s dream”, including multiple advanced treatment processes to achieve high water quality.

While the project was highly successful in that it was delivered on time and reliably produced water to better than drinking water standard, it was overshadowed by political tension around the use of recycled water for drinking. “Toilet to tap” was the front-page headline in Brisbane’s Courier Mail when the project was announced, and this set the scene for the following years. Ultimately, as the drought broke and dams refilled, the government formed the view that recycled water would not be needed for potable use in the near future, and removed this from the political agenda. Sadly, the project was mothballed, but in time if it becomes needed, GHD will be ready to help recommission it.

As can be imagined, hundreds of our people were involved in the project. Key managers included Jim Thompson and Craig Berry on the pipeline alliances, and Warren Traves, Claire Gronow, Stuart Galway and David Solley on the owner’s team. All are rightly proud of what was achieved.

**Floods and cyclones**

In late 2010 and early 2011, Queensland was badly affected by heavy rainfall. Many parts of the state were flooded, including Brisbane, which experienced one of the worst floods in its history. As happens where there are significant floods, river hydrology and hydraulics came to feature as headline news, which on one occasion included Ross Fryar, one of GHD’s surface water specialists, appearing on breakfast television.

The events of the 2010 summer were followed by Cyclone Oswald in 2013, which crossed the coast in north Queensland and tracked south into New South Wales. By that stage, it was downgraded to a rain depression, but nevertheless brought near-cyclonic
conditions to much of Queensland. One of the worst affected cities was Bundaberg, home to around 70,000 people on the lower reaches of the Burnett River. The city experienced what was later determined to have been a 1 in 200 year flood. GHD played an important real time role in the management of flood impacts, providing key inputs to the emergency response. GHD had been previously engaged to prepare a flood model for the Burnett River. Ben Regan, in our Brisbane office, had been intimately involved in developing the flood model and our work on the project was largely complete when the flood hit. While the community was alert to the potential for a flood, nobody expected the rain depression moving down the coast would effectively stop over the Burnett River catchment. This led to much more significant flows than had been experienced elsewhere along the coast. On realising what was happening, our client, Bundaberg Regional Council, urgently contacted Ben to help in predicting flood levels in the city on a real time basis. Epitomising the engineering profession’s commitment to public safety, Ben worked tirelessly over the next two days modelling and remodelling flows in the river, progressively updating the model to reflect new flow readings from the upstream Paradise Dam to forecast flood conditions in the city. The predictions led to forced evacuations – particularly in North Bundaberg – that the locals found incredible. The modelling was vindicated however when the city unfortunately experienced the worst flood in its history. GHD’s work had enabled the client and emergency services to properly prepare for a severe flood that no one had imagined only 48 hours earlier.

Returning to the regions

The 1990s began with difficult business conditions, but following that time, the South Queensland business grew, peaking in size in 2011 with around 1000 people. Our regional network was strengthened with the business of John and Jeff Leddy and
Rob Sergiacomi joining in 2006, providing new offices at Bundaberg and Hervey Bay, and strengthening our team on the Sunshine Coast. New offices were established in Ipswich, Gladstone and Toowoomba. The Gold Coast office, re-established via the acquisition of Egis, was diversified to build on its strong road construction services base and saw GHD return to the area following the Southport office closure in the early 1990s.

To some extent, regionalisation was facilitated by the significant funds allocated through the Natural Disaster Relief and Recovery Arrangements (NDRRA) following the floods and cyclones of 2011 and 2013, which involved extensive road reconstruction works across regional Queensland and where GHD excelled in providing planning and supervisory services to local government. Moreover, regionalisation reflected GHD’s ongoing commitment to serving clients locally and helped strengthen the company’s involvement in local government across the region.

Onwards

In April 2012, two significant events coincided: the election of a new conservative state government and a steep decline in coal prices. This meant a steady reduction in community infrastructure investment over nearly two years to help manage state debt. There was a concurrent and much steeper decline in activity in the mining sector, with numerous jobs cancelled seemingly overnight.

The subsequent few years saw a decline in staff numbers, largely back to the levels of 2002 after the merger with Egis. It was necessary to close the office in Ipswich, which had struggled because of its proximity to Brisbane, although other regional offices had prospered. Despite the reduction in numbers, GHD’s South Queensland Operating Centre, driven by a diversity of skills across its regional network, remained strong and well-positioned for a return to stronger market conditions.

Through 2015 and 2016, the conditions stabilised, and there was considerable evidence of market recovery. This is particularly reflected in investment in road and transport projects, which have seen a resurgence across Australia. The office has also seen significant growth in energy and mining projects as well as positive impacts from the expansion of our service offerings arising from the addition of the team from Woodhead Architects and the launch of the GHD Advisory brand.

Over this time, the company has remained committed to its underlying values and the fundamental principle of delivering high quality service, and building on our internal networks to maximise the value we deliver to our clients and shareholders. The company maintains a leading profile in the industry and is widely recognised for its positive and ongoing contribution to the region’s economic and social infrastructure.
People of GHD
Nick Apostolidis

In 2013, after more than 36 years at GHD, Nick Apostolidis, brought down the curtain on a remarkable career. Recruited in 1977, Nick’s rise to GHD ‘royalty’ as an engineer is one of the great Greek Australian success stories. His story, like that of most migrant high-achievers, is one of humble beginnings and a commitment to repaying his parents’ courage to embark on a new life Down Under, away from war-torn Europe.

Nick was born in northern Greece in 1954. The family lived in a hamlet of less than 300 people pressed up to the borders with Albania and the former Yugoslavia, and it offered Nick’s father few prospects of advancement. In 1963, Nick, aged nine, and younger brother George arrived with their mother Anastasia to join his father who migrated a year earlier in Melbourne. The early years are still vivid.

“Coming from a small mountain village to urban Carlton was a bit surreal,” says Nick. “It was strange but exciting. We’d never seen so many cars before.”

An academically gifted child, despite his lack of English, he acclimatised quickly. “As the eldest son I’d sit with my father and listen to the news and translate it for him, so I learned the issues of the day and the language”.

At high school, he knew he wanted to pursue a career as either an architect or an engineer. Monash University followed where he opted for civil engineering – a profession which he says “is about making life easier for the community”. And it was with an honours degree that he joined GHD in January 1977. A defining moment in his career he says, was when he spent a year in San Francisco, as part of an exchange scheme with US water company CH2M Hill.

“I was in awe of this organisation,” says Nick. “They were one of the biggest water consultancies in the world. I thought, ‘These guys must be so much smarter and advanced than us’, but what the experience showed me is that we could match it with the best of them.”
Nick returned from the US in 1985 with “a 30-kilo laptop”, his first son, and buckets of self-confidence. The experience he had gained enabled GHD to win contracts with the Australia’s major utilities who were undergoing sweeping corporatisation. Under Nick’s watch, GHD became globally recognised for creating sustainable solutions for water infrastructure. Given the task of developing the water management side of GHD globally in 2002, the impact of Nick’s work was remarkable: the company’s turnover in that sector jumped from AUD40 million per annum to more than AUD250 million in 2012.

“It’s always been about the full water cycle,” he says. “A raindrop falls in the catchment, how you then take it, treat it, prevent it from polluting, before you release it back to the environment. That’s the job.”

Nick’s portfolio also took in GHD’s work at the forefront of dealing with climate change – not just in Australia but around the world.

“Global warming impacts the availability of water hugely, and with Australia having one of the most variable climates on earth, we’re the canary in the coal mine. Australia is an example to other countries which have more stable climates, of what they’ll experience as the planet gets warmer. That’s why we have such a tremendous responsibility to lead the field.”
Chapter 15.

It may be a region known for its tropical environment, lazy beaches, and laid-back lifestyle, but to GHD it has been one of our most consistently profitable and successful parts of the business as well as an incubator for leadership. Many a graduate has cut their teeth in North Queensland before going on to serve long and successful careers either locally, or in senior leadership roles across the company.
The impact of the North Queensland Operating Centre on the broader GHD business is well beyond the region’s population or contribution to GDP. Although it is home to only two percent of Australia’s population, the region’s influence on GHD has been much greater. In turn, GHD has had a major impact on the development of north Queensland, its environment and its communities. Put simply, GHD has a reputation for punching well above its weight, and many of the stories have become legend.

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Many of GHD’s leaders established their careers in the north, including:

- chairmen: Henry Adcock, Des Whybird, and Russell Board
- managing directors: Henry Adcock and Des Whybird
- general managers: John Baird and John Gersekowski
- global market leaders: Ian Dawson and David Luscombe
- operating centre managers: Henry Friend, Jose Foruria, Alan Lindberg, Anne Lavers, Mike Rodd, Warren Traves, Cameron Gillanders, Phil Pigram, Bryson Millers as well as several of the people mentioned earlier

It was also home for some of GHD’s most experienced practitioners, people like Sam Caltabiano, Brian Heggie, Jeff Crofts, Andrew Scovell and Neal Morrow, who led an amazing array of projects and developed generations of new professionals.
GHD has undertaken a range of projects to help mitigate impacts on the Great Barrier Reef, Queensland, Australia.

A common theme is the extraordinary diversity and complexity of many projects GHD has undertaken, which, in turn, enabled numerous younger professionals to establish long and rewarding careers.

Protecting World Heritage

Renowned for its natural beauty and tropical climate, north Queensland is also home to two huge World Heritage sites recognised by United Nations Education, Scientific and Cultural Organisation (UNESCO): the Great Barrier Reef and the Wet Tropics of Queensland. The Great Barrier Reef is a marine site of remarkable beauty and the world's most extensive coral reef system covering almost 35 million hectares on the north-east coast of Queensland. The Wet Tropics of Queensland comprises tropical rainforest extending some 450 km along the north-eastern coast, covering an area of 893,000 ha, and containing the relics of the great Gondwana forest which extended over Australia and Antarctica 50-100 million years ago. In places, these two World Heritage areas join, and much of the population of north Queensland lives and works in proximity to these natural wonders. Unsurprisingly, GHD has had an important role in the development of this region whilst protecting its natural assets.

GHD’s focus has been on supporting sustainable development of the region, minimising environmental impact and in some cases remediating sites. The company has also assisted communities living in the region to better understand their interconnectivity with the World Heritage Sites.

The vast majority of the half million residents in north Queensland region live and work on land which drains through to the Wet Tropics or into waterways discharging adjacent to the Great Barrier Reef. Recognising the importance of an effective environmental
strategy, Canegrowers, the body representing 6450 Queensland sugarcane producers, selected GHD from 33 Australian and overseas consultants to conduct a major environmental audit of the industry over 12 months commencing in mid-1995.

The audit, carried out by teams from our Cairns, Brisbane, Canberra and Melbourne offices, interviewed over 180 stakeholders and audited more than 130 farms to obtain a comprehensive snapshot of existing practices. The project helped the cane growing industry identify the effects of farming practices on the environment and identify what changes were needed to ensure the industry remained ecologically and environmentally sustainable. Harry Bonanno, Chairman of Canegrowers at the time, described the report as "a powerful new tool in a campaign to ensure that cane farming practices are not only economically viable but also sustainable and address changing community expectations about the environment."

Roadways are the lifeblood of north Queensland communities and GHD has been at the forefront of developing transport infrastructure in the region. GHD's work in this area has included assessing environmental factors as well as traffic loadings, travel times, freight demand, roadway capacities, pavement conditions and crash histories of road corridors, such as the El Arish to Mission Beach Road, and the 48 km Atherton-Gordonvale Link Road, which includes a 33 km section within the Wet Tropics of Queensland's World Heritage Area.

Integral to the upgrade project was ensuring the preservation of local wildlife including cassowaries, tree kangaroos as well as remnant roadside vegetation, which in many places provides a complete rainforest canopy over the road.
GHD undertook a regional traffic study of transport links between Cairns and Kuranda and beyond through the Wet Tropics World Heritage Area – a site that consists of tropical forests growing along the Great Dividing Range.

In 1992, GHD compiled an inventory of transport and infrastructure services, which were analysed to assess the impact on the World Heritage Area of upgrading services for future development. Geographic Information System (GIS) technology was used extensively for this work.

In a second study, GHD was commissioned to prepare design and siting guidelines of sustainable tourist and residential development within the World Heritage Area. In preparing the guidelines, five key actions used in the World Heritage Convention were considered: protection, conservation, preservation, rehabilitation, and transmission (to future generations). The guidelines were required to be innovative and to reveal non-standard concepts to be used in designing natural resources, cultural heritage, scale and character, landscaping, services, and roads and walkways.

**Developing tourism infrastructure**

Tourism remains an important industry in north Queensland. Over the years, GHD has enabled an ever-increasing number of tourists to enjoy the tropical lifestyle of the north and its wonders, whilst protecting those environments.

An important example of how World Heritage areas can be successfully protected whilst being accessed by large numbers of visitors is the Skyrail project north of Cairns – an environmentally friendly cableway through the tree canopy of the Wet Tropics World Heritage Area, providing visitors with a deeper understanding of rainforest ecosystems.
GHD worked closely with the cableway developers Skyrail Pty Ltd to deliver the project, from initial planning and project evaluation through to its completion in August 1995. The company conducted initial geotechnical assessments for the cableway towers with an emphasis on environmentally sensitive foundation construction methods appropriate to rugged terrain without road access. In addition, GHD provided superintendency services for the cableway’s construction.

For the mid-station buildings in the heart of this environmentally sensitive area, GHD reviewed and designed water supply and wastewater treatment and disposal services, including mechanical and electrical works. The Rainforest Station site, originally accessible only from walking tracks, is not serviced by reticulated water, wastewater or electrical services. Similarly, there is no reticulated water or wastewater at Barron Falls Station. As a consequence, the design features included:

- collection and pumping systems that use rainwater for drinking and fire services
- water tanks filled by a service gondola for water supply during the dry season
- composting toilets at Rainforest and Barron Falls Stations built to World Heritage environmental standards

In 2014, GHD was engaged to design and document two pedestrian suspension bridges as adjuncts to the project, continuing our involvement in one of the world’s premier environmentally sensitive tourist attractions.

For Green Island Resort on the Great Barrier Reef, GHD helped Daikyo NQ with the provision of all infrastructure to very stringent environmental standards. The project was awarded an Institution of Engineers Australia’s Engineering Excellence Award.
In the late 1990s, GHD assisted Cairns City Council with the upgrade of its degraded foreshore. It was a sensitive project, in part because of a controversial major reclamation development proposed a decade earlier. GHD developed a five-stage public consultation process which began with the exploration of the public’s values for the area. At one stage, GHD appeared regularly in news bulletins, talkback radio, local community events and the like. Community support developed enormously throughout the process, and eventually led to what is now known as Cairns Esplanade, featuring a salt water swimming lagoon, boardwalks, community and interpretive facilities and public art – now a much-loved public face of the city.

At one stage or another, GHD has been involved in much of the overall tourist infrastructure in north Queensland, including hotels and resorts, regional airports including Cairns, Townsville, Mackay, Rockhampton, Emerald, Gladstone, Hughenden and Lockhart River, swimming lagoons at Airlie Beach in the Whitsundays, along with water and wastewater services for island resorts such as Green Island and Hamilton Island.

Following the destructive Cyclone Justin in March 1997, GHD designed a wave screen wharf for the Marlin Marina in Cairns to provide not only enhanced public berthing facilities but protection to the marina itself. A ‘skirt’ breakwater was selected instead of a full depth screen because of its ability to restrict wave damage whilst minimising siltation and allowing tidal flushing. Flume models were used to evaluate wave forces and the breakwater’s impact on wave heights. The Cairns Port Authority also engaged GHD to help consolidate various reef vessel berthing options into a single multi-user terminal, providing an integrated facility to cater for commercial day trip operations to the reef.
As 2020 approaches, our involvement in the tourist industry continues. Through our Mackay office, GHD is helping Daydream Island Spa and Resort reinvent itself, providing design, project management, and contract administration for a multi-million-dollar redevelopment of the resort rooms, atrium, lagoon, restaurants, foyers and other associated front-of-house facilities. The company is also busy behind the scenes with high voltage submarine cable testing for the island.

**Defending our nation**

GHD has enjoyed a long association with the Australian Government’s Department of Defence, a relationship going back many decades and which was further cemented by GHD’s acquisition of Works Australia in 1997.

Reforms to Defence procurement policy resulted in greater investment taking place in northern Australia from the late 1980s. In 1988, Prime Minister Bob Hawke opened what was one of GHD’s biggest Defence contracts in its history, the AUD140 million RAAF Base Scherger on Cape York Peninsula, as part of a ‘shield’ across northern Australia.

GHD project managed the base and had responsibility for site selection, sourcing construction materials in this remote location, services, environmental impact assessment, as well as support evidence for the Parliamentary Standing Committee on Public Works.
Since the 1990s, GHD has undertaken many projects as part of the redevelopment of Lavarack Barracks, RAAF Base Townsville and other Defence facilities across north Queensland, including:

- **Lavarack Barracks Stage 1 Redevelopment** – Project manager and contract administrator.

- **Lavarack Barracks Stage 2 Redevelopment** – From 1999 to 2001, GHD carried out design consultancies from concept to construction completion, for water and sewerage, and building services design for extensive industrial facilities. GHD also provided environmental auditing and management.

- **Lavarack Barracks Stage 3 Redevelopment** – GHD was the site-wide environmental consultant, completing the Environmental Impact Assessment and advised, monitored and documented environmental management activities throughout the concept design, detailed design, and construction phases.

- **Enhanced Land Force (ELF) Townsville** – GHD managed and coordinated the design and head contracts for AUD500 m of new facilities to increase the size of the Army and relocate 3rd Battalion, Royal Australian Regiment, from Sydney to Townsville.

- **Single Living Environment and Accommodation Precinct (Single LEAP)** – GHD delivered project management and contract administration for the provision of more than 3000 single accommodation units across 14 Defence locations around Australia. This included 540 units at Lavarack Barracks in Townsville.

- **Defence Logistics Transformation Project (DLTP)** – GHD provided project management and contract administration for Works Package 3, which consolidated the operations of Joint Logistics Unit (North Queensland) including storage, distribution and land material maintenance at Lavarack Barracks, allowing the unit to vacate its Macrossan and RAAF Base Townsville sites and maintain a reduced presence at Ross Island.

- **HMAS Cairns Redevelopment** – GHD provided project management and contract administration for phases 1 and 2 of the redevelopment. Cost control by GHD enabled the project to achieve the intended scope of work as well as extra works to complete a new AUD2 million canteen within the project budget.

- **RAAF Base Townsville** – GHD concept and detailed design for various aspects of the stage one and two redevelopments of the facility.

- Development of a drainage management plan at RAAF Base Townsville, which was critical in minimising bird strikes by reducing ponded water close to the runways.
Indigenous development

For much of GHD’s extensive history in north Queensland, the company has been closely involved in the provision of infrastructure for the many Aboriginal and Torres Strait Islander communities.

In 1996, GHD undertook a landmark project of preparing Total Management Plans for 18 Aboriginal and Torres Strait Islander communities in the region, with funding from the Queensland Government. The most comprehensive piece of work of its type ever undertaken, the project involved preparation of a comprehensive ten-year plan for each community. The plan examined the aspirations and levels of service for each location, and the infrastructure needed to support these services. The project then outlined how the services could best be managed and supported in each of the communities, as well as identifying the capital and ongoing operating and maintenance costs. These plans were used by both the communities and government for many years, and represent a massive undertaking in providing a holistic approach to asset management. The project was awarded an Engineering Excellence Award by the Institution of Engineers, Australia.

Subsequent projects undertaken by GHD include Health Infrastructure Priority Programs aimed at improving community health through the provision of housing, sewerage, drainage, and roadworks for communities at Injinoo, New Mapoon, and Bamaga, and Seisia at the tip of Cape York. Similar work was carried out at Wujal Wujal under the later Community Housing and Infrastructure Program.
The big blows

Natural disasters, such as flood and cyclones are part and parcel of life in north Queensland, and although distressing for the community and potentially dangerous, a degree of resilience and ‘Aussie spirit’ usually prevails in the community.

Such events will always need the swift assistance of engineers and other technical professionals to make the situation safe for the public and help the community get back on its feet. The reliance that the community places on the expertise held by professionals in these situations cannot be understated.

One such extreme event was the ‘Night of Noah’ in Townsville on 11 January 1998. Heavy rains commenced in the area on 10 January as a repercussion of ex-Tropical Cyclone Sid and continued throughout the day and into the following evening.

Almost 550 mm of rainfall was recorded at the Townsville Airport on 11 January alone. This led to widespread flooding and destruction, with some homes literally washed into the river. Crystal Creek Intake was also washed away, leaving 20,000 people without water. GHD worked 24/7 for six months to expedite repairs and to help reinstate services to the community.

In recent times the community’s resilience has been sorely tested by two events that tore through north Queensland: Tropical Cyclone Larry and Tropical Cyclone Yasi.

Larry, travelling at 30 km/h, made landfall on the morning of 20 March 2006 as a category four cyclone with wind gusts of up to 240 km/h and a storm surge of nearly five metres at Bingil Bay, south of Innisfail.

It caused widespread damage to housing and infrastructure to coastal and inland communities from Townsville to Port Douglas, a range of 420 km. The day after the cyclone crossed, GHD engineers were on the ground at local schools inspecting the damage and making on the spot repairs to get the facilities up and running again.

Over 30 schools were inspected by GHD engineers before our attention turned to the hundreds of damaged private dwellings, some beyond repair. GHD inspectors came face to face with the human side of the disaster, with some residents refusing to leave houses that clearly had to be condemned. Local government infrastructure also took a hit, with GHD providing inspection, design and planning assistance to a number of councils. Recovery was slow from Larry owing to the unprecedented magnitude of the cyclone and the protracted rainfall that followed.

Almost five years later, events would repeat with the even larger Tropical Cyclone Yasi. Originating in Fiji, it crossed the coast at Cardwell on the morning of 3 February 2011, as a category five storm with wind gusts of up to 285 km/h and a storm surge of five
metres. The cyclonic effects of Yasi were felt from Port Douglas in the north to Mackay in the south, and west towards Mt Isa where Yasi was still a tropical low when it arrived there, almost 1000 km from Cardwell.

The cyclone passed through lower-populated areas of the coast with the major towns avoiding a direct hit, thus lessening the degree of human and community suffering. However, the effect on infrastructure from destructive winds, storm surge and heavy rains ushered in a government-funded community and infrastructure rebuilding program that would continue for years.

GHD was at the forefront assisting with inspections of all forms of infrastructure and working closely with the state government, local councils, the Department of Transport and Main Roads, and insurers to move through the process of recovery.

Lessons in mobilising teams of engineers and emergency service deployment had been learned from Larry just five years earlier and were put to good effect to get the initial works underway quickly. In 2015, the recovery of infrastructure was still ongoing.

The ability of GHD to mobilise people from throughout all of its operations in a short period to help a community in distress, highlights how our commitment plays an active part in communities where we live and work.
The ‘Big Drys’

North Queensland is a region of climatic extremes. ‘Big Wets’ are often followed by long droughts. In such times, GHD has helped many communities and businesses in solving water problems.

In 2003, GHD designed a 36 km pipeline from Tieri to Capella in central Queensland. The project was fast tracked to provide Capella with an emergency water supply. GHD also project managed the installation and commissioning of a reverse osmosis water treatment plant on Hamilton Island as well as a full water cycle strategy to help future-proof the island’s supply.

Assisting a community through the full journey of providing an affordable and reliable water supply is particularly evident in Townsville. In 2003, GHD developed detailed water balance models for the Ross River Dam, the primary water supply for the 180,000 residents of Townsville and Thuringowa. The models were used to develop the water restriction strategies and trigger points for the dam. As dam volumes dropped to 10 percent capacity, the Townsville Thuringowa Water Supply Board would meet during the day to consider options. GHD worked through the night to model these options ready for the next day and the process subsequently enabled the community to have affordable water in drought conditions.

GHD developed Townsville’s Water Supply Strategy to 2030 as well as its Infrastructure Development Strategy, which led to the company being engaged in 2015 to design the city’s new water supply pipeline from the Burdekin Dam – the Haughton Pipeline duplication.

GHD’s expertise in creating innovative emergency water solutions also led to it helping the Queensland Government develop its State Water Grid, to conceptualise taking water from the Burdekin Dam 1000 km south to supply South East Queensland through its drastic drought in the early 2000s.
Community infrastructure

GHD has always been deeply involved in the development of vital community infrastructure across north Queensland. Across our five market sectors, we have been at the forefront delivering projects that have improved liveability for the locals and attracted new residents to the region.

In 1988, GHD commenced work on a thriving urban development in Cairns based on experience gained from a similar business in the Mackay area. The largest project undertaken was the multi-stage Delfin-managed development called Forest Gardens at White Rock comprising 1200 lots. Many other developments of between 20 to 500 lots were undertaken by the specialist team in Cairns.

With our history solidly anchored in the water industry, there are few places in regional north Queensland where GHD has not been involved with water and wastewater treatment infrastructure. In 1948, surveying, designing and project managing the Cairns sewerage scheme was the catalyst for the company establishing its presence in north Queensland. Work on this and backlog Mulgrave Shire Schemes extended through to the late 1990s.

Almost 60 years later, we formed part of the Cleaner Seas Alliance which upgraded four major sewerage treatment plants in the Cairns region to increase capacity and improve the quality of treated wastewater being released to waterways and reef systems. GHD led the civil and structural components of the project, working alongside Cairns Water and other consultants to deliver one of the largest wastewater treatment projects in regional Queensland.

Cleveland Bay Townsville Wastewater Treatment Plant, one of GHD’s iconic projects in Queensland, Australia
In 2013, GHD was again called upon to provide wastewater services, this time as part of Cairns Regional Council’s Sewer Pump Station (CRCSPS) upgrade program. Partnering with local contractor JPMI Pty Ltd to deliver end-to-end design, construction and program management, the project delivered 15 upgraded pump stations and three new pump stations, 2.9 km of rising mains and 1.2 km of micro-tunnelled sewers.

Other major water and wastewater infrastructure projects include:

- Townsville Water Supply Upgrade, involving the upgrade of the Douglas Water Treatment Plant (WTP) as well as a new WTP at Kinduro
- Mackay Water Recycling Project, which included decommissioning of the Mount Bassett wastewater treatment plant, reversal of sewage flows within the city, upgrading of the northern water recycling facility and a new water recycling facility on the southern side of the city
- Mission Beach and Hughenden sewerage scheme and sewerage treatment plant upgrades
- Project planning and design development for the upgrading of the Townsville CBD water main network and reservoirs
- Investigations, program development, project scoping, design and project management for critical water infrastructure upgrades across Charters Towers Regional Council’s network

Roads and bridges

GHD’s involvement in the iconic Jubilee Bridge at Innisfail is an example of our long-term commitment to connecting our communities. The existing concrete bridge was constructed across the South Johnstone River in 1923 and, like much of the built environment of the township, featured art deco design elements. Over many years, GHD was engaged by Johnstone Shire Council and subsequently, Cassowary Coast Regional Council, to assess the condition of the bridge and recommend management options to ensure the safety of road users. Ultimately, in 2010, the old bridge was completely closed to traffic and GHD was called upon to design its replacement, ensuring the charm and art deco aesthetics of the old bridge were retained. GHD’s innovative use of concrete design elements resulted in a bridge that reconnected the road network while meeting the community’s aspirations for their much-loved landmark.

Another iconic bridge project is the Forgan Bridge replacement and duplication in Mackay. This project involved construction of a four-lane bridge over the Pioneer River, a six-lane bridge over the nearby Barnes Creek, and considerable approach and intersection works. At the time, it was the largest road and bridge project ever
undertaken by the Department of Transport and Main Roads in the Mackay region. GHD teamed with Queensland construction company Golding Contractors Pty Ltd to deliver the project in an Early Contractor Involvement (ECI) arrangement. Connecting the northern suburbs of Mackay with the central business district, the project was affected by several harsh wet seasons as well as the discovery of the SS Brinawarr, a historical shipwreck sunk in the Pioneer River by the severe tropical cyclone that devastated Mackay in 1918.

As part of the project, GHD’s geotechnical team developed an innovative ‘pile rafting’ technique to construct the approaches to Barnes Creek where the earth fill abutment locations coincided with deposits of soft marine clays, posing issues of excessive settlement and slope instability. The design led to a cost-effective and program-efficient solution, avoiding pre-loading and surcharging.

GHD has had a long association with the Mission River and Andoom Creek road and heavy handrail bridges at Weipa for Comalco. GHD designed the “temporary” structures back in 1971 and has continued to provide advice on capability and maintenance of the structures over many years. The work has included the development of underwater welding techniques to strengthen steel components of the bridge piles, plus techniques to protect against carbonation of the bauxite concrete. All of this was done in crocodile-infested waters!

GHD has been at the forefront of road and highway improvements in Gladstone, assisting the local council to deal with the pressure on public infrastructure as a result of the booming LNG industry. Our involvement in the design and project management of various stages of the Kirkwood Road Arterial Link project enabled Gladstone Regional Council to
deliver an alternative route from the Dawson Highway to the Port of Gladstone, removing heavy vehicle traffic from the city centre and opening up new land for residential and commercial development. More recently, we have delivered the detailed design for a new 5 km, four-lane road between Tannum Sands and Boyne Island, including four new bridges across the Boyne River and Boyne River Bifurcation. Once constructed, the project will significantly ease congestion on this busy commuter route.

Another landmark project for our transport and urban development group was the duplication of the Bruce Highway between Vantassel and Cluden on the southern approach to Townsville. A 7 km long highway duplication, including the grade separation of the North Coast Rail Line, GHD delivered options analysis, business case, and detailed design for the project. A number of design innovations added value to the project which was delivered within a very tight budget.

GHD’s heritage in remote locations is still present in our current projects. Graham Bruce, project engineer from GHD’s Cairns office, led the survey, design and construction of many of north Queensland’s original developmental roads during the 1960s and 1970s, and our team is revisiting that history as part of our work with the Department of Transport and Main Roads. In 2016, our Townsville office became heavily involved in the upgrading of the Gregory Developmental Road, one of Queensland’s iconic ‘beef roads’ and a key alternative north-south freight route to the Bruce Highway. Having completed the detailed design of the Cape River Bridge, near Charters Towers, in mid-2016, GHD began developing options and design solutions to upgrade approximately 85 km of road across multiple sections in order to provide an 8 m sealed width for the entire road length between Belyando Crossing and The Lynd.

Leisure and recreation

If there is one thing that north Queensland is known for, it is sunshine and long, hot summers. Pools and aquatic centres are popular facilities that local governments are often tasked with developing and maintaining. GHD has provided specialist services to upgrade existing public swimming pools, as well as develop world-leading recreational facilities that provide a place for locals and tourists to congregate and escape the heat. Some of the key projects we have been involved in include:

- Tobruk Memorial Pool redevelopment in Cairns, which was named 2016 Cairns Regional Project of the Year by Engineers Australia
- Tobruk and Long Tan memorial pools condition assessments and filtration upgrades
- Thuringowa Riverway in Townsville, a riverfront parkland revitalisation including a 4000 m² swimming lagoon, cultural centre, car parking, boardwalks and river edge treatments
Facility planning and engineering for the Northshore Leisure Centre in Townsville, incorporating a 50 m pool, a 20 m learn to swim pool and a children's leisure pool play area, change areas, kiosk and car parking

Detailed design of the Reef View Resort pool and the North Point pools on Hamilton Island

Upgrades at the Townsville Strand Water Park; Townville Grammar School 50 m pool, Kirwan State High School new 25 m pool, Hinchinbrook Aquatic Centre redevelopment, Lavarack Barracks pool refurbishment, and Trinity Anglican School Olympic pool in Cairns.

GHD in the community

GHD has a long tradition of being a regionally-based business that invests in the communities with which it works. The company was started in the Great Depression and that heritage endures as we continue to invest in regions that face challenging times. In north Queensland, GHD established its offices in Cairns in 1948, Townsville in 1972, and Mackay in 1976, retaining permanent offices in these locations ever since.

The Gladstone office was established in 2001 and has undertaken many substantial projects. It has also been pivotal in developing our next generation of leaders with office managers taking on leadership roles in larger offices.

As part of our connection to the community, we have regularly established offices in smaller regional towns in response to specific needs at the time. More recently, we established the Bowen and Richmond project offices in 2009 and 2013 respectively. Whilst both have now closed, they were critical to the delivery of substantial infrastructure projects in these locations.

The challenge of finding people to work in isolated offices has not deterred GHD's commitment to establishing our presence in remote locations. As part of our 2014 Northern Australia initiative, we established the Mount Isa and Emerald offices, both of which were founded in mining communities during a downturn in the resources sector, a continuation of GHD's heritage of setting up in tough times and environments. 2017 has also seen us establish an office in Rockhampton, cementing our commitment to communities in central Queensland.
Carolyn Longman has been with GHD since 1994. As Finance Manager North Queensland, Carolyn has witnessed GHD’s transformation for more than two decades from Australia’s tropical north. New Zealand-born Carolyn, the daughter of an adventurous builder with a passion for sailing, and a no less adventurous home-maker mum, spent her childhood in Fiji and Darwin, and was living in the Northern Territory’s capital when Cyclone Tracy hit in December 1974. It was an event that left its mark on a teenager who had her sights set on a career as a flight attendant.

“Cyclone Tracy was incredibly scary, but it made us more resilient – less reliant on possessions as we lost most of them and had to start again.” And start again they did, living on a friend’s property for months while rebuilding their own home. Dad encouraged his daughter’s wish to spread her wings in civil aviation, but on one condition – that she enrolled for a clerk typist certificate first.

The career in the sky wasn’t to be, but it was during one of her first jobs with accounting firm Ernst & Whinney she realised she had a head for figures. By late 1994, Carolyn was in north Queensland and had been offered a finance clerk position with GHD. Two years later, with her first child on the way she took a break, but returned to the Cairns office as Finance Manager. It was a very different GHD to the one we know today: gender diversity was in its infancy. Attending a meeting of finance managers in Sydney shortly after her appointment, she was surprised to be the only woman in the room.

In 1999, following the birth of her second child and keen to upgrade her skills, Carolyn embarked on a Bachelor of Commerce. “I could see that the role I was in was changing rapidly. North Queensland was going to need to be less reliant on Sydney for accounting skills and knowledge, so to be more self-sufficient I began studying part-time”.

People of GHD
Carolyn Longman
Years later she’s still not sure how she coped. “It was hugely challenging, working full-time, studying, and bringing up two small children. I just remember being very determined. I was learning so much that I could apply to my role in the business. GHD was very supportive and interested in my progress, and as a result I worked hard to get good grades.”

An integral part of GHD’s achievements in north Queensland since the mid 1990s (one of the most consistently profitable operating centres in Australia), Carolyn says what’s kept her at the company all these years are its people.

“One of the reasons I’ve stayed is the diversity of people that I get to work with and learn from. I’m very proud to be part of a strong and connected finance community.

“GHD has come a long way from when I first joined. The systems and processes we use today are exceptional and are moving towards being truly global, and that’s very exciting.”
In GHD, a posting to the Territory has always been an opportunity to spread one’s wings and to be involved in opportunities a young professional could only dream of elsewhere.
The Northern Territory (NT) is a special place. Isolated from the populated centres of Australia and close to South East Asia, its vast natural wilderness areas, rich Aboriginal heritage, and stories of outback adventure, sustain the legend of it being a last frontier – a place which does things differently.

With a population of just 244,000 (2016), it is the least populous of Australia’s eight states and territories, even though it covers about one-sixth of the Australian continent, with an area of 1.35 million km² – equal to the combined areas of France, Spain and Italy. About four-fifths of the Territory (1.09 million km²) lies within the tropics with many areas inaccessible by road in the wet season.

In GHD, a posting to the Territory has always been an opportunity to spread one’s wings and to be involved in opportunities a young professional could only dream of elsewhere. With its informal outdoor lifestyle, for some it was a waypoint on their career journey. For others, the Territory’s unique attractions made it a place to put down roots, bring up a family, and be part of the ongoing story of this remarkable part of Australia.

Any narrative of GHD’s relationship to the Territory must begin with the devastating natural disaster in Darwin that took place in the early hours of Christmas Day 1974, which saw 71 people killed and more than half of the city’s 11,000 dwellings damaged beyond repair. GHD participated in the design of the new Darwin that grew phoenix-like from the debris, including iconic road projects such as the Bagot Road flyover, completed in 1981. In the years that followed, offices opened in Katherine and Alice Springs, in line with GHD’s successful model of regional presence in Australia’s southern states.
The 1980s

The Channel Island Power Station in Darwin, the Territory’s largest power station, dominated GHD’s engagement with the NT in the mid-1980s. The work involved engineering, procurement, and construction management of a 200 MW combined cycle gas power station in a joint venture with US company Black & Veatch. The decade saw GHD contributing to the establishment of the Royal Australian Air Force (RAAF) Base Tindal, near Katherine, and further development of road infrastructure in the NT. High population growth in the early years prompted some serious planning and design for Darwin’s water and sewerage infrastructure, with GHD playing a prominent role. However, the bubble burst in 1986 when the Territory began to suffer negative population growth and new projects became few and far between.

Like Darwin’s overall demographic at the time, GHD people were primarily young and single, or families with children. Without the support of their wider family members down south, the GHD extended family assumed even greater importance. The opening up of Kakadu National Park and Litchfield National Park to tourism meant that camping was the recreation of choice, with a bit of ‘barra’ (barramundi) fishing thrown in with the help of the GHD outboard motor. Office Manager Doug Hammerton never did find the boat that supposedly went with it!

People with vehicles that could handle the harsh terrain could find the beauty and seclusion of Wangi, Florence or Tolmer Falls at the end of a long, rough and sometimes precipitous track. Some, like Russell Board, managed to dunk their brand new Toyota LandCruiser off road vehicle in Wangi Creek, while Lindsay Monteith would take his
Toyota Tarago (people mover) to places it was never meant to go. New roads made it easier to traverse the Territory by the late 1980s, but many lamented the loss of their secret spots to the general population or to environmental exclusion zones.

The establishment of RAAF Base Tindal stimulated a range of infrastructure projects, both on the base and in the nearby town of Katherine, keeping local office surveyor Bruce Hammond busy. Water supply work, sewerage headworks and residential development added to our NT portfolio.

As part of a study of the Donkey Camp reach of the Katherine River, a regular sub-consultant to GHD, Adelaide’s Professor Bill Williams, supplied limnological advice on the potential impacts of weir construction. He took the opportunity to take GHD people on a spelunking expedition to gather samples of the blind shrimp living in the subterranean water bodies below Cutta Cutta Caves.

The newly-established Alice Springs office, under the care of Bert Saunders, Jim Shaw and John Baird, was feeling its way with infrastructure projects in the locality, with St Phillip’s College, a local boarding school, being a regular client for the building group and the new suburb of Larapinta providing work for the civil group.

The most significant Alice Springs project to end the decade was the Junction Waterhole Dam. In response to earlier flooding damage to Alice Springs, it was recommended that a dam be built across the upper reaches of the Todd River to mitigate floods, and potentially to provide a water body for recreation. Russell Board took on the project and progressed it through concept and preliminary design. Detailed design was commenced in 1991, with initial site preparation contracts let and underway. However, a section of Indigenous traditional land owners objected to the scheme. After their appeal to the federal government, the project was embargoed for 20 years, and may never proceed.

During this period, the civil group in Darwin, including long-time Darwinite Lech Powierza, and later Welsh import Tom Rees, were kept busy with upgrading the Territory’s highway system which, given the lack of speed limits, was being upgraded to accommodate 140 km/hr vehicle speeds and 50 m long road-trains weighing up to 120 tonnes.

Projects in plains areas like the Barkly Highway, connecting the central Territory to Queensland, were a challenge because watercourses often only became apparent in heavy rain – running everywhere except through the designated culverts.

Further north, the Kakadu Highway faced different issues: the need to avoid anthropologically significant Indigenous sites, while the Victoria Highway, heading west from Katherine, crossed waterways that could be 10 km wide in the tropical wet season, forcing the road to be elevated for long distances.
This was the beginning of the age of the PC and our office in Darwin soon felt the power of a machine with a blisteringly fast 4.7 MHz processor, along with a whopping 10 MB of hard drive. Software was thin on the ground and Geocomp had to suffice, until Lindsay Monteith and others set about reinstalling applications from the old HP and mainframe platforms. Their ingenuity enabled the development of new systems for survey, road design, power line design, sewer reticulation, drainage and other tasks, with many of the resulting software programs disseminated to other GHD offices.

Around this time, aquaculture was seen as a vital new industry for the Top End and GHD was engaged to assist with various projects, including the preliminary design of the Channel Island and Point Ceylon Prawn Farm proposals, by project engineer Graham Sproats. The Department of Fisheries saw the need for research in this area and commissioned GHD to convert a former power station building into an aquaculture research facility, specialising in the production of barramundi fingerlings for supply to farms. The hatchery was sketched out by Bob Macintosh from Brisbane, designed by Lindsay Monteith, and built on a shoestring budget. The facility went on to establish several firsts in the breeding of barramundi as well as an ongoing involvement by Lindsay with the growth of the centre, culminating in 1995 when it was relocated to bigger and better facilities at Channel Island. Lindsay managed and designed much of this transition and several subsequent augmentation stages as the hatchery went on to provide commercial quantities of fingerlings.

One of the GHD signature projects in this period was East Point Lake, later to be renamed Lake Alexander. One of the issues for Darwin residents is the inaccessibility of the sea for swimming, except for a few months a year, due to the presence of deadly box jellyfish.
Fresh from his experience with the design of the Port Douglas Resort swimming lagoons, Russell Board took on the design of a large salt water recreation lagoon for Darwin City Council in an area of semi-tidal tussocks and mud flats at East Point.

Central to the design was a semi-natural, clay-lined impound with rockfill revetments and sandy beaches intended for small sailcraft and safe year-round swimming. Receiving a through-flow of filtered sea water drawn from the adjoining Fannie Bay beach, one design feature marks the system’s unique Top End credentials: one-way gates on the fence let wallabies through, but keep out crocodiles from the adjoining mangrove estuary.

The lake, while not without the occasional challenge such as swimmer-biting cod, or infestations of upside-down jellyfish, has proved a hugely popular community asset over the years.

As the 1980s came to a close, GHD in the NT bade farewell to Office Manager Doug Hammerton who completed his five-year term in 1988. Doug was replaced by future GHD Chairman, Clive Weeks.

The 1990s

The start of this decade saw GHD in the NT leaner than in the heydays of the mid-1980s, but still the dominant force in the Territory industry. In Darwin, population growth was again positive and activity was occurring on a number of fronts: the Department of Defence was focused on developing facilities in Northern Australia, the prospect of trade with our Asian neighbours led to the development of East Arm Port, and eventually to
the Alice Springs to Darwin railway. In addition, favourable commodity prices resulted in increased mining activity.

The decade started with a change in leadership. Clive Weeks responded to the call from ‘down south’ and returned to Melbourne, leaving yet another future chairman, Russell Board, to take over as NT Manager. Russell had arrived in Darwin from Townsville in 1987 and headed the NT operations for the first half of the decade, leading a range of significant projects, including the masterplanning of East Arm Port, the 116 km MacArthur Mine haul road, various Defence infrastructure projects (notably Tindal Stage 3C) and hydrological studies.

By the late 1990s, demographic trends reversed once more. Population growth in the Territory receded and together with a change in the NT Government’s development policies, another lean period in terms of infrastructure ensued. GHD’s employment graph followed suit with people numbers rising to the 40 or more and then declining to the mid-20s. In 1995, Russell took up the post of manager for North Queensland and John Gersekowski returned from Cairns to take over as NT Manager – his third stint in the Territory. John’s association with the NT had begun in 1979 with the design of Bagot Road Flyover followed by the construction of the Nabarlek Uranium Mine airstrip. Meanwhile, Paul Hansford headed up the Alice Spring office in 1994, where he and his team delivered the Alice Springs Flood Study amongst other successes. Paul took over from Cameron Gillanders who moved up to Darwin with his family after three years as manager of the Alice Springs office.

Garry Coleman joined GHD in Darwin in 1991, providing skills in hydrology, roads, structures and hydraulics. During that time he was engaged in a variety of projects before managing the Alice Springs office, taking over from Paul.
Potential growth areas in Darwin were limited with most development concentrated in the satellite town of Palmerston, close to the Australian Army’s rapidly developing Robertson Barracks.

One area that bucked the trend was mining; with gold prices on the rise, considerable new activity in gold mining around Pine Creek in the Katherine region followed. GHD was engaged in infrastructure development for the Cosmo Howley Mine, Moline Mine, Union Reefs Mine, Mount Todd, Maud Creek and Brock Creek mines, as well as works for several other mining leases.

Older mining operations also provided work, with a long-delayed clean-up and restoration of the Rum Jungle site, where an old mine pit and mullock heaps were a source of contamination 20 years after the cessation of mining. Ranger Uranium Mine, on the edge of Kakadu National Park, 230 km east of Darwin, provided work for surveyors in regular volume assessments for tailings and an engineering feasibility study for the Koongarra uranium deposit.

The responsibility for water supply and sewerage infrastructure in the Territory evolved from a division of the Northern Territory Transport and Works Department, to become a dedicated Water Authority. By 1987 the authority had been expanded to include the former NT Electricity Commission. So began the NT’s Power and Water Authority (PAWA), now Power and Water Corporation (PWC) – one of GHD’s major clients in the Territory.

The 1990s saw GHD engaged in a number of major projects for PAWA (managed by Lindsay Monteith), including the development of the Darwin Sewerage Masterplanning, the rural area Water Supply Master Plan, the Palmerston Water Supply Master Plan and the Darwin Trunk Water Supply Strategy Plan, as well as masterplanning of the McMinns Transfer Station.

Meanwhile GHD continued to break new ground. The NT Community College was finally growing out of its temporary home in the old hospital and the establishment of the new NT University Campus commenced at Brinkin, with GHD engaged for survey and various infrastructure projects.

Bruce Hammond relocated to Cairns, but not before taking on the job of recording the Aboriginal rock art sites of Kakadu using one of the first applications of terrestrial photogrammetry in the NT. Trevor Forge took over as Survey Manager in 1992, and a year later Stefania Fikus joined the Darwin office to add her mechanical engineering expertise to the mix, staying to form the project management group, and leading the way on GHD’s input to Aboriginal housing schemes and a host of other significant projects.

The 1990s witnessed the expression of a new and ambitious vision for the Territory. Rail access from Australia’s south to the NT had only got as far as Alice Springs, but a
bold target was set to complete a standard gauge link from Adelaide to Darwin, with a new container port to make the NT capital a gateway to Asia.

Moves to make this vision a reality were initiated and the groundworks commenced for both these projects in the early 1990s. While GHD made some minor contributions to the railway project (survey commissions, investigations into ballast quarry sources), we provided a significant contribution to the development of East Arm Port, with planning and design of access roads and reclamation work, concept and detail designs for port facilities, dredging works, design of services, and an ongoing role as technical adviser to the NT Government through the construction phase. Project management was led by Russell Board and later by John Gersekowski.

As bold steps were being taken in transport infrastructure, defence and border protection in the NT became increasingly important sources of work for GHD.

In Darwin, the main naval installation was five kilometres inland, while the army occupied prime seafront real estate, with the navy occupying a section of the army base to locate its patrol boats.

In 1994, the Royal Australian Navy acquired additional vessels and needed to expand its presence to include more land berths.

During the design of the new on-land berths by engineer Barry Ridge, it was found that the base was consuming some 3 ML of water a day (2.5 percent of Darwin’s entire water supply) to run potable water through heat exchangers to keep the berthed boats’ air
conditioners running. The navy's meter was faulty so the army was paying the bill. On GHD's recommendation, a salt water recirculation system was included in the brief and installed. Our involvement with the naval base continued with provision of new wharf facilities, associated dredging, and building works.

Electrical engineer Phil Kirby originally came to Darwin for the Channel Island Power Station project and stayed to head the electrical group, taking on projects large and small. Heavily engaged in Defence work, Phil contributed widely to other projects, such as the major refit of Nabalco's aluminium smelter power distribution and substation system, as well as providing ongoing support to PAWA for Channel Island Power Station, and the development of other gas-based power projects along the pipeline from Darwin to Alice Springs. Phil's legendary work included several community power supplies around the NT before he returned to Brisbane in 1993, leaving the electrical load to be borne by Leigh Benger (1994-1998).

The mid-1990s saw the federal government issue the Army Presence in the North (APIN) policy, involving the relocation of a significant proportion of Australian Defence infrastructure to northern Australia.

With major expenditure already in progress at RAAF Base Tindal, the policy gave rise to the establishment of Robertson Barracks which currently houses 1st Brigade and the 1st Aviation Brigade of the Australian Army, as well as occasional contingents of US marines. GHD was engaged in the 1990s to design a range of facilities for the barracks, including vehicle shelters and workshops, medical centres, administrative headquarters, heavy vehicle wash and fuelling points, as well as a tank fording pool used to train armoured vehicle crews in deep water crossings.

Over a decade, the base was expanded to house more than 3,000 personnel and GHD continued to provide architectural and engineering services for a range of projects, including non-commissioned and junior officer accommodation, night training facilities, and emergency power generation.

In 1997, GHD successfully bid to acquire Works Australia, the remains of the federal government's engineering and construction arm. This resulted in the influx of several new people, including the return of Tom Rees, who had left GHD in 1988 to manage what was then the NT branch of the Federal Housing and Construction agency.

Tom's intimate knowledge of and contact with Defence and National Parks organisations stood us in good stead and he stayed on the manage Defence projects at Tindal and Darwin as well as various infrastructure projects until 2002.

GHD's office in Katherine remained as a one-man (and finally one-woman) survey office until its closure in 1998.
The 2000s

The early 2000s was a quiet time in the engineering industry in northern Australia. In 2002, John Gersekowski returned to north Queensland and Peter Tonkin came up from Geraldton in WA to manage the NT Operating Centre. In 2004, Andrew Saxelby arrived to manage the Frances Bay Substation project and went on to form the core of a highly effective power engineering group, providing PWC with much needed power generation, switching and substation design expertise. As a sign of the growing maturity of Darwin, the group started recruiting electrical graduates from the local Charles Darwin University.

With the multi-billion dollar Darwin Liquefied Natural Gas (LNG) plant at Wickham Point beginning construction in 2003, and its commissioning three years later, the impact of this project on the NT economy and GHD was considerable.

By 2008, we had outgrown our office and moved to new premises in Smith Street where dedicated groups for survey, electrical, environmental, structural, civil, project management and water engineering could be comfortably housed.

GHD had some work directly from the LNG plant, but was also able to capitalise on infrastructure growth as a result of the influx of workers and development of service industries centred on the plant.

The 2000s saw GHD supply its services to Connecting Neighbours, an NT Government scheme targeting essential infrastructure needs for remote Aboriginal communities, and the federal government’s Strategic Indigenous Housing and Infrastructure Program (SIHIP), an AUD672 million housing program to deliver 750 new houses, 230 rebuilds
of existing houses and 2500 refurbishments across 73 remote Indigenous communities and town camps. GHD was to provide architectural design standards and planning input to the program via Julian Wigley.

Community infrastructure was initially disregarded, however GHD was retained by the SIHIP program managers to check current infrastructure status against the newly formulated standards and identify upgrade requirements for a number of typical communities. The water team of Andrew McLeod, Cathy Sherry and Rene Ortiz (under Lindsay Monteith's guidance) subsequently identified significant shortfalls ultimately requiring of the order of AUD300 million in further expenditure to upgrade water and sewerage services.

GHD was to undertake the design and construction monitoring for a significant proportion of this spending (in association with the Territory Alliance team responsible for Top End communities), and some southern townships and community infrastructure development funded through PWC.

During the 2000s, border protection authorities in Australia's north became increasingly called upon to intercept illegal fishermen and unauthorised boat arrivals at sea. For some years, boats that had been apprehended were moored in a secure zone in Darwin harbour, engines disabled, and the occupants supplied with food and left to fend for themselves until they were processed. The boats were then burned.

In 2003, the Department of Immigration decided on the establishment of a formal on-shore detention centre. GHD's project management group under Stefania Fikus won the work to convert an existing temporary accommodation area on the Coonawarra
Naval Base into a secure camp for up to 500 detainees. The project was subsequently extended over some 10 years with progressive expansions and upgrades.

In 2010, Peter Tonkin made the move back to Perth and Dave Clark headed up from Victoria (with his wife Fiona and six children) to manage the NT Operating Centre from the beginning of that year. Dave introduced himself to the Darwin team while being dressed as Superman at the 2009 Christmas party, so we knew he was our sort of guy. With a mining geotechnical background, Dave arrived with a goal to achieve a greater level of GHD involvement in the mining industry. GHD’s reputation in this sector ramped up through a range of commissions. Dave’s active leadership was reflected in his chairing the Australasian Institute of Mining and Metallurgy’s NT branch, and through key roles in the Darwin Mining Club and Minerals Council of Australia NT division.

Bill Freeland joined GHD from the NT Government to head the environmental team, bringing a wealth of experience and an engaging personality that lifted our profile in the area, before then moving on to head the newly created NT EPA.

As a follow-on from the successful Frances Bay Substation project, Andrew Saxelby’s team progressed to complete the Archer Substation (providing security to the Palmerston supply) and a number of other power projects with PWC. Brian Kison came from PWC in 2012 to lead the energy team and provided valuable experience in the gas industry.

Brian Jones’s civil group won the job of bridging the Daly River to provide all weather road access to communities otherwise marooned in the wet season. The team also commenced headwork for the new suburb of Zuccoli in Palmerston.

Starting out as a relatively minor design for the spine road into the development area, this project grew to encompass masterplanning of water, wastewater, power, communications and roadwork infrastructure for an area ultimately intended to house over 9000 people, as well as detailed design of initial headworks, including trunk sewers, power lines, water mains and sewage pump stations. The services masterplanning was an exercise in persistence as the development concepts provided by the client evolved and transformed through multiple permutations of layout, content and density.

**The 2010s**

In the second decade of the 21st century, GHD in the Northern Territory is well positioned to assist clients in water management, transport, power, mining, property and buildings, and environment.

The operating centre experienced a successful period of growth in revenue over two to three years at the beginning of the decade and staffing levels increased to around 60 people. GHD people and their families continued to maintain an active social calendar locally and more remotely, including a large group enjoying the August 2010 Koolpin Gorge camping trip.
Meanwhile the movement of GHD people in and out of the Territory continued. Lutz Kleeberg relocated from GHD’s former Jakarta office in 2010 to lead the water group. Despite everyone’s best efforts, a change in the Territory’s government and a general decline in the Australian economy meant workload for GHD reduced and measures were put in place to accommodate this decline.

A former gold mine at Mount Todd, near Katherine, abandoned by previous miners in 2000 (without honouring their clean-up obligations), left pits and tailing dams to flood with contaminated waters. With gold still in ‘them thar hills’ a new player, VistaGold, took over the lease a year later and began the removal of 12 GL of contaminated water from the open pit before mining resumed. GHD was engaged for the challenging Environmental Impact Statements (EIS) for the mine, thanks to our enhanced reputation in the mining sector and Dave Clark’s support. Kylie Fitzpatrick and then Nicole Conroy led this project. In addition, GHD provided assistance with flow diversion works and water treatment options studies.

GHD was formally engaged for the initial and then more substantial EIS packages associated with the Nolans Bore Rare Earths Project (owned by Arafura Resources). The project was located about 135 km north-west of Alice Springs and grew over several years.

In the early 2010s, the buzz around town was all about a second LNG plant being constructed by Inpex with an investment of AUD30 billion (budgeted), with suggestions of forecast expenditure by commissioning somewhat higher in pipelines and a gas liquefaction plant at Middle Arm, as part of the Ichthys project. The rumours were confirmed, and while few contracts were going to local consultants, Bill Freeland and the environmental group won valuable work undertaking the ongoing aquatic mammal survey through the plant’s five-year construction period.
Darwin entered its latest building boom with the skyline transformed by high-rise apartments and hotels catering to the incoming gas workers as well as a demographic shift of the younger population leaving their family homes in the suburbs and relocating to the city.

Darwin was going up-market and, while suits were still only for ‘the southern salesman’, the traditional shorts and long socks were a thing of the past.

As infrastructure needs continued to grow, demands on water supply triggered several major new projects. Load pressure finally forced PWC to decommission the raw sewage outfall serving the Darwin CBD and redirect flows to the Central Zone Treatment Plant. GHD was engaged in the concept design of a new 4.5 ML elevated storage to supply Palmerston and detail design of 22 km of DN750 water main to prepare for reactivation of Manton Dam to enhance the Darwin water supply. The electrical group designed and managed construction for a new substation complex serving Darwin’s inner urban and commercial areas.

Andrew McLeod from the water group had proved his worth as construction supervisor during the SIHIP project and was much sought after by Power and Water for community infrastructure projects thereafter, taking on the upgrade of the Gunbalanya sewerage upgrade. Andrew eventually took on a secondment role with PWC to assist in management of the infrastructure upgrade program, and while we missed his presence in the office, he provided a valuable contact with the PWC works program.

John McClement had joined the project management team under Stefania Fikus in 2007 and had proved himself the go-to man for Defence-related projects, developing a particular skill in negotiating the intricacies of procedural and political requirements for this much-valued client. The Northern Territory’s considerable defence establishments have been in a continuous development and renewal since the 1990s, providing GHD with a steady and ongoing workload.

Meanwhile, the NT team continued to evolve. Bill Kmon moved from the army to join GHD as a cadet drafter in 2007, rising quickly to chief drafter by 2010, and assisting the project management group with construction supervision as well as managing office IT and fitout issues (and running the GHD office boot camp fitness program along with structural engineer Jacinta Kelly). By 2011, Bill had moved into the project management group where his skills in client and contractor management brought considerable kudos to himself and to GHD. Bill’s management of the reconstruction of Gulliwiniku and Minjilang Indigenous communities by the NT’s Department of Infrastructure (DoI) after the destruction caused by Cyclone Carlos, was instrumental in the DoI project team winning the annual awards for excellence in project management.
Stage Two of the Frances Bay Substation was won in September 2011 with newcomer power engineer Arnaud Marois at the helm. Assisting in the power engineering area and also with pump control and services electrical work was Richard Oppusungu. Richard cut his teeth on Frances Bay and Archer substations under the tutelage of Andrew Saxelby and went on to anchor the electrical groups.

Mar Serrano Lopez joined the NT water group from Christchurch office in New Zealand, and in 2014, when Lutz Kleeberg had to return to Indonesia, Mar was elevated to the role of Service Group Manager. Mar’s first big challenge was the augmentation of the Howard East Borefield supply, comprising four new bores and connecting roads, rising mains and power lines to provide an extra 210 L/s of much-needed water to provide security to the otherwise single-sourced Darwin supply.

In April 2014, we said goodbye to Dave Clark (returning to Melbourne) and welcomed new Operating Centre Manager Sean Tucker fresh from the Victorian capital. Sean along with his wife Nicola and daughter Evie, then added to the family through the arrival of son William in December of 2015.

In 2014 and 2015, the water group was primarily involved in the design of trunk water pump stations at Manton Dam, Darwin River Dam and Jenkins Road, aimed at improving the delivery capacity of water to Darwin as well as the Howard Borefield. Mar and Sean also led a water, sewerage and power master planning study for the inner and middle suburbs of Darwin for the Department of Lands, Planning and the Environment, which led to the development of a large headworks infrastructure program to cater for future infill development.

GHD’s strong involvement in the planning and design of major road infrastructure continued with the design of the Roper River and Wilton River bridges. Juliette Jong and Brian Jones led this work with the assistance of hydrologists and bridge specialists from our Melbourne, Perth and North Queensland offices. The bridges, both in excess of 100 m long, provided increased access to remote communities along the Roper Highway during the wet season, which could be inaccessible for up to half a year.

Brian Kison joined GHD in 2012 from Power & Water, where he worked as a gas project manager. He quickly put his experience to work when he led the Darwin Abattoir Gas Supply project for AACO, ably assisted by mechanical engineer, Minh Hoang. GHD’s role on the project included the design, construction support and commissioning of the NT’s first high-pressure gas system using composite pipeline technologies.

The environmental group, under Geoff Metcalfe, with Nicole Conroy and Kylie Fitzpatrick, remained busy with continuing work at Mount Todd Gold Mine and with Crocodile Gold environmental monitoring. Toms Gully Mine also made use of their skills and experience.
Another strategic commission within the mining sector was secured and commenced during 2015. This involved a scoping/preliminary feasibility study for Rum Jungle Resources’ Karinga Lakes Potash project. The project relates to a series of salt lakes located along the Lasseter Highway approximately 200 km southwest of Alice Springs. Effective delivery of this project, coupled with GHD’s growing portfolio of mining environmental impact studies, led to GHD securing the EIS for Rum Jungle Resources’ significant Ammaroo Phosphate project in late 2016.

David Eames, a mechanical engineer who joined GHD from Rio Tinto’s Gove alumina refinery in 2014, soon developed a reputation as a very competent all-rounder, able to turn his hand to most things. David and Rohan Koenig (from GHD’s Brisbane office) led the preliminary design of a prawn hatchery facility in Darwin to support a proposed large prawn farm at Legune Station in the NT’s north-west. The hatchery was designed to produce about 80 million disease-free post-larvae tiger prawns per week.

In 2015, GHD was engaged to undertake the design of the Todd River boardwalk under the direction of Senior Architect, Angelique Brett, and Principal Structural Engineer, Jonathan Rapley. The project came to GHD after previous attempts to complete it over several decades had been unsuccessful. A culturally sensitive project, the alignment of the boardwalk travels around the base of Annie Myer hill, a site of Aboriginal significance, and around sacred river red gums on the banks of the river. A certificate approving the works to proceed was originally issued in 2003 from the Aboriginal Areas Protection Authority, after extensive consultation with elders and traditional owners of the area. This construction work was halted after conditions of the permit were not met by contractors, who covered the sacred rocks of Annie Myers hill with imported fill. It would be over 10 years before the project recommenced. As well as dealing with the project’s
sensitive history, GHD successfully negotiated a number of other challenges including the treatment of the sacred rocks, tree protections zones, grass fires, vandalism and the need to design a structure capable of being fully submerged up to two metres above the deck level of the boardwalk.

The Todd River is an ephemeral river, usually just a sandy river bed, however upstream rains are known to cause significant flooding and dangerously fast flow rates. The handrail and barriers of the boardwalk are made from a series of curved fin elements which give a rounded form to the structure as it snakes between the trees and along the bank of the river. One side of the fins is a bright yellow and the other side is orange to give users a point of interest travelling in different directions along the boardwalk. The colours were inspired by local wildflowers and are a bright flash of surprising colour in a landscape of generally muted tones. Local conversation in Alice Springs compared the form of the boardwalk to the ‘Yeperenye’ caterpillar dreaming. After a difficult construction period in which the Todd River flowed twice, the boardwalk was complete and opened in November 2016. The path and boardwalk now complete a portion of the Alice Springs cycle network.

In 2016, GHD celebrated 60 years of continuous operations in the NT. We are proud to be part of the very fabric of the Territory, helping private and public sector clients drive ongoing economic development, infrastructure and social improvements.
Stefania Fikus was born and raised in Poland. The eldest of three children, maths and science came easily to the young Stefania, and encouraged by her engineer father, by the end of high school, she knew what her future profession would be. A Master of Engineering degree duly followed, and after graduation in 1977, just married, she began her first job.

The late 1970s were difficult times for Poland. As the political unrest grew and the state-run economy faltered, Stefania and her husband knew a better future lay elsewhere. They emigrated with their young son Piotr to Australia in 1981.

“We arrived in Sydney on a sunny October day, two suitcases each. Mine were filled up with books and dictionaries, and I still remember the welcoming words, ‘This is your new country, here you can choose what you want to do, and who you want to be. It’s up to you.’”

Stefania made the most of it. Swatting through English language night classes, she found her first engineering job six months after arriving. With a hunger for knowledge, she strived for more. Completing her Australian engineering degree at the University of NSW in 1989, she broadened her qualifications with a Masters in Project Management three years later. All the while she was working full-time.

In 1993, as Sydney’s engineering sector felt the downturn of recession, Stefania joined GHD in Darwin, and quickly became a vital part of the team.

A natural trailblazer, working in the Northern Territory with its tropical outback lifestyle has been an experience she wouldn’t swap for the world.

“I realised that I found my place with GHD here. I’d never go back to the big city. There were lots of opportunities for project management in the early years, which was, and still is my passion.”
Encouraged by GHD to continue to follow her natural instinct for self-improvement, Stefania completed a Master of Business Administration at Deakin University in 1997. More recently she added a Master of Professional Accounting to her remarkable skill-set.

“The beauty of self-improvement is that you can do it by yourself. It’s your choice,” says Stefania.

“You don’t need anyone’s permission to become a better engineer, or to become a better project manager, or a better leader. You simply seek out the knowledge that is there, share it, and apply it to your situation.”

From her recruitment as Senior Mechanical Engineer; to her position today as Principal Project Manager/Engineer; (and the NT office’s Deputy Manager), Stefania’s knowledge and skills have been applied to many of the Territory’s most significant infrastructure projects – from improving the living conditions of Indigenous Territorians through new housing developments, to ensuring Defence and border protection facilities in Australia’s north meet the country’s needs.

“Being with the company for nearly 25 years I need to acknowledge the great support I’ve had. GHD is such a special company. My experience has always been that when you need support, you get it. Just ask.”
As the second decade of the 21st century unfolds for GHD in WA, the work profile has reflected the state’s massive and ongoing infrastructural development, fuelled by the mineral and resources industries.
The state of Western Australia (WA) covers one-third of Australia’s land mass and is the second largest country subdivision in the world at 2.6 million km². Four times the size of Texas and 12 times bigger than the UK, WA has only 10 percent of Australia’s population, with most people living on the coast in the south-west corner of the state. Add to these figures one more remarkable statistic: WA produces 46 percent of Australia’s exports by value.

Perth has the dubious honour of being the most isolated city in the world, but this also brings advantages, one of which is the apparent in-bred entrepreneurship that exists in many of its people. In the period covered by this book, Western Australia has produced a chairman of GHD (John Phillips), and two chief executive officers (Ian Shepherd and Ashley Wright). Using innovation and creativity, this vast state, and in turn GHD, has been able to capitalise on its unique position.

The 1990s saw the business grow incrementally with the addition of new services and supremely capable people. Diversification was key as it became clear the turbulent economic conditions of the early part of the decade would continue. In 1993, GHD celebrated its 21st birthday in WA with confidence and optimism. Soon after the anniversary, the business experienced a transformational phase, having won the Water Corporation Out-Sourcing contract in 1995, and Works Australia joining the company in 1997. GB Hill & Partners joined in 1998 to reinforce GHD’s civil engineering and roads capability. The end result saw GHD recognised as leading the WA industry in defence, project management, water and civil infrastructure, urban development and roads.

Between 1988 and 2013 the WA economy grew from AUD90 billion to AUD235 billion. While the state had long been recognised as a mining frontier dating back to the 1890s gold rush, and then forward to the 1960s iron ore boom, WA’s mineral resources sector continued to be the major and an ever increasing driver for the economy. In addition to iron ore, the industry was also extracting nickel, gold, coal, diamonds, mineral sands,
bauxite and, on a whole new scale, hydrocarbons. The 2000s saw growth boosted through the commitment of megaprojects across WA and by 2013 the population had grown to 2.4 million, compared to 1.55 million 25 years previously. To match this growth and the community’s new demands, public infrastructure over the period required a massive boost.

GHD’s WA regional network in many ways mirrored that of the company at large, with the aim of leveraging competitive advantage through a local presence, supporting strategic clients, nurturing long-term relationships with key regional private and public sector organisations, as well as the clearly defined goal of providing opportunities for youth in regional areas to pursue science and engineering careers.

In the South West region, the Bunbury office opened its doors in 1980, offering assistance to local clients to enhance revenue, reduce costs, improve productivity, and meet community and environmental imperatives. A key client was and remains Worsley Alumina (now known as South32), where GHD designed and managed the construction of tailings dams, water management and environmental control systems. The Bunbury office has served this client continuously for more than 30 years.

GHD has contributed enormously to the shaping of Bunbury and the South West, and will continue to do so as the region’s light and heavy industry develops in parallel with the expansion of Bunbury Port. The growing population will lead to a continued demand for engineering and environmental services. GHD’s South West presence further expanded with the opening of the Albany office in 2015, as a response to the state government’s goal to drive increased regional development in the south of the state.
In the Mid West region, GHD acquired the Geraldton practice of Shepherd & Fisher in 1986. The city, with its population of more than 35,000 is a key service and logistics centre for mining, fishing, wheat, sheep and tourism industries. Promoting a strong belief in the importance of the Pilbara to the WA economy, GHD could be recognised as a ‘trailblazer’, with the opening of the Port Hedland office in 1983. It operated for nearly a decade until the Karratha office took over its mantle in 2004, responding to the growth demands of the North West region. Further east, GHD committed to the Kalgoorlie office in 1995 and three years later Looten Engineers joined us, creating the largest infrastructure consulting business in the region.

**People and projects**

In 1988, the professional profile of the WA business consisted of structural, civil, marine, electrical and geotechnical engineers, three urban and regional planners, and the surveyors.

Revenue streams were largely coming from subdivisions, roads (including involvement in the Northern Highway between Newman and Port Hedland, and the award-winning Munjina Gorge section), tailings dams, the Boddington Gold Mine, and numerous structural engineering projects.

GHD move to larger office accommodation in Perth in 1988 gave us room to expand. We recommenced airport engineering services, having previously designed and managed the upgrades of Albany and Barrow Island airports. One notable new aviation project was the parallel runway at Jandakot airport and the master planning for new taxiways and apron areas.
Soon the power sector was an increasingly important part of the business via the Black & Veatch joint venture, and was successful with construction management of Mungarra, Kalgoorlie and Pinjar Gas Turbine Stations. This was new ground, previously the reserve of government utilities. More power plant feasibility studies, design and condition assessments followed. Meanwhile the oil and gas sector was fuelling the company’s growth. Following GHD’s pre-1988 design phase of the North West Shelf LNG Load-Out Jetty, construction phase services were provided until completion in 1989. This major infrastructure project remains a widely referenced design exercise in the oil and gas sector.

The recession in the early 1990s was negotiated largely as a result of the multidisciplinary nature of the business. Many competitors were down to three-day or four-day weeks, with accompanying reductions in people numbers, and it was the relationships with clients such as Boddington Gold Mine and Worsley Alumina that kept GHD’s teams busy, along with large projects such as Observation Rise Resort in Scarborough.

The road may have been bumpy but the journey continued. In the early 1990s, Main Roads WA commissioned GHD to undertake project management and road construction projects across the state, including the Eyre Highway as well as projects at Meekatharra, Bunbury/Capel and Mandurah. Projects covered the various regions of the state: the South West region, the Goldfields, the Pilbara and the Kimberley.

Soon after, the WA Government committed to a master plan for the Northern Suburbs Rail System, some 27 km of rail with tunnels and bridges. Here GHD provided early bridge advice that led to the award of the plan’s largest design and project management contract. The contract related to the section leading to Joondalup and included the railway earthworks and sub-rail pavement, four bridge-tunnel structures and extensive retaining works in areas of deep cut. Two of the tunnels, the largest of their kind in Australia, used the Techspan precast concrete arch bridging system.

GHD’s civil engineering services in the state have not only involved the design of new projects but also the demolition of existing infrastructure. One such project was the demolition of eight of Bunbury’s twelve grain silos in 1992. The remaining four silos have subsequently been redeveloped into an interesting ‘boutique’ style hotel.

As GHD celebrated its 21st birthday in WA in 1993, the Surveys group undertook two major hydrographic/geophysical surveying assignments for Woodside Offshore Petroleum’s North West Shelf Project. The first was a pipeline investigation survey between two proposed offshore oil platforms and an existing platform; the second was a survey of the pipeline and the shore.

During this period, the group was also responsible for survey activities associated with most of the high-rise buildings in the Perth CBD, together with the Burswood Casino precinct. In 1993, the company won a major project management commission from
the Department of Defence to manage the expansion of buildings and infrastructure at HMAS Stirling on Garden Island. Federal government projects had normally been undertaken by the Commonwealth’s Department of Construction (subsequently Works Australia) and the invitation for tenders from private consultants broke new ground.

The mid-1990s

In 1994, GHD began an aggressive step up in capability, recruiting people with experience in power generation, industrial electrical, industrial mechanical, and instrumentation and control. GHD Black & Veatch began study work on a cogeneration plant at the BP refinery near Fremantle. J.F. Pritchard, a Black & Veatch company, was awarded a contract to deliver the project, with GHD providing design services for all the underground services and foundations, as well as the off-site mechanical interconnections. The Kwinana Cogeneration Plant as it became known was a landmark project, not just in Western Australia (where it was the first major privately-owned power plant built under the state government’s new policy), but it was also a groundbreaking national project as the first combined cycle cogeneration plant in Australia.

Due to the benefits of cogeneration (the combined production of 116 MW of power and up to 2400 tpd of steam), the plant was the most efficient in the country at the time. Completed in December 1996, with no contract variations and with a performance bonus payment for improving on the guaranteed efficiency, the plant over time proved to be one of the most reliable in Australia.

One of GHD’s largest design and construct commissions also in this time period was the associated Kwinana wastewater treatment plant. Commissioned in 1994 and coming in
at AUD14 million, the plant is believed to be a world-first in its use of an oxidation ditch for nutrient removal from oily wastewater.

In 1994, the WA Water Corporation invited tenders for the outsourcing of all its dams, water supply, sewerage, electrical and mechanical design work. After being shortlisted with another consultant group, GHD was invited to make a presentation to all of the 75-plus people who would be affected by the outsourcing. This presentation was made by GHD’s WA managers rather than the competition’s head office managers from interstate. As a master stroke, GHD had 20 of its Perth-based people attend the presentation in Leederville. A subsequent unplanned social gathering, suitably impressed the Water Corporation. GHD won the majority of outsourcing, with the smaller dams group from the Water Corporation joining Geo-Eng, which would in turn merge with GHD in 2002.

In 1995, Neil Rowlands assumed leadership of the Western Australian business from John Phillips. Also that year GHD was awarded management of the maintenance for about 2500 km of state and federal roads throughout the highly populated south-west of the state. The experience gathered on this project would stand us in good stead for the new breed of 10-year performance-based maintenance contracts that appeared in 2000.

Works Australia joined GHD in September 1997 taking the total workforce in WA to about 240 and so began a dedicated property and buildings group, comprising architects, interior design and building services engineers. Greater expertise reinforced GHD’s capabilities particularly with federal government clients. Project offices on Christmas Island and Cocos (Keeling) Island were established and the company’s work offshore expanded.
In 1995, the surveys group formed a joint venture with British firm Gardline Marine Surveys to undertake hydrographic, geophysical, seismic and geotechnical surveys for the oil and gas industry. The first major project for WA Petroleum, a consortium led by Chevron, was for a detailed hydrographic and geophysical reconnaissance survey west of Barrow Island using the MV Sea Challenger to determine the position the Gorgon Field production platform.

More seabed and sub-seabed surveys were carried out over the ensuing years for Woodside Energy, Apache Energy, and Phillips Petroleum amongst others. The largest project being an exploration seismic survey of the Great Australian Bight funded by the Australian Geophysical Survey Organisation and Seismic Australia, extending from Esperance in WA to Port Lincoln in SA. This project was the first detailed geophysical survey of these waters, and led to a number of prospective oil targets for future investigation. The surveys group carried out a plough assessment survey for Overseas Telecommunications Commission, north of Sydney, as a prelude to the laying of a fibre optic cable from Guam to Australia. The survey, using a one-tenth scale plough, was towed behind a tender vessel from the beach to beyond the 20 m seabed contour to provide data to inform the design of a full-scale plough to bury the cable between deep water and the landing beach.

1998-2003

In 2000, GHD Black & Veatch delivered several feasibility studies and carried out owner’s engineer roles on a number of power projects, including the SIMCOA waste heat recovery study, the Kingstream Steel Project’s 350 MW combined cycle station and a cogeneration plant at Kemerton. The retrofit of combined cycle to a simple cycle gas turbine at the Barcaldine Power Station was the first and still the only project of its type in Australia.

Winning the project management for the WA Maritime Museum in 1998 was a significant milestone. Running until 2002, it won numerous awards, including the overall Engineers Australia Excellence Award.

In 1999, GHD introduced innovative grain handling design solutions to the Cooperative Bulk Handling Group and led to many years of continued service with this client, spanning storage cells, conveyors, infrastructure and electrical systems. GHD’s multidisciplinary technical capabilities, including architecture, were recognised as being of significant advantage to the Peters and Brownes Group which engaged GHD as the consultant and project manager for a major dairy and milk processing factory in metropolitan Perth.

Engineering, Procurement, and Construction Management (EPCM) became a reality for GHD in WA in 1998, winning Wesfarmers’ Premier Coal Handling Plant at Collie, which included all materials handling, rail load-outs, works and instrumentation. A year later GHD formed a joint-venture with Stork Electrical to win the first 10-year performance-
based maintenance contract for Main Roads WA. The contract outsourced maintenance, asset management and minor capital improvements for Main Roads’ electrical assets, including significant intersections, street lighting, emergency telephones, and variable message signs. Later the scope widened to include infrastructure associated with Intelligent Transport Systems. In 2009, this highly successful project was rewarded with a four-year extension, making it one of GHD’s longest continuous contracts.

In 2000, Ian Shepherd assumed leadership for the Western Australian business, and in October the same year, GHD was awarded the design consultancy for the Jervoise Bay Project (now the Australian Marine Complex). The project consisted of a 15,000 tonne load-out wharf (the largest in the world at the time), a 3,000 tonne load-out wharf, dredging to create a 10 m deep harbour, seawalls, 3.3 million cubic metres of earthworks and reclamation, an 80 ha industrial estate, and relocation and provision of major new services infrastructure.

Demonstrating the often long gestation periods for power projects, in the late-1990s, GHD Black & Veatch studied the possibility of cogeneration at Alcoa Australia’s Alumina Refineries at Kwinana, Pinjarra and Wagerup. Alinta Energy and Alcoa formed a joint venture to develop the plant and Pinjarra was the chosen site. GHD Black & Veatch acted as Owner’s Engineer (OE) and balance of plant designer for the first unit producing 140 MW of power and up to 420 tph of steam. As well as EPC specification, tender assessment and technical review of design construction and commissioning, along with the usual OE roles, GHD also delivered a significant amount of design on the project, including underground services, foundations and plant interconnections.
Materials technology and engineering became a key focus for GHD with Taywood Engineering joining in 2002. With the iron ore market on an upward trajectory, GHD established a joint venture with Aker Kvaerner. This was successful with Rio Tinto and helped deliver significant brownfield projects in support of increasing export volumes. GHD’s merger with Egis and Geo-Eng the same year delivered significant benefits to WA with enhanced marine, civil and environmental capabilities along with dams and related water engineering knowledge.

2003-08

In 2003, Ian Shepherd took over responsibility for the Australian business as General Manager, with Graham Greenacre taking over leadership of Western Australia, followed by Ashley Wright in 2010.

Qest Risk Management joined GHD in 2005, enabling us to provide these services specifically to the mining industry. One example was work for BHP relating to catastrophic risk management which assisted the client in utilising safety records. A year later, the GHD Black & Veatch company was closed down, replaced by a Memorandum of Understanding detailing GHD’s task in pursuing traditional consulting engineer contracts, while Black & Veatch would pursue selected EPC opportunities identified by GHD.

With oil and gas becoming key drivers for the Australian economy, GHD invited PCT Engineers to join in 2007. This introduced another 70 people into the company, with particular emphasis on clients such as Chevron and Apache. Alinta once more demonstrated confidence in GHD in 2007, appointing us for an owner’s engineer role.
on the 210 MW Tamar Valley Combined Cycle Power Station, and a 58 MW Open Cycle Gas Turbine Station. GHD completed more than the OE role usually involves, providing geotechnical services, detailed design and procurement documentation for the civil works and foundations, as well as numerous design services for fire and other systems.

2008-2016

The Southern Gateway Alliance (SGA) heralded the start of an unprecedented run of success for GHD. Together with construction partner Leighton (now CIMIC), GHD was highly successful in delivering work under an alliance model – a way of working that requires high levels of cooperation and where performance is underpinned by a ‘best for project’ approach and a risk/reward regime.

As a member of the SGA, GHD was responsible for the environmental assessments and approvals, road, bridge and drainage design for the Kwinana Freeway extension and Forrest Highway (later known as the new Perth Bunbury Highway). The AUD705 million project received numerous accolades for its design and environmental planning. The SGA team went on to undertake the Mandurah Entrance Road project as a AUD120 million variation contract. The alliance’s upgrade of the Great Eastern Highway to six lanes through the inner city suburbs of Belmont was another example of the team’s success. Remarkably the project was completed 13 months early – all the while keeping four lanes of traffic open. The run of alliance wins continued with the same partners being successful with the AUD1 billion Gateway WA Perth Airport and Freight Access Project.
– WA's largest ever road project, designed to improve the safety and efficiency of one of the state's most important transport hubs. This was followed by the Roe Highway Stage 8 Freightlink Alliance.

Success with road alliances was contagious and, in 2011, GHD partnered with John Holland in the first ever rail project undertaken under the alliance model. The project, in the heart of the Perth CBD, involved the sinking of sections of railway line, which have separated the city from the commercial precinct of Northbridge for more than a century. Further major success followed in urban rail with the 2016 award of the billion dollar Forrestfield Airport Link to a consortium of Salini Impregilo and NRW, with GHD as the lead designer. This transformative project involves the design and construction of an 8.5 km underground rail link from Bayswater via the Perth International Airport to eastern suburb of Forrestfield, improving airport accessibility and opening up new areas for urban development.

In 2011, GHD took a major step in EPCM project delivery, being appointed by BHP Billiton Iron Ore as a major project partner, responsible for delivery of non-process infrastructure for their expansion program in the Pilbara. During the investment boom in iron ore, GHD grew a team of more than 200 people dedicated to delivery of BHP Billiton's expansion program. Subsequently, GHD’s delivery of services to the mining sector grew strongly, underpinned by panel contracts with all of the major mining companies in the state.
GHD continued development of EPCM capability in 2014, entering into an agreement for the outsourcing of engineering and project management by Horizon Power, a government trading enterprise responsible for electricity generation, transmission, distribution and retail across regional WA. By 2016 GHD had achieved an undisputed leadership position in power engineering consulting in the state. This grew people numbers in WA to more than 800.

GHD’s diversified business model has positioned the company as the industry leader in WA. The environment business has made strong in-roads into the oil and gas market providing environmental assessment and oil spill modelling services for off-shore drilling programs. Strong connections have been developed with companies such as Quadrant Energy (formerly Apache), Chevron and Murphy Oil.

In 2014, the team from the Woodhead architectural practice joined GHD with some 20 architects, interior designers and technical professionals joining the company’s existing property and buildings team in Perth to form a strong multidisciplinary group of more than 100 people. GHDWoodhead has been named one of the world’s largest architecture practices, ranking as #71 on the highly regarded 2017 World Architecture 100 listing.

The Perth City Link Bus Port project is the second and final stage of the Public Transport Authority (PTA)’s infrastructure project to construct a state of the art underground terminal replacing the 40 year old Wellington Street Bus Station. The new Bus Port project
supports the aspirations of the PTA for a state-of-the-art public transport facility that is a critical component of the city's infrastructure. GHDWoodhead is the architectural designer for this landmark project. GHD was the lead environmental consultant for this project.

GHDWoodhead is the lead consultant for the Curtin University Building 410, a state-of-the-art learning and teaching facility, which hosts the university's new Medical School as part of the visionary Curtin City Masterplan. All learning spaces are enabled with the latest in integrated distributed audiovisual technology.

Craig Walkemeyer assumed leadership of the Western Australian business in 2014. By June 2016, the number of GHD people working in Australia's largest state had been rationalised to 500, following the downturn in the industry at large. In July 2016, Craig Walkemeyer handed over the reins to Sheldon Krahe to focus on his role as Australian Market Leader Energy and Resources.

As the second decade of the 21st century unfolds for GHD in WA, the work profile has reflected the state's massive and ongoing infrastructural development, fuelled by the mineral and resources industries. The job list includes airports, dams, roads, power and port facilities, hydrology and water supply projects; and a plethora of feasibility studies and continuing consultancies. In environmental services, GHD was awarded a major contract with Chevron in 2016 for the provision of environmental advisory services to their Australian Business Unit. This is typical of the key client relationships that GHD has successfully forged in this resource-driven state.

The company's story in Western Australia over the past forty years is one of self-belief; of applying the company's DNA – its heritage – to break new ground. One thing is for sure, GHD will continue to have a central role in WA's next chapter of development.
On 1 April 2016 Ashley Wright was appointed GHD’s Chief Executive Officer. Born in Cape Town to parents of English and French/Dutch descent, Ashley was raised in South Africa. As HR Manager to petrochemical firm Caltex, his father’s globetrotting career shaped a Euro-centric upbringing. Reflecting on the journey his father’s career created for the family, for Ashley it became a touchstone for his own global odyssey.

“Everywhere my father worked, he left a part of himself there, and that gave us a connection to the world,” he says.

A graduate of the University of South Africa, with a Bachelor of Commerce and a Master of Engineering (Tech) – Roads and Transportation, Ashley’s motivation for studying civil engineering was to help build the desperately needed infrastructure to unlock the country’s economic growth. However, at 35, eager for new challenges and a more stable environment to bring up a young family, he had his sights set on distant horizons.

With his wife Glenda and their two infant children, Ashley moved to Perth in 2001, having been invited by SMEC to establish a transport business in Western Australia (WA). Three years later he joined GHD as a Principal Engineer. Ashley served as Operating Centre Manager in one of GHD’s largest, and at the time fastest-growing Operating Centres in WA from 2010 to 2014, has been a Director of GHD since 2013 and between 2014 and 2016 and as a member of the Executive Management Group he has had responsibility for Europe, UK and the Middle East.

With a deep sense of social justice nurtured by his experiences in South Africa, from 2006 until 2013, Ashley was a founding Director of the ROADS Foundation, a not-for-profit organisation established with the WA Government and Main Roads WA to empower young indigenous regional Australians. The Foundation’s programs, linked to industry partners, enables participants to find employment in road construction and transport infrastructure asset management.
In 2016 Ashley was appointed CEO of GHD. Paying tribute to his predecessor, Ian Shepherd, Ashley says he is keen to continue the same mentoring role. “Ian was always accessible, and I plan to be the same.” GHD is a vibrant egalitarian company that focuses on teamwork and allows exposure to everybody, whatever your role. That is a large part of what makes us different and so successful.” Embodying the GHD philosophy handed on through the generations, Ashley says it’s all about realising a shared vision of improving the communities in which we live, work and play.

“This is a company where if you’re prepared to back yourself, and work hard, you’re rewarded in time extraordinarily.”

“We are masters of our own destiny. That’s what makes GHD so special. If you can dream it, you can do it.”
The Christchurch office utilised the 'One GHD' concept to its fullest extent, with people from Victoria, New South Wales, South Australia, Canada, Qatar, East Coast USA, and the Philippines, as well as every office in New Zealand working on earthquake recovery projects.
Pre-2000

GHD’s connection with New Zealand predates forays into the local government market with asset management services that Roger Byrne led in the 1990s. One of the founding partners of GHD, Gerald Haskins, was born in Christchurch in 1885. Gerald attended Christchurch Boys High School and then Canterbury College School of Engineering (now Canterbury University) where he gained his engineering degree qualification. His mother, Elizabeth Gosling, was a ‘Canterbury Pilgrim’ arriving as a two-year-old child on the Randolph, one of the first four ships bringing settlers to form an official colony in Canterbury in 1850. Like many Kiwis in more recent times, in 1911 Haskins left his native New Zealand to seek his fortune in Australia.

2000-2005 – Initial establishment

Building on early asset management work in the local government sector, and challenged by the strategy to grow internationally, the formal establishment of GHD in New Zealand was achieved through the merger in December 1999 with Manukau Consultants Ltd (MCL), a local authority trading entity.

The acquisition of MCL included a number of offices in the North Island, including Orewa, Manukau and Pukekohe in the Auckland area, and Marton, Tauranga and New Plymouth in provincial areas. At the time of the merger MCL employed about 150 people. The new operation had a strong presence in local government transportation, a range of water/wastewater/stormwater services, structural engineering and a fledgling environmental, solid waste and asset management business.

The inaugural Operating Centre Manager was Michael Brouwer who had relocated from Sydney. He was assisted closely in Auckland by Tony Norrish, who had transferred from Perth. Following the introduction of the ‘GHD way’ and GHD systems, the local team set about streamlining and developing the local government-focused business and
broadening the client base to include other private and government-based clients, such as Housing NZ, the Ministry of Education and Watercare Services Ltd.

The acquisition of Wellington-based buildings and food industry consultancy Smith Wood followed in late 2000, establishing and growing GHD’s presence in Wellington and the surrounding region. This added further structural and building services capability.

The Palmerston North office was established in mid-2001 leading to the expansion of our water and transport business in the lower North Island.

In early 2002, Russell Board was appointed as the New Zealand Operating Centre Manager. Implementing the company strategy in New Zealand saw the matrix structure established with the formation of demand stream leader roles to help drive business development and client relations.

The 2004-05 period saw another milestone event in the merger with Auckland City Council’s engineering services group City Design Limited. This also included the former Hutt City Council’s professional services company Civil Design Services in the Wellington area. Through this, GHD significantly strengthened its position in the local government sector in both Auckland and Wellington, and expanded our services further into structural engineering and also architectural work for local government.

Mike Hayes fondly remembers how the merger of City Design unfolded, and how GHD people clearly differentiated our service offering from those of other potential suitors at the time – a key factor in the success of the integration.
“The City Design General Manager, Barry Potter, had obtained a commitment from Auckland City Council that the key criteria for evaluating sales offers was to be the interests of the City Design staff members,” recalls Mike.

“Two meetings down and only one left to go, meant that City Design approached the final session with some concern. It was with GHD. Surprisingly, they turned up mob-handed with a broad cross-section of employees at all levels. In contrast to the previous suitors, GHD insisted on spreading around the table interspersing with us rather than bunched on one side of the table like the other companies had done. I found myself between real people, and only a couple of suits among them.

“Finally, Des Whybird (then GHD’s Chairman) got up, moved out from behind the table and strolled around the assembled people looking everybody in the eye. He fumbled for a piece of paper that presumably had some notes on it. ‘What GHD believes it is buying’, began Des,’... is you, your skills and experience’. After that it didn’t really matter what Des or anyone else said. City Design people had made up their minds, and subsequently made it quite clear to Barry that our future was definitely with GHD.”

Upon completion of this acquisition, Russell handed over the reins to Barry Potter to integrate the businesses and lead the next push forward. Having a ‘home-grown Kiwi’ as Operating Centre Manager was seen by our people at the time as a key step in the evolution of GHD into one of New Zealand’s leading infrastructure consulting services companies.

Christchurch – from small beginnings and transformation through adversity

With the Haskins legacy in the Canterbury Region as a backdrop, a presence in Christchurch was established in 2004. Russell Board met with Derek Crombie – a trustee for Central Plains Water Trust, a major proposed irrigation scheme in Canterbury at the time. Derek had recently retired from another engineering consultancy and was performing directorship roles for various firms around Christchurch. In 2004 Russell convinced him to take on a role with GHD to establish a Christchurch office for the company.

Derek convinced Russell that he needed several ‘pinch-hitters’ (senior people) to bring the work in, but that the work could be done elsewhere in New Zealand. So rather than waiting for the work to be there before hiring, some key people with established personal networks were recruited as the foundation for the Christchurch business.

Derek and Bob Penter (environment) brought with them Solid Energy contacts, amongst others. Allan Watson (water) brought with him Christchurch City Council contacts and Jim McNeill (transport) brought in NZ Transport Agency and Christchurch City Council work. In 2005, the small start-up office moved to BDO House, Victoria Street, and comprised 15 people. The first large job the Christchurch office secured was the project management of the resource consents process for the Central Plains Water scheme.
In 2006, GHD went on to win half of the capital program for Queenstown Lakes District Council in water and transport, and the transportation maintenance contract, starting in January 2007. A great collaborative effort between the Christchurch and Auckland offices to secure this work, the contract allowed a Queenstown office to be opened as well as increasing the numbers in the Christchurch office, where the majority of design would be done. Within six months, the number of GHD people in the South Island had grown to 35.

In late 2008, there were about 60 people working in Christchurch, Dunedin, Queenstown and Timaru across the South Island.

On 4 September 2010, at 4.35 am, a magnitude 7.1 earthquake hit the Canterbury Plains. In the immediate aftermath of the earthquake, Martin Smith, who had previously worked for Christchurch City Council’s (CCC) operations and maintenance contractor – City Care, provided advice to help get the city back up and running. When the CCC decided to rebuild the city's underground and horizontal infrastructure through individual design-build consortia, it seemed obvious that City Care would team up with GHD.

A magnitude 6.3 earthquake then struck Christchurch and the Canterbury Region at 12:51 pm on Tuesday, 22 February 2011, killing 185 people in one of the country’s deadliest peacetime disasters. Water Service Group Manager at the time, Colin Forsyth recalls: “I made it as far as the Colombo Street bridge on the south side of the railway at 12.51. Despite having my seatbelt on, I landed on the passenger seat of the car. The brick building opposite me fell apart... I looked up and saw the cathedral spire fall. The buildings were shaking, looking like they would fall and the area resembled a war zone. I walked back
to my car with Derek Crombie, past what I can only describe as pictures you only see in books – police cars with their back doors open and people sprawled across the back seat on the way to the hospital...people everywhere not knowing what to do.”

Transport Engineer Les Dowdle adds, “Entire suburbs were covered with liquefaction, and where it had dried, it looked like a moonscape; grey, dusty and craters in the road. The focus in those initial days was on family, friends and neighbours. Residents were encouraged to use chemical toilets which were distributed to households as wastewater was not getting to the treatment plant in the east. Wastewater disposal tanks were provided on the streets. I remember these becoming the ‘social hub’ of the street, where you caught up with neighbours and exchanged stories while emptying your chemical toilets.”

The stressful working conditions our people and their families endured during the immediate aftermath, and the ongoing months of thousands of unpredictable aftershocks, were not lost on anyone. The Victoria Street office had to be abandoned due to earthquake damage, with all furniture, fittings, computers, papers and books left behind.

The team started to work out of the City Care Milton Street depot, which Derek Crombie quickly arranged. City Care later gave us space in their Antiqua Street boardroom and this connection enabled us to secure the lease on premises at 226 Antigua Street promptly after the February event.

Team members had the opportunity to carry out geotechnical assistance on emergency response projects such as the Avon River Stopbanks and Port Hills rock fall, road assistance, water and wastewater assistance, and structural, and health and safety assessments of buildings and petrol stations. We also had requests for rapid building assessments throughout the city.

At this point the team began pulling in GHD people from across New Zealand. Within a week or so, all the local Christchurch people were fully utilised plus most of the Queenstown office. Property and buildings teams from Wellington and Auckland, along with the water group and geotechnical professionals swelled the ranks of the hastily established office, and by mid-March there were up to 80 engineers working out of the temporary office.

After a few weeks, the water supply was back up and running in most areas of the city and the water group’s focus turned to wastewater. By June, there were over 50 water group people working with City Care and the Christchurch-based group had started to increase in size.

The transportation team assisted City Care’s contractors with the removal of the widespread liquefaction from Christchurch’s urban roads, and developed a database to record, monitor and manage the total tonnage (470,000 t) of liquefaction removed.
During this time, the Christchurch office utilised the 'One GHD' concept to its fullest extent, with people from Victoria, New South Wales, South Australia, Canada, Qatar, East Coast USA, and the Philippines, as well as every office in New Zealand working in Christchurch and elsewhere on earthquake recovery projects.

As one of the four consultants that worked with contractors after the September 2010 earthquake, GHD became one of the four lead design consultants for the Stronger Christchurch Infrastructure Rebuild Team (SCIRT) Alliance, with Martin Dasler the GHD-led team's Design Manager. Within six months, GHD in Christchurch had gone from a well-known and respected consultant within the city, to proving ourselves as a major market player in the Canterbury region.

The response to the earthquakes had also enabled a significant property and buildings team to be developed in Christchurch and this included an architectural capability. The team is also honoured to have been appointed as the engineering designer on the Canterbury Earthquake Memorial project, a significant site of remembrance with a 100-year design life to commemorate the loss of life in the 2011 earthquake.

The Christchurch business has since diversified across all of the transport, property and buildings, water and environment and planning sectors. By 2016, under Donna Bridgman’s local leadership, the team had outgrown the Antigua Street premises and the office was relocated to a new building in Victoria Street, ironically adjacent to the pre-earthquake office location.

Today the Christchurch office has close to 100 staff servicing our core markets. Just over a third are female, with a diverse range of employees originating from the far reaches of the globe, all united in their passion for supporting the region and its
post-earthquake recovery efforts. The GHD people are resilient and proud to assist clients and communities, a recent example being supporting engineering responses to the major Kaikoura earthquake event in 2016.

2005-2016 – Challenges in a changing market

Under Barry Potter’s leadership, employee numbers in New Zealand rose to more than 450, with the number of offices growing to 15 in response to buoyant market conditions.

Throughout the majority of this period, the transport and water market sectors remained the larger parts of the business. The environment and planning business grew with market niches in the contaminated land, site remediation, solid waste management, hydrogeology and water quality, and statutory and consent planning areas. Across the operating centre, we now have one of the larger planning practices in all of New Zealand, and whose team members have played key roles in the consenting and permitting of many infrastructure projects undertaken elsewhere in the NZ business. As an example, under the direction of Mary O’Callaghan, the planning team won awards with their consultation strategy for the NZD300 million Christchurch Southern Motorway approvals.

The property and buildings business had also diversified from the initial structural and building services capability to incorporate a significant architectural and hydraulic/HVAC and electrical capability. Aside from ongoing work with local authority clients, mainly in social infrastructure projects (including a major renovation of the Auckland Central Library), throughout this period, the New Zealand Defence Force (NZDF), Department of Corrections, and the Ministry of Education all became major clients. Examples of major projects completed include the Light Armoured Vehicle facility at Linton Army Camp, a Pilot Training Facility at the Ohakea Airforce Base, design
and construct schools for Hawkins Construction at Mission Heights and Papamoa, and a program of work on community-based corrections facilities at 80 different locations as well as prison upgrade projects at Auckland, Wellington, Invercargill, Christchurch and Whanganui for the Department of Corrections.

A significant geotechnical capability was established by Bob McKelvey in 2002, and grew throughout this period, initially supporting project work carried out by the rest of the business to now also having its own client base. Program work associated with the consenting/permitting and then project management implementation of mobile phone network tower rollouts for a number of telecommunications clients has also been undertaken.

In 2009, Barry Potter moved into a global leadership role as Property and Buildings Market Leader within the company, and Gary Payne then lead the New Zealand business as Operating Centre Manager. Gary had joined GHD through the transport team of MCL in the late-1990s. Barry was subsequently appointed General Manager, Asia in 2010.

The Global Financial Crisis impacted on consumer spending and in particular residential property growth; the sector that fuelled much of the demand for public sector infrastructure which the business relied upon. With many of our client organisations spending less, market opportunities contracted. In response, project work in the Australian market grew to greater than 10 percent of the total New Zealand revenue at this time.

In late 2010, the seven local government authorities in Auckland merged to form the single Auckland Council, with Watercare retained and transformed into the sole water-wastewater services provider, and Auckland Transport (AT) established to carry...
out the local transport functions. This change had a significant impact on our main clients’ locations and operations in Auckland, and led to the subsequent amalgamation of the three Auckland region offices in Orewa, Manukau and the City into the current, single location in late 2012 on the city fringe at Freemans Bay. Amalgamation of the Lower Hutt and City offices in the Wellington region followed later.

Barry Potter returned from his role as General Manager, Asia, in 2012 to again lead the New Zealand operation. With some local government agencies moving back to an in-house service provision model, this period saw some further consolidation of the business and office numbers in response to market conditions.

In July 2014, Barry decided to take up other pursuits. The business was reorganised to a three regions (Auckland, Wellington, Christchurch bases) structure and Ian Fraser was appointed Operating Centre Manager in April 2015.

The New Zealand business was incorporated into the newly-created Asia Pacific region of GHD and Rob Knott was appointed General Manager, covering operations in New Zealand, the Philippines, China and Chile.

In 2016, the New Zealand architecture group rebranded as GHDWoodhead and under the direction of Russell Hawken, established strong connections with GHDWoodhead teams across Australia. Late in 2016, GHDWoodhead welcomed the Creative Spaces business and its approximately 30 people, further enhancing the architectural capability of the property and buildings team, as well as adding significant strength in building interiors and fitout management – overall a complete integrated buildings offering for clients.

In late 2016 a Dunedin presence was re-established to support major transport infrastructure improvement projects and GHD continues to be active and successful in this Central Otago region.

Looking ahead, our perspective on the Strategy to 2020 sees us diversifying our client base, with more work targeted in the private sector, particularly within the environment planning, and property and buildings sectors and with the major contractors. Further developing business in the South Pacific and developing a closer working relationship with colleagues in the Philippines, as part of the Asia Pacific region, are also key objectives for the New Zealand team.

Heartland New Zealand – a key part of our transport business

GHD’s business in areas outside the main city centres was built mainly on a network of local offices serving local clients, rather than serving these clients from Auckland, Wellington or Christchurch. Many New Zealand councils in the late 1990s and early 2000s outsourced their professional services work relating to the maintenance and
operation of their road transport networks. MCL had these types of contracts with Rangitikei and Manawatu District Councils in the lower North Island, which were serviced from the project office in Marton. Building on this, GHD was successful in securing the road network management contract for Far North District Council (FNDC) in 2003, initially for a term of three years, with two one-year extensions available, dependent upon performance. Offices were established in Kaikohe and Kaitaia. The contract included the management of more than 2500 km of sealed and unsealed roads, two maintenance contracts, a resurfacing contract and a line marking contract. Alongside these, GHD provided general engineering advice, structural engineering and support and assisted the council’s customer service centre responding to requests. GHD was also instrumental in securing regional development funding for the council to deliver a program of road and bridge strengthening projects to coincide with significant forestry operations and assisting with the long-term asset management of the network.

A similar contract was pursued and obtained for the Ruapehu District Council in the central North Island, which led to the opening of an office in 2004 in the regional town of Taumarunui.

An extreme wet weather event in February 2004 saw significant flooding and damage to the road network in the lower North Island. This generated significant extra ‘at-call’ work in geotechnical, road and bridge structural engineering services related to repairs and renewals, which saw mobilisation of people from all around New Zealand to complete this work.

In 2006, another road network maintenance contract was secured in Queenstown, which led to an office being opened there and a team of 10 people serving local client needs across the transport and water sectors.

The Far North of New Zealand is also prone to severe weather systems and the team was regularly called upon to manage significant storm events. This in turn created work for other GHD offices across geotechnical investigations and design. On average, two to three events occurred annually that required funding assistance from central government to support the FNDC in reinstatement activities. The area was hit hard in July 2007 with a major winter storm and again in July 2008. Both events required over NZD25 million in funding for physical works and professional services to reinstate the network back to an acceptable level of service.

GHD also assisted FNDC in the management of the stormwater assets and created management plans across the district. The team remained relatively stable over the years, with Luke McCarthy taking over the management of the contract and offices from Craig Connelly in late 2009 through to early 2012.

In later years, other road network maintenance professional services contracts, either for the local government agency or through contractor-led arrangements with the New Zealand Transport Agency (NZTA), have led to the establishment of our presence in Hamilton in

These contracts provided stable, secure baseload work and revenue for GHD, with a very low overhead cost structure. Establishment of these offices has enabled diversification of our business offerings in these regions, with the transport work often paving the way for local work in the other market sectors.

Aside from the network maintenance part of the transport business, significant road project work has been undertaken for NZTA on the national highway network. Recently, the team has played major roles on upgrade projects on Auckland’s Southern Motorway, CSM2 in Christchurch and also the innovative Planning Alliances to secure the consents for the NZD700 million 18.5 km Ara Tūhono Pūhoi to Warkworth motorway north of Auckland and the NZD1.5 billion East-West Link project in suburban Auckland, both very large and complex projects. David Proctor has maintained governance roles on these key projects throughout, ensuring the client’s and GHDs objectives are realised.

Another major client of the Transport business is Auckland Transport. Work carried out includes technical support for network maintenance contracts, asset management of road and other transport infrastructure, safety works and other capital projects including cycleways.

**Water – Making a splash through ‘One GHD’**

Building on the local government client base established by Roger Byrne in asset management, the 1999 acquisition of MCL provided immediate skills and client base in
the greater Auckland area, particularly with Manukau City Council and Manukau Water. Joining MCL’s water team leader Alastair Monro and the local team, Tony Norrish and Steve Carne transferred from Australia to build on GHD’s market profile for the benefit of the New Zealand business.

From 2000 onwards, new drinking water standards in New Zealand meant Australian-based Mike Muntisov, Calvin Lai and Greg Finlayson played significant project roles on major water treatment plant projects at Watercare in Auckland, Nelson, Tauranga and Hamilton. These projects established the GHD brand in drinking water treatment in the New Zealand market. Our track record with Hamilton and Watercare has led to further opportunities with these clients.

The acquisition of City Design in 2005 gave GHD significant skills and profile in the Auckland and Wellington markets. Experience in the design and operation of the old combined stormwater-wastewater networks in Auckland through the City Design acquisition played a significant role in GHD being an alliance partner in the first water industry alliance project in the country – the Clear Harbour Alliance. This project involved the design and construction of a separate wastewater pipe network to 1000 old, established residential properties in the inner Auckland suburbs. The project was delivered in a collaborative working arrangement with Metrowater, Downer and Opus. Design team inputs were led by Alastair Monro.

Systems masterplanning for wastewater systems and water supply systems was also a major component of work in the 2000-2008 period, with work carried out for Watercare, Manukau Water, Metrowater, North Shore City in Auckland, Wellington, Christchurch, Palmerston North and Invercargill.
Involvement in systems masterplanning allowed us to better position ourselves for downstream infrastructure design work, such as Christchurch’s NZD60 million main sewer upgrade work undertaken between 2008 and 2011 with partner Beca. Water supply masterplanning undertaken for Watercare in Auckland on the Hunua 4 pipeline project led to our role in the design of this NZD250 million, 30 km long, 1800 mm diameter, steel water main, through Auckland’s southern suburbs, our largest capital water project in New Zealand to date.

As a counterpoint to the steady growth in GHD’s market share and profile in the North Island, the Christchurch earthquakes saw the rapid transformation of our market position in the South Island’s largest city.

Significant opportunities exist within the rural or productive water sector, and work has been completed on a number of irrigation projects. Our selection as the design consultant by the preferred OHL-Hawkins consortia for the NZD250 million Ruataniwha irrigation scheme in Hawke’s Bay was an example of our local skills and international reach at work.

GHD’s water team has made significant progress in its objective of being recognised as a leading water services provider in New Zealand, with opportunities for diversification and established relationships with key client water agency organisations particularly in the Auckland, Wellington, Christchurch, Hamilton and Palmerston North markets.

Food and agribusiness – a key part of New Zealand’s economy

A significant portion of New Zealand’s export income is derived from the food and agribusiness sector, including dairy, food manufacturing and meat processing.

Building on the GHD food and agribusiness established by the Smith Wood merger in Wellington in 2000, ProAnd, a small boutique process design consultancy based in Palmerston North, joined GHD late in 2007. This integration recognised the importance of meat industries in both Australia and New Zealand in generating export earnings (5 percent in Australia and 14 percent in NZ). Across New Zealand and Australia, GHD now had around 40 people capable of working for clients in all sectors of the food industry – dairy, meat, processed foods and seafood. Our team worked across both countries until a drop off in contracts around 2009, driven by the economic conditions, resulted in a downturn in the Australian sector.

Since that time our team has focused on the New Zealand primary industry, and in 2012 Operating Centre Manager Barry Potter refocused the sector by appointing Robert Sinclair as the Food and Agribusiness Leader. Our work focuses on three areas linked to the primary sector: irrigation (boosting land productivity on the East Coast), food processing (dairy, meat, fish, horticulture, prepared foods), and logistics (growth at our ports and airports).
The rapid rise in commodity prices for protein and high-quality food items (dairy, meat, fish and horticulture) was fuelled by global population growth and the New Zealand Free Trade Agreement with China. This saw a resurgence in earnings to farmers and record volumes of exports from New Zealand’s 11 nationwide container ports. Recent projects delivered by the team include a meat processing plant in Africa (Niger), an infant formula canning line for Synlait, a fish processing plant for the South Island client Ngai Tahu, and an industry report into the restructuring of the NZ meat industry. As the global need for high-quality, safe food continues to grow, New Zealand and GHD are well placed to help supply this demand.

**Extending into the South Pacific**

Aside from work undertaken previously through GHD’s International Development Assistance team, projects in the South Pacific completed by the New Zealand team have been many and varied since our work in the region began on the Tovata Water Supply project in Fiji in 2003. We have also delivered a number of road projects in Fiji as well a recent suite of airport-related works in Fiji, Samoa and Vanuatu. Other projects include New Zealand aid-funded energy-related and other projects in Papua New Guinea, and a sanitation project in Kiribati. In the Cook Islands, major projects include the Te Mato Vai Water Supply in Rarotonga, the Rarotonga Airport Masterplan and the Penryhn Island Fuel Depot. With a growing workload across the South Pacific spearheaded by Bob McKelvey and Evan Mason, establishment of an office in Suva, Fiji, is currently being planned.
GHD in the Community – Giving back

New Zealand team members have contributed personally to the wellbeing of local communities through their donation of services or voluntary time into a host of initiatives, including World Environment Day community environment projects, Volunteer Service Abroad (VSA) assignments in the Pacific and helping build houses for Habitat for Humanity in struggling areas in South Auckland.
Born and raised in Suzhou, China, a city often referred to as the ‘Venice of the East’ because of its ancient canal system fed by the Yangtze River, Joy has always felt a natural connection to water. In her first degree she majored in hydrology at Nanjing University, and her first professional project was as potent a professional baptism as you’re likely to find – flood assessment for the Three Georges Dam Feasibility Study.

Not that Joy was a stranger to challenge. Having lost her mother during the Cultural Revolution she was raised from the age of five by her father, a teacher, who bestowed on her and her younger brother a love of learning and a set of values she treasures.

“He always told us to learn new things, to work hard to achieve our goals, to be honest, sincere and generous, and to stay positive. Those precepts I still carry with me,” she says.

Migrating to New Zealand in 2000, Joy gained her Master’s Degree at the University of Auckland, where she majored in Geographic Information Systems (GIS) before joining City Design just before its merger with GHD in 2004.

So began Joy’s journey in applying GIS in New Zealand and beyond. With its powerful ability to visualise, analyse, and interpret data to understand relationships and trends, under her coordination, GHD’s GIS capability in New Zealand has grown substantially, establishing Auckland and Christchurch as important nodes of GHD’s Spatial Sciences service line network.

Since 2004, the GIS team in New Zealand has been deploying the technology in many different ways, including data collection and processing for flood modelling and for transportation and environmental projects. In 2011, the team applied its GIS resources to aid recovery work after the devastating earthquakes that hit Christchurch.
“What GIS enables us to do in these situations is to make sure the data we need is ‘fit for purpose’, and then analyse and visualise that data to get the best outputs. I’m very proud of what our team has been able to achieve, and with GIS constantly evolving as a technology, it has such a vital part to play in delivering great outcomes for our clients.”

In addition to her responsibilities as Senior GIS Analyst and Spatial Science Service Line Coordinator, Joy’s portfolio expanded. She took on the role of Client Relationship Manager – Major Chinese Investors, helping develop and coordinate GHD’s service offerings to Chinese businesses investing in New Zealand.

With inbound Chinese investors an increasingly important group of clients for GHD, Joy says sustaining and growing such clients is all about trust.

“Building good relationships with clients, from China or any other part of the world, is for me about remembering what my father told me – be honest, sincere and generous. This is what builds trust – and trust is critical when doing business with Chinese or any other clients.

“GHD has a unique heritage and values, similar to the ones I learned as a child. As a company we’re rich and diverse, and the respect we have for each other plays a big role in motivating everyone to do their best.”
If one includes the foundation period laid by Geo-Eng, GHD has been established in China for more than 20 years. Arguably no other Australian-founded engineering company has such a track record in the country over this period.
19.
China
Jin Zhang Zou / Peter Wood

The road to China

Any history of GHD’s involvement with the world’s most populous nation could not be written without reference to Geo-Eng, the company GHD acquired in 2002. GHD already had some experience working with the Asian giant through our architecture practice in Canberra, which built a relationship with architects and building professionals led by Bin Min in Changsha, capital of Hunan Province in southern China. However, it was our merger with Geo-Eng that delivered GHD’s first formal operations in the country.

Rewind to 1992. With only one client – the State Electricity Commission of Victoria, Geo-Eng was seeking new markets. The Victorian economy was, like the rest of Australia, in recession and growth markets locally hard to find. China was seen as a new frontier and the focus on Australia’s largest two-way trading partner began in earnest with the recruitment by Geo-Eng of Chinese-born engineer Dr Jin Zhang Zou.

Jin Zhang was to play a pivotal role in establishing the company’s beachhead in the Chinese province of his birth – Hubei Province in central China. In the 1990s, joint ventures, with a maximum of 50 percent foreign ownership were the only legal entities permitted in China for foreign consultants, and with Geo-Eng’s strengths in water, power and coal mining, it sought joint venture partners in these sectors. Relationships were built, and in 1995, two joint ventures were formally established.

Geo-Eng Yangtze Australia Co Ltd (GEYA) was formed in Wuhan, the capital of Hubei Province. The joint venture partner was the research division of the Changjiang (Yangtze) Water Resources Commission which had responsibility for the massive and strategically critical Yangtze River basin. Geo-Eng Development Co Ltd (GED) was set up in the nation’s capital, Beijing. In this case, the partner was a branch of the coal ministry. Board and management positions were equally shared between Geo-Eng and their partner organisations for both joint ventures. Some of the key Geo-Eng people to be involved were Jin Zhang, Peter Wood, and also Glen Reinsch, who went on to become GHD’s Manager in Vietnam.
One of the first projects GEYA became involved with was Shenzhen International Airport, located on the east bank of Pearl River, 32 km from Shenzhen city centre. The airport and runways required innovative foundation treatment, as the natural foundation was not strong enough to meet the required capacity. A distinctive feature of the project was the blend of construction measures into the foundation structure to form a high-standard cushion foundation. Geo-Eng, together with its joint venture GEYA, was involved in the design and project management of the foundation for the runway, taxiway and parking lots.

Over the next 15 years GEYA became involved in a number of large-scale engineering projects, including geotechnical advice for the Three Gorges Dam project, consulting on concrete lining for the South North Water Transfer project, and SCADA system engineering for the World Bank-funded Jiangsu Grand Canal irrigation project.

GED’s first contract was to undertake hydrogeological investigation and groundwater modelling for the Tianjin Beitan Coal Mine. In later years, GED became specialised in the design of coal preparation plants which were in high demand when China began to introduce clean coal technologies.

The joint venture model was challenging. Inevitably the two partners’ goals diverged over time, and in 2000 Geo-Eng sold down part of its interest in GED. GHD later sold the remaining share in 2004, when the GED partner wished to become involved in coal preparation plant construction and operation, as well as design. GEYA continued for a number of years and GHD sold its 50 percent interest in 2009. Austrade officials in Beijing often described this as the longest surviving foreign joint venture in China. While GED delivered little to the overall bottom line, GEYA traded consistently with modest profitability until it was wound up. Both entities enabled Geo-Eng, and then GHD, to build a portfolio of projects in China that added to our corporate CV.
The experience helped GHD with its later China evolution; its ability to win China-based projects and grow its credibility with Chinese outbound investors.

Growing GHD in China

In the early 2000s, reforms to business legislation changed in China and foreign companies were allowed to set up Wholly Foreign Owned Enterprises (WFOEs) for consulting purposes, colloquially known as ‘Woofies’. In 2004, GHD took advantage of the new environment and set up GHD Consulting (Beijing) Co Ltd (GHD Beijing) as its first 100 percent owned entity; a Chinese operation which could employ people, negotiate contracts and undertake projects.

Through the wholly owned entity, GHD was able to recruit full-time employees in the Beijing office, and grow the office, from one person initially to about 12 people in a couple of years. Several of the earlier recruits, including Eileen Wang, Lois Zhang, Boiz Sun and Sophia Wang later became key to GHD’s expanded China business.

In 2003, Beijing had just won the right to host the 2008 Olympic Games and the city was keen to learn world best practice during its planning for the Games. Since GHD was one of the major consulting companies who provided planning and engineering services for Sydney’s successful Olympics in 2000, we were invited to provide consulting advice on transportation planning for Beijing, as well as provide advice to two consortiums bidding for construction of Olympic venues, including the main stadium and the Olympic Village.

The next few years saw rapid change in GHD’s China business. Bin Min’s small buildings practice in Changsha was encouraged to merge with GHD, instantly creating a new GHD office in that city, and establishing the foundation for what would become a substantial buildings practice.

Over the next two years, relationships were built with Rankine & Hill in Hong Kong and Archispace in Beijing. Both firms joined GHD in late 2006, more than doubling the total GHD staff numbers in the region almost overnight.

A number of management changes took place around this period. Mike Polin, as General Manager – Development, drove the mergers with Rankine and Hill and Archispace. Peter Wood was appointed to the new role of General Manager – China and moved to Beijing, commencing his four-year venture in the country. Jin Zhang Zou continued as Operating Centre Manager – China and led the integration of the new firms into GHD.

Around Chinese New Year 2007, GHD’s Beijing office and Archispace moved together into a new office building on the city’s Second Ring Road, marking the completion of that acquisition. The Rankine & Hill team moved into a new GHD office in Hong Kong.

The integration of these businesses was challenging. Neither of the acquired teams had experience operating in a Western business environment and the learning curve was
steep. Jeff Fok moved from Melbourne to run the Hong Kong office, and Brett Goebel transferred from Brisbane to Hong Kong as Operations Manager – China, with the task of getting everyone to understand and apply GHD systems.

Archispace’s core strengths were in urban planning whereas Rankine & Hill comprised building engineers. Both of these skill sets complemented the architecture skills in Changsha and helped make GHD a one-stop-shop for urban development and building projects.

Ready to capitalise on the building boom in the country, GHD in China provided integrated services to property developments across the country from 2007. The range of projects included an exhibition centre in Chengdu in the country’s west, a green concept residential building development in Shenyang in the north, a sports centre in Changsha in the centre, and a golf resort on the holiday island of Hainan in the south.

GHD designed a number of golf resorts in Hainan Province, including the Sanya Bay New Town Golf Villa project, which covered an area of approximately seven square kilometres. The Golf Villas occupied 155 ha and include an 18-hole golf course and residential area. GHD provided integrated design services for the residential area, including overall planning design, architectural design for 304 townhouses and 125 standalone villas, and tropical landscape design. The design also included a golf clubhouse and country club.

In 2008, Henderson Land Development, a leading property developer listed in Hong Kong, engaged GHD to design its first property development project in Changsha, the Arch of Triumph. On a land area of 24 ha, the development comprised a high-rise residential complex, luxury villas, a club, as well as commercial, education and recreation facilities.
One significant constraint on GHD’s buildings business in China was the lack of appropriate design licences. This required GHD to partner with a licensed firm for all building design projects, with the obvious loss of revenue and margin. A small firm in Wuhan with the necessary Class A design licence, Wuhan Jiangwei Architectural Design Co. Ltd. was acquired by GHD in 2010. The merger established a new GHD office in Wuhan in addition to the GEYA office which had been present since 1995.

One of GHD’s major design projects in Wuhan was the Wuhan Zhong Cheng Dragon Lake Complex. The project site covered approximately 24 ha, comprising townhouses, garden villas and a high rise residential building, as well as commercial and club facilities. GHD’s planning and architecture design team created a high-profile complex in a North American style, which was a significant property development success.

The China Operating Centre achieved a major step forward when it joined forces with several Australian operating centres to deliver the complete design of infrastructure packages for the Sino Iron Project in Western Australia. During the design of this project, the Perth office provided concept design and interface with the client, the China Operating Centre delivered the detailed design and documentation, and engineers and architects from various Australian offices were sent to China to provide training and design review to ensure design quality met Australian standards.

From the late 1990s, GHD built a strong relationship with the Ministry of Water Resources. This led to an interesting transaction whereby GHD acquired a majority interest in a consulting arm of the ministry, China Water International Engineering Corporation (CWIEC). This joint venture partnership was led by Dr Qingping Zhu and the new GHD water team grew steadily from around 35 people to more than 50. Projects were centred around water resource planning and hydropower planning. The new division for GHD in China sat well with the company’s global skill set.

One business sector that has persisted from the early days of the two joint ventures until today for GHD in China is international development assistance work, which includes government organisations such as the Australian Government’s Department of Foreign Affairs and Trade (which now incorporates AusAID), as well as the Asian Development Bank (ADB) and World Bank (WB).

Through the Beijing office, GHD has won and delivered a number of ADB and AusAID-funded energy, water and environmental projects. In 2004, GHD was engaged to provide implementation consulting services for the ADB-funded Gansu Clean Energy Project. The project aimed to ease the electricity supply pressure in three poorer counties, and help improve the capacity and capability of local authorities.

In 2005, GHD was engaged by the ADB to provide project management services and technical consultancy to help the Ministry of Water Resources to implement the National
Flood Management Strategy. This program supported the Chinese government’s policy shift from a reliance on structural measures for flood control to an integrated approach, using structural and non-structural approaches to flood management. The project won GHD an ADB Outstanding Achievement Award.

One of GHD’s most significant successes in the aid space came in 2007. GHD was awarded the management of the Australia China Environment Development Program (ACEDP), funded by AusAID. An AUD25 million, five-year Australian Government initiative, the ACEDP had the objective of improving policy development in China in the area of environment protection and natural resources management. GHD, as program manager, set up a project office with ten full-time employees based in Beijing. This significant program raised the profile of GHD in China significantly and provided a strong platform for the further development of business in the country, especially in the environment sector.

The number of GHD people in China grew strongly through this period, from 30 in 2005, to 160 in 2007. In 2009, the total employee numbers reached a peak of 330 on the back of a number of urban planning and building projects. At the end of 2010 Peter Wood returned to Australia and was replaced by Barry Potter as General Manager – China. Barry had been the Global Market Leader – Property & Buildings and prior to that Operating Centre Manager in New Zealand. Around that time Stephen Porter was appointed Operating Centre Manager to allow Jin Zhang Zou to focus largely on outbound Chinese clients.

Several management changes took place between 2011 and 2015. Barry Potter returned to New Zealand 2012 and Jin Zhang Zou was appointed as General Manager – China. Qingping Zhu, who had led the water team, was promoted to Operating Centre Manager.
and occupied that role until early 2015. In 2014 Rob Knott was appointed as General Manager – Asia Pacific with responsibility for China and the region, and later that year Michael Ma, a former Beijing local, relocated from Sydney to China to take on the challenge of Operating Centre Manager.

The management of GHD in China provided a number of our senior people with a challenging and unique experience. The steep learning curves experienced by leaders of both Chinese and Australian backgrounds as they sought to understand, and operate effectively in, different business cultures have undoubtedly added to GHD’s skill set in developing global business opportunities.

**Supporting outbound investment**

China’s direct investment into other countries started in the mid-2000s, as the ‘Go Global’ strategy initiated by the Chinese Government took effect. Australia was the biggest single destination for Chinese Outbound Direct Investment (ODI) worldwide from 2005 to 2015, with investment totalling more than AUD100 billion.

In parallel, with the development of the business within China, GHD was building strong relationships with a number of major Chinese corporations that were expanding into the Asia Pacific region. These companies were investing in mines, gas projects, real estate and agriculture. Jin Zhang Zou directed more of his attention to this market sector, leveraging his knowledge and experience of both Chinese and Australian cultures, and GHD became one of the dominant service providers to these outbound Chinese clients. Jin Zhang was joined in Melbourne by Sophia Wang who was a key client manager for many of these investors. Sophia had previously worked for GHD in China between 2005 and 2009.

One of the most significant projects GHD became involved with was the massive Sino Iron project, in Western Australia’s Pilbara region. Sino Iron is the largest magnetite mining and processing operation in Australia, and also one of China’s largest ever investments into the Australian resources sector. In the summer of 2008, Jin Zhang received a call from MCC Mining Western Australia, the Engineering Procurement and Construction (EPC) contractor of the Sino Iron project developed by Chinese giant CITIC.

As the EPC contractor, MCC used its subsidiary design institute in north China, the Northern Engineering & Technology Corporation, to deliver the detailed design works. MCC urgently needed GHD to review the design works to comply with Australian design standards. GHD subsequently undertook a number of design packages for the project, including geotechnical investigations for the concentrate plant, design of the transmission line and transforming facilities, safety review, infrastructure facilities, business network and security systems. GHD also managed the feasibility study for MCC’s Cape Lambert Iron Ore project in WA. GHD conducted studies for the operation’s port, power and water needs, and also undertook the study work and documentation for the project’s environmental approval.
In 2008, Chinese energy company, Shenhua Group, acquired the Watermark coal project in New South Wales, which covers a 195 km² area, 35 km out of Gunnedah towards Breeza. GHD managed the exploration program and undertook the mine feasibility study for Shenhua's first major international project, the Shenhua Watermark Coal Mine. The feasibility study included a coal marketing plan, wash plant and mine infrastructure design, the mining method, a comprehensive water model, geotechnical assessment, economic mining strip ratios and production rates, rail and port logistics, as well as an economic model.

As part of the mine feasibility team, GHD worked closely with the project's environmental assessment consultant to ensure the mine plan took into account all the environmental and community requirements, given the site was within an environmentally significant and sensitive area. The revenue from this outbound investor client sector soon outstripped that from the local Chinese market and this remains an important area of work for GHD.

Dealing with cycles

If one includes the foundation period laid by Geo-Eng, GHD has been established in China for more than 20 years. Arguably no other Australian-founded engineering company has such a track record in the country over this period. The first decade was a long and steady learning phase for the business. The second decade was marked by a series of growth spurts, adjustments and re-focussing. A number of factors have impacted GHD's business along the way, and probably every other business in China. These include the GFC, massive changes in the Chinese economy, as well as reforms taken by the Chinese Government to manage the economy, including changing policies with respect to inbound investment and continued growth in outbound investment.
GHD has made a number of changes to adapt to these factors. The market for new buildings in China shrank markedly with the GFC and this put enormous pressure on GHD’s building business. These difficult trading conditions led to GHD taking measures to divest the business of the Wuhan Jiangwei Architectural Design Co. Ltd in December 2014, which was purchased by the local manager Min Bin and the local management team.

Chinese Government policies around limiting data access to foreign companies, such as stream hydrology, started to put pressure on our water business. In 2015 GHD negotiated the sale of China Water International Engineering Corporation to Xinhua Hydropower, a subsidiary of the China Nuclear Engineering Group. Chinese corporations continue to globalise rapidly, supported by the ‘one road, one belt’ strategy. GHD continues to operate in China and build strong relationships with Chinese clients in the energy, resources, and urban infrastructure sectors in the regions where we sustain operations. Our understanding and relationships will endure for the long term as Chinese-led businesses retain their positions of leadership and influence in every national economy.
While Hubei Province in central China may be most famous in engineering circles for the Three Gorges Dam - the largest operating hydroelectric facility in the world – another asset from this province – Dr Jin Zhang Zou, has spearheaded GHD’s work in and with the world’s most populous nation since 2002.

The son of a road construction manager in local government, Jin Zhang grew up in the countryside, the eldest of three brothers. His mother was a schoolteacher, and through her nurturing he excelled at school. He was a child prodigy. In 1983 at the tender age of 18 he graduated from Wuhan University with a Bachelor of Engineering. Five years later, after cutting his teeth on upgrading Hubei’s Danjiangkou Dam, the gifted engineer had his sights set on overseas opportunities.

After winning a national award for academic achievement, international universities lined up to offer him a scholarship to complete his PhD, but with the University of Queensland offering a research program, his mind was made. DownUnder it would be. With his PhD complete in 1992 it was a good time to be looking for an engineering job in Australia. The winds of change were sweeping across the state-managed energy sector, and privatisation was the order of the day, with new and ambitious start-ups looking to make the most of the deregulated marketplace.

Geo-Eng, the firm that grew out the geotechnical team at the State Electricity Commission of Victoria, was seeking new markets and with the Australian economy in recession, Asia, and particularly China, was seen as the new frontier. Geo-Eng recruited Jin Zhang to work as a geotechnical and groundwater-modelling specialist, and to help lead the charge into the country of his birth. Leveraging the company’s strengths in water, power and mining, Geo-Eng had established two joint ventures in China by 1995. Utilising Jin Zhang’s intimate cultural knowledge and technical expertise, Yangtze Australia Co Ltd (GEYA) was formed in Wuhan with the Changjiang (Yangtze) Water Resources Commission, and in Beijing, Geo-Eng Development Co Ltd (GED) was established with the coal ministry.
In 2002 Geo-Eng merged with GHD, bringing across Geo-Eng’s Chinese operations. Two years later, as a result of legal reforms in the country, GHD took advantage of the new environment and set up GHD Consulting (Beijing) Co Ltd as its first 100 per cent owned entity in China, with Jin Zhang as OCM – a role he undertook until 2009, when the total number of GHD employees in China reached a peak of 330.

With the foundation laid by Geo-Eng, GHD has been established in China for more than twenty years, and Jin Zhang – as OCM China, Market Leader China, and General Manager China – has been a key player in our ongoing evolution in the country.

“The first decade was a learning phase for the business,” says Jin Zhang. “The second decade was marked by growth spurts, and it was a time of adjustment and re-focusing. Much has impacted our business there along the way – the GFC, and of course massive changes in the Chinese economy, so we’ve had to adapt to these factors.”

Jin Zhang adds that GHD’s merger with CRA further strengthened GHD’s capability in the country.

“CRA’s history of working with North American energy companies with Chinese operations, means we’re now able to leverage our presence on both sides of the Pacific to service clients operating there.

“We’re also seeing the number of outbound Chinese investor clients continue to grow in Australia and we’re well positioned to service these clients.”
Employing local professionals and training them has created a cadre of very capable individuals who have, without exception, gone on to contribute to their country. We can be very proud of the people and projects we developed, which are GHD’s legacy in Indonesia.
Indonesia has been a strong performer among the large emerging Asian economies over recent years. As the economy developed and diversified in the last 25 years, Australian and other foreign direct investment in the country has grown significantly. GHD made its first concerted attempt to operate in Indonesia in the late-1980s. The move can be put down to Alan Longstaff who, at the time of a booming Australian economy, embarked on a campaign to develop an international arm for GHD’s water business. Alan’s first efforts focused on the Australian International Development Assistance Bureau (AIDAB), which had established an Australian advisory team within Cipta Karya (Directorate General of Human Settlements within the Ministry of Public Works) to help it improve the planning and execution of water and sanitation projects in Indonesia’s large regional cities.

One of the first projects was providing tailored foreign training for mid-level managers from the country’s central and city government organisations. Robin Povey, at the time employed with Victorian Government-owned consulting organisation OPCV but who later joined GHD, was engaged to plan and deliver the first course in Melbourne, and, as water sector manager, sought specialists from private firms interested in assisting with the course.

Alan Longstaff became involved with course preparation and facilitation, as did a number of his Melbourne colleagues, including Jonathan Crockett, Lindsay Mott and Roger Byrne. Following the program’s successful delivery, Alan built on the many connections made with young professional engineers from Indonesia’s water sector, and with support from officials, secured a contract to provide an advisor for the delivery of water and sewerage services in Bandung. Frank McGuire and his wife Jenny relocated there in 1988 and their home became GHD’s guest house of choice.

On Alan’s retirement, Henry Adcock, the then Brisbane-based Chairman of GHD, assumed responsibility for the fledgling international business. Henry brought experience from his
involvement with bridge work in Sarawak, Malaysia, and supported the effort and investment needed to consolidate the first steps in establishing GHD's international growth.

A major player in GHD’s work with the Freeport copper mine in Indonesia’s Papua province, Henry soon realised that the many complex engagement, tax, working permit, and logistics issues associated with working at the site, could be streamlined by securing a well-regarded local associate or the establishment of a local company. Frank was also conscious of Henry’s efforts to secure mining-related work with Freeport, in addition to the work GHD had undertaken on the Timika airport, which serviced the Freeport township and mine. A number of options were considered before agreeing to establish PT Graha Hardja Dynamica – a firm established and managed on our behalf by Indonesian company Geoservices – through which we could deliver services and engage staff. Geoservices provided office logistics support for a modest fee and this arrangement satisfied the tight foreign ownership regulations existing at that time.

PT GHD was supported by the country’s consulting engineering peak body INKINDO as a desirable new addition to the Indonesian consulting scene, subject to its increasingly tighter controls over professional engineering services. The president of INKINDO was managing director of the consulting firm PT Ciriajasa, with whom we established a strong working relationship for the delivery of design and construction services for a chemical dye factory and warehouse in Bandung, on behalf of Yorkshire Chemicals Pty Ltd (Australia).

This initial PT GHD company was retained for some years, but was eventually retired when we were able to establish a 100 percent foreign-owned business entity under more liberal company ownership rules, specifically to target Official Development Assistance (ODA) and other business opportunities. GHD secured a range of mostly ODA-related projects in
Indonesia between 1990 and 2001 and sought work on a fly-in fly-out arrangement, with projects identified during short trips from Australia, supported by extensive marketing efforts with Cipta Karya, other Indonesian agencies, AIDAB and Austrade.

Some small victories were achieved, but in the absence of what the Indonesians called “a show of commitment” – by which they meant the establishment of a permanent and visible independent office – these initial successes were hard won and difficult to sustain. More difficult was demonstrating the commercial viability of Indonesian operations. GHD’s relatively low level of Indonesian-experienced personnel made securing work a challenge, and it was always highly desirable to have people with Bahasa Indonesia nominated in proposal teams. Many competitors had long-standing relationships and experience – factors that ranked highly during bid evaluations.

GHD’s merger with Egis Australia in 2002 saw the latter’s Jakarta office become our office as contracts were transferred to GHD’s responsibility. The office, with about 13 people, was executing foreign aid projects and had successfully delivered many large projects. At one point, numbers rose to more than 300 people engaged jointly with our local partners. Greg Lee, who came from Egis, assumed responsibility for managing the combined operation, and with support from Australia, started to build the business into GHD’s traditional areas of interest. Ken Trebilco was one of the first GHD secondments into the office to help deliver these services.

In 2002, Jeremy Stone (then based in Manila) began discussions with both water concessionaires in Jakarta, namely Thames Pam Jaya (TPJ) and PALYJA. Each had 25-year concessions and responsibility to develop and operate some 10,000 km of pipes, supplying over five million customers. Utilising our experience from working with water concessionaires in Manila, we were able to secure long-term agreements with both companies, undertaking a range of services including non-revenue water reduction, construction phase services, and design and project management. To run these, we relocated a senior team from Manila to Jakarta, including Simon Terry, Malcolm Haddock, Keith Shephard, Lito Rillo and Ferdie Abanilla.

The 2004 tsunami that hit Banda Aceh resulted in GHD being involved in the design and construction management of a range of building projects covering both new works and refurbishment, including schools, village offices and halls, pharmacy warehouses, a prawn hatchery and a ferry terminal. Our initial project for AusAID was an emergency response commission for three months.

We were then appointed to a six-month interim contract while the Aceh Rehabilitation Program – Infrastructure Component (ARPIC) was planned. We tendered for this contract but lost it to a largely local company (with minimal Australian expertise). With the company unable to mobilise, AusAID overturned the appointment and GHD was awarded the contract. This dramatically changed the nature of our design office as we had to engage additional people to deliver more than 100 individual building designs.
There was a particular issue that arose on the ARPIC program that demonstrated some of the challenges in the physical delivery of works and GHD’s values and determination to always do the right thing. The contracts for the delivery of the ARPIC program specified non-asbestos-based sheeting materials for construction. While this had long been a standard in Australia, it was not so common by Indonesian construction standards, and the building contractors proceeded to build with sheeting containing asbestos supported by fabricated test certificates. The non-compliance was significant for the AusAID and the Australian Government, although most other buildings in Aceh had been constructed with asbestos sheeting to Indonesian standards. The ability to legally enforce rectification through contract law in Indonesia was minimal, and to avoid significant embarrassment to the Australian Government, GHD took responsibility for the cost of replacement. The multimillion dollar cost of doing so was not recoverable by insurance and was one of the tough lessons of operations in Indonesia.

Soon after, GHD was awarded the World Bank Infrastructure Program Management (IPM) project – a USD18 million commitment and one of the largest consulting contracts ever awarded in Indonesia to that date. Together with local partners, we set up a team in Aceh overseeing a wide range of infrastructure reconstruction projects. Cameron Gillanders was brought up to Jakarta as Operations Manager and to strengthen the project management capability of the local team.

Although GHD can be proud of the work undertaken by this project team, the project did throw up some issues which ultimately led to a sanction of 12 months from the World Bank. For a company that values its reputation for ethical conduct, it was a confronting time. An inspection of the project records by the World Bank led to allegations of an inaccurate tender declaration and invoicing for disbursements which were not in
accordance with our contract. Whilst GHD investigated and remedied the issues raised, and made a number of management changes, the World Bank process proved to be drawn out and painful.

The outcome however included an improved integrity management system within GHD, which ultimately led to a strengthening of our relationship with a number of agencies, including the World Bank. In the process, GHD took the opportunity to demonstrate leadership around integrity management, sharing our experiences in professional circles. It was during this time that GHD participated in other significant development assistance contracts in Indonesia through the acquisition of the Canberra-based aid and development company Hassall & Associates. The noteworthy projects successfully delivered at the time were the flagship LOGICA and the ISPT3 programs, delivering tailored training across all levels of the Indonesian public sector.

GHD played a key role with numerous donor agencies in the development of skills, knowledge and capacity building. Where possible, we recruited Indonesian people, gave supply contracts to local firms, and engaged local companies for construction. Design work was carried out in close consultation with the communities in order to address local aspirations. Ultimately our buildings were recognised as being by far the best out of all the organisations who delivered reconstruction work across Aceh. Later we developed good relationships with local coal producer Adaro and other mining companies, and began executing a number of substantial projects with the assistance of our Australian offices. In contrast to dealings with government agencies, the Indonesian
private sector mindset was performance-oriented and this provided GHD a rich opportunity for supplying professional services to global standards. Cameron Gillanders was appointed Operating Centre Manager in 2008, followed by Keith Christiansen, who played a vital transitioning role from 2009 eventually handing over to Lutz Kleeberg.

The most significant challenge for GHD in Indonesia was to work ethically within a challenging political system, and to overcome client and societal pressures to participate in improper business practices. The success of GHD operating in a foreign business environment lies in the adaptation of our business model to suit local requirements without compromising our values. This applies to our past, present and future operations around the world. Doing business in Asia is based on trust and mutual support, as well as capability and skills. Establishing a trusted relationship with the government and private sectors is a painstaking exercise that requires cultural sensitivity, local understanding, endurance and patience. A long-term view, continuity and consistency in approach is vital. Working in Indonesia demanded flexibility, respect, and the willingness to provide professional help 24/7, without necessarily submitting an immediate invoice. GHD demonstrated its technical and management skills within a complex bureaucratic slalom and needed people with the required mix of business pragmatism and social sensitivity.

After reviewing our Indonesian operations and the long-term potential for success in a country with known governance and security issues, it was decided to close our Indonesian operations in 2011. Many of GHD's projects were related to sanitation and water supply, reflecting our long history of achievement in the water industry. The provision of functional wastewater infrastructure and clean water supplies has dramatically improved the quality of life for many Indonesians across the archipelago. Employing local professionals and training them has created a cadre of very capable individuals who have, without exception, gone on to contribute to their country. We can be very proud of the people and projects we developed, which are GHD's legacy in Indonesia. No doubt sometime in the future GHD will again establish a presence in Indonesia as the country continues to develop.

Malaysia

Australia and Malaysia share a long history of cooperation and trade relations. Since its independence in 1957, Malaysia has transformed from a commodity-based economy, focusing on rubber and tin, to one of the world's largest producers of electronic and electrical products. Today Malaysia is also one of South East Asia's major oil and gas exporters. The country's diverse population includes Malays, Chinese and Indians as well as other ethnicities. Sunni Islam is the predominant religion, principally among Malays, but other religions represented include Buddhism, Hinduism and Christianity. While the country's official language is Malay, English is widely used.
In 1991, Malaysia set out to achieve high income, developed-economy status by announcing its Vision 2020 national strategy, which placed a strong emphasis on developing modern and efficient public and private infrastructure. Education has played a central role in the development of the country and has led to a significant pool of highly-trained professionals in the engineering sector.

GHD has a long history in Malaysia, dating back to a joint venture established in 1978 known as Angkasa-GHD Engineers Sdn Bhd, an association between GHD and a local firm Angkasa Jurutera Perunding, originally established by Woo Hin Wai. A number of GHD engineers served periods in Malaysia working in the joint venture, including Bob Crane, Tom Fricke, Michael Polin, Lindsay Monteith and others. In the 1970s, GHD was responsible for providing engineering services for the Santubong Bridge, Kuching, and Henry Adcock enjoyed a high-profile reputation locally for his work on the project and other bridges, which utilised factory-cast pre-stressed concrete beam structures; the first time such technology was adopted in Malaysia.

Over time, ownership of the association changed, with Angkasa Jurutera Perunding selling down to Khor Chai Huat and GHD having a minority interest, but by the late 1990s it became evident that it was time for GHD to relinquish its interest. Between 1992 and 2001, GHD secured a number of projects in Sarawak, and in 2001 an office was temporarily established in Kuching. The move was widely supported locally with a number of consultants keen to associate with GHD. These sentiments were frequently echoed by clients who were familiar with us through the work of Tom Fricke and Henry Adcock.
By 2001, we had established a Malaysian company in our own name – GHD Perunding. Jeremy Tod began as Country Manager intent on consolidating our position in readiness for a more concerted effort in the country. Parallel to our growth in Malaysia, in 2001 we opened an office in Thailand, with Jim Giannopoulos at the helm as Operating Centre Manager, Bangkok. Jim was seconded to the Thai NVPSKG consortium for six months as design manager for the Samut Prakarn wastewater management project. This major wastewater collection and treatment system, valued at USD750 million, included 131 km of collection sewers, a 525 ML/d average dry weather flow treatment plant, and an ocean outfall. Between 2001 and 2004, GHD completed a number of wastewater, power and environment projects in Thailand before the office closed and Jim moved to the USA.

Back in Malaysia, in 2005 the decision was made to acquire the business of our original joint venture partner, Angkasa Jurutera Perunding, and to merge it with GHD Perunding. Keith Christiansen was appointed Malaysia Country Manager, working closely with Woo Hin Wai (affectionately known simply as Woo). Together they arranged for the transfer of AJP’s people and contracts to GHD, which saw us taking possession of offices in Kuala Lumpur, Kuantan and Ipoh. A new office was established in Kuala Lumpur, with Michael Brouwer and Bernadette Kan playing vital roles in the establishment phase of the new operating centre. Keith handed the OCM reins to Liong Khoo in 2008. Liong, who joined GHD in 1983, had been living in Australia for 30 years before returning to his home country to head operations. Adrian Graham started in Malaysia in September 2009 as the Kuching Office Manager in Sarawak, and went on to become Operating Centre Manager in July 2010 until the centre’s closure in October 2011.
With little exposure to GHD’s business systems for project delivery, quality assurance, health and safety, finance and timesheets, newcomers from AJP experienced steep learning curves. Another issue was insufficient respect for written agreements and payment terms by some clients. Following the merger, much of the work relied on unfinished AJP projects in the property and buildings sector. Flagship projects undertaken at the time include the Sultan Azlan Shah Dam, Malaysia’s first and largest roller compacted concrete dam on the Sungai Kinta River in Perak, and engineering design of the Crystal Mosque (Masjid Kristal) at the Islamic Civilisation Park in Kuala Terengganu, a highly symbolic project within the Islamic world.

In 2006, GHD was responsible for delivering an environmental impact assessment for an exploration drilling campaign in the Timor Sea by Petronas – Malaysia’s government-owned oil and gas corporation. The same year, GHD Perunding developed a close working relationship with GHD’s Perth office to alleviate resource shortages being experienced in Western Australia. This involved short-term exchanges of managers and technical people – a process that highlighted the importance of face-to-face contact. This knowledge transfer would be the forerunner of Centre of Capability (CoC) established in 2007 in Malaysia and the Philippines, to provide support for GHD’s projects globally.

Our commitment to corporate citizenship was marked in 2008 when GHD Perunding instigated a ‘clean up the beaches’ campaign in the Kuantan area. The company was named the Malaysia Australia Business Council Large Business of the Year in 2008.

As the property and buildings market declined locally, GHD’s activity in Malaysia was broadly set at 60 percent CoC projects, with the remainder focused on the local markets in water, hydropower, environment and asset management. In the early stages, the CoC in Malaysia ran its own internal marketing, almost in competition with GHD’s operating centres in the Philippines and China. To avoid confusion, the Philippines took the lead role in coordinating CoC resources between Malaysia and the rest of GHD.

A major challenge was competing in the local consulting market in a way that complied with our company-wide management requirements; our systems and aspects of our culture were markedly different from the practices of local consultants. We also lacked sufficient local senior leaders with mature client relationships to win work. Typical Malaysian consultancies were owned by their senior personnel who won work through relationships with their client decision-maker peers. Relationships between the owners of these business and their staff was quite different from those in GHD. Ultimately, GHD came to the conclusion that it was unlikely our business would be commercially successful in Malaysia for at least the medium term.

Despite the closure of the Malaysia operating centre in 2011, GHD continues to work on selected projects in Malaysia, leveraging its outstanding track-record in the country developed over 30 years.
Philippines

GHD operations in the Philippines were established after a number of attempts to create a fully owned permanent business in Asia. The company had been involved in projects in Asia for many years, and commenced a joint venture in Malaysia in 1978.

GHD began developing its permanent presence in South-East Asia, in Singapore from 1989 to the early 1990s, when Robin Povey spent 18 months pursuing opportunities in the region, but the business struggled to attain traction, with a number of unsuccessful bids and rationalisation as a result of a downturn in the Australian economy.

A second attempt was commenced in mid-1997 when Jeremy Stone was invited to return to GHD as Regional Director Asia, having spent the period since 1989 working in Singapore for another consultant.

A new plan for a regional headquarters in South-East Asia was put in place. It was a clear choice to create operations as an international company with a local office, not a local office with an international name. That meant building an international mix of people and achieving international norms for quality, delivery of services and fee structures, all reflecting the GHD family culture.

The choices for the country of location were Malaysia, Indonesia, Singapore, Hong Kong, or the Philippines, but the timing was hardly fortuitous; the Asian financial crisis which began in the late-1990s, was spreading from Thailand, wreaking financial havoc from South Korea to Indonesia and affecting economies and companies around the world.
Malaysia was ruled out. It was the location of an existing challenging joint venture in a relatively mature market. In Indonesia, the Suharto era was ending and political instability threatened. Hong Kong and Singapore were mature markets with strong competition. Jeremy recommended the Philippines, based on his experience there and supported by the conclusion of an assignment he had recently completed as part of his Diploma of Business Administration at the National University of Singapore: ‘Where to locate a regional headquarters?’. The rationale was that with a large pool of well-trained, English-speaking professionals, and few international competitor companies, the Philippines was the best option. Other factors supported this recommendation: the Asian Development Bank’s headquarters were located in Manila; the country’s cost structure was competitive on a world scale; the economy was in reasonable condition and there would be reasonable political stability if the election in mid-1998 was calm.

At this time, the regional political and economic landscape was changing dramatically. In the Philippines, a new president, Joseph Estrada, a former movie star, was ushered in. The Philippine peso went from 26 to 50 to the US dollar, while other Asian currencies devalued, causing the worst economic conditions in the region since the Second World War. Work across South-East Asia was scarce with companies going bankrupt and many people losing their jobs.

As a result, finding clients was difficult and securing an opportunity to submit a proposal was a success in itself. Nevertheless, bids were submitted for projects in the Philippines, Singapore, Malaysia, China, Vietnam and Indonesia. Surprisingly, the first success was a military project in Saudi Arabia – the Gizan Military Base, working for US company Parsons International, with the work undertaken in Parsons’ Manila office with input from GHD in Melbourne. GHD then teamed up with Meinhardt Middle East for the design of infrastructure projects in Qatar and the UAE, and Swiss company Renardet for projects in Oman, Singapore and the Philippines.

GHD’s Australian offices now had the opportunity to have work undertaken in the Philippines, with cost effective labour rates for professional, technical, and administrative services.

The first project for a Philippines client (Luisita), was a technical review of the 6000 ha Hacienda Luisita Township. While the Asian financial crisis was impacting on opportunities, GHD put in place a strategy to build relationships with Philippine family-owned conglomerates and foreign multinationals operating in the region.

Working from an office within the premises of logistics company Lomar, GHD started with small land development projects and technical assistance for a gold and copper mine Rapu Rapu, owned by Australian mining company Lafayette, but the major breakthrough came in the water sector.

Manila’s Metropolitan Waterworks and Sewerage System (MWSS) had been privatised in August 1997 at a value of USD7.5 billion (the world’s largest water and sewerage
privatisation) and two companies had been awarded 25-year concessions to manage the system. Maynilad Water Services Inc. (MWSI), the west concessionaire, had about 7.3 million customers and Manila Water Corp (MWC), the east concessionaire, had around 3.7 million customers. The shareholders of Maynilad were Benpres, a major Filipino utility company owned by the Lopez family, and Lyonnaise des Eaux, the French water and infrastructure company. Manila Water was owned by Ayala Corporation (one of the largest diversified companies in the Philippines), Bechtel and United Utilities.

Jeremy developed a good relationship with Jose Gabriel D. Olives, President of MWSI, and discussions ensued about the challenge of delivering the capital works program required with limited resources, and how to supply water and sanitation to his 7.3 million customers. The MWSI president was drawn to how GHD had assisted the WA Water Corporation in delivering capital works under a long-term agreement, and introduced us to the local head of Lyonnaise des Eaux, Michel Detay. Two days before the Easter break in 1999, Mr. Olives called Jeremy and said: “We need help and would like you to assist. Let’s have a trial, an interim contract. Here are a few projects and let’s see how they go. If it works, we can talk about a longer term game plan.”

Fees for the trials would run into the millions of dollars. A simple proposal (less than ten pages) with a commitment for our complete attention, high-quality work, delivered transparently on time, by a high-quality team and for monthly payment, was submitted. Soon after, Olives and Detay confirmed our appointment which would last six months prior to finalising a longer-term deal. With a down payment secured, Johan Raadsma and Manny Ancheta were employed to assist. We quickly had to find the appropriate Australian specialists and bring them to Manila, identify the right local people, and set up the systems – financial and IT. At the time, GHD was still learning the intricacies of
expatriate and local staff payments and conditions, health and travel insurance, local laws, inter-country billing and taxes, visas, accommodation, and local logistics.

Manny Ancheta is still with us today and has held a number of positions over his service with GHD. Currently the Market Leader for Energy and Resources, Manny has won numerous major projects across the energy and resources sector for the company in the Philippines.

The core GHD delivery team for the MWSI project, based in its offices, consisted of Warren Traves (Brisbane), Tim Chapman (Canberra), Keith Shephard (Cairns), Alan Senese (Geralton) and David Hickey (Sydney), supplemented by many more, working either remotely or on short visits. The team worked with seconded staff from MWSI to ensure technology and system knowledge transfer. It was a great learning experience for all concerned – like having a tiger by the tail. There were no half measures; everyone worked hard and came together as a team for project that became the catalyst for our current Philippines-based operations.

In late-1999, after successfully delivering a number of the projects under the interim contract, we were awarded a three-year contract which boosted employee numbers and integrated Maynilad staff into our operations. Coincidentally, the contract was signed on the same date as the Manukau acquisition in New Zealand (16 December, 1999). In just over a year, GHD had close to 150 people spread out over four locations in Metro Manila.

GHD’s work for MWSI included: design upgrades of 1500 ML/day and 900 ML/day water treatment plants; design and construction management of more than 300 km of water main; due diligence on a 13.2 km, 4.5 m diameter tunnel for water transmission of up to 2600 ML/day; asset management consulting for the entire concession area, and design and construction management of pump stations for up to 235 ML/day with a lift of up to 65 m. The Philippines operations diversified into providing services to the environmental, mining, energy, property and buildings markets (including design of embassies). Another significant success for us was securing a major project with the other water concessionaire, Manila Water.

In 2005, Dean McIntyre took over leadership of the Philippines operations. GHD was involved in many mining projects, delivering services for concept, feasibility and detailed design and construction monitoring for all the surface infrastructure, including the ports, roads, earthwork, civil works, mine camps, fuel supply, power station, reticulation, mining, tailings and environmental services.

Signature projects in the Philippines also involved the design of tailings dams, in particular Rapu Rapu, Masbate Gold Mine, Acoje Nickel, Red 5 Gold, Taysan Copper Gold, Simenco Copper Gold, Didipio Gold Mine and others.

The Taysan Copper Gold project comprises a large copper and gold porphyry deposit located in the industrial province of Batangas. In 2010, GHD was engaged by Crazy
Horse Resources to undertake scoping and pre-feasibility study. The work subsequently undertaken included design of all non-process mining infrastructure such as water supply, access roads, geotechnical investigations and tailings storage facilities.

Three mining projects (Taysan, Seminco and Didipio) cemented GHD as a major player in the non-process mining infrastructure market – a position that has only grown from these early successes.

In April 2011, GHD was commissioned by Copper Development Corporation to undertake a review of the scoping study report and completion of a pre-feasibility study for the Hinoba-an Copper Project. The scope of work for this project was similar to the scope for Taysan Copper, but included water balance and power studies.

Didipio is a high-grade gold and copper mine located on the island of Luzon, approximately 270 km north of Manila. In 2011, Oceana Gold Philippines Inc. (OGPI) engaged GHD to undertake the concept to detailed design of the tailings and waste rock storage facilities and the mine’s general site infrastructure works. These works included the construction camp, operations village, services and utilities area, and process plant support facilities.

GHD provides ongoing services to the Didipio project, and Oceana Gold has grown to be one of our most trusted clients in the Philippines. Oceana Gold is regularly asked to provide tours of its GHD-designed and supervised tailings storage facility for prospective miners to demonstrate world-class tailings management.

GHD had been working in the International Development Aid (IDA) sector since the mid-1970s. With the establishment of a permanent operation in Manila, GHD was able to
strengthen our position with ADB which is headquartered there, by developing a local team in Manila liaising with ADB, coordinating expressions of interest and proposals, and assisting with project execution. In due course, Manila created its own IDA team directly interacting with the ADB project officers. GHD’s coverage began to cover South Asian countries such as Sri Lanka, Bangladesh and India.

GHD remains active in the IDA sector with projects delivered through the ‘One GHD’ network, coordinating with offices in Melbourne and Manila for the South-East Asia region and New Zealand for the Asia Pacific region. Bing Ruso continues to fulfil this role to this day in Manila.

Like every chapter in GHD’s story, the Philippines has its own unforgettable incidents that became an indelible part of the company’s narrative. Paul Hansford, now manager for Water in the Philippines, describes a project in 2002 when we were supervising a pipe jacking contractor who was tunnelling under the Philippine National Railway Line at Sampaloc. Paul was looking after the project with Keith Shephard. It was a 24/7 operation and both Paul and Keith had gone home for the night whilst another engineer took over the nightshift. At around 8 pm Paul got a call from the onsite engineer, who told him mud had seeped into the tunnel excavation, but she thought it was manageable. Paul didn’t like the sound of it. The tunnel was supposed to be in rock. When Paul and Keith arrived at the site, the 2.2 m diameter tunnel was full of loose soil, which could only have come from a cave-in under the tracks. Keith went looking for the next train station to try to stop approaching trains. But as Keith left, the sound of a locomotive was heard. Because it was so close, we had no way of warning its driver and there was every chance a crash would result. People were moved far enough away so we would not be impacted by a potential derailment, but thankfully the train went right over the top without a problem.

The track was closed immediately before any more trains could come through. Later we found a cavity under the track, but it was deep enough so that the train track and existing ground was able to temporarily bridge it. We engaged an Italian contractor to pump the hole full of grout. The professionals associated with this episode showed immense leadership under very difficult circumstances.

One Friday afternoon in November 2007, just before a long weekend break, and just after Fraser Watt had taken responsibility for leadership of the Philippines from Dean McIntyre, Fraser was called urgently into a meeting room by a senior Filipino colleague. People had gathered to watch a live TV news broadcast; a military coup attempt by rebel Philippines army soldiers was underway. The rebels, calling for the overthrow of President Gloria Arroyo, had driven a tank through the doors of the Peninsula Hotel in Makati, and had taken over a shopping mall. Confronted by the regular army, bullets and tear gas were flying. Major roads near the office had been blocked off and an overnight curfew enforced.
Fraser asked for the office to be locked down, and called together the senior leaders. Should we allow our people to go home to their families? Should we lock ourselves up in the office for safety? "Don't worry", he was told by the local team, “it'll all be over by morning. These guys have picked a Friday night before a holiday weekend. They want to mobilise the people, and get them out rallying on the streets, but they made a miscalculation, it's raining. No one is going to come out and protest in the rain. They won't get any support.”

As a precaution, GHD’s people were encouraged to return home before the night-time curfew kicked in. Soon after, 1500 government troops stormed the hotel and arrested the rebel ring-leaders. There were no casualties. The moral of the story: listen to the local colleagues, they know more than the local TV news.

Saturday, 26 September, 2009, was the day of the AFL Grand Final between Geelong and Hawthorn. For expat companies, the football final was a chance to celebrate all things Aussie, and to mark the occasion we had taken a table at a corporate event hosted annually by the Australian and New Zealand Chamber of Commerce. The Chamber had booked the ballroom of Manila’s Intercontinental Hotel, decorated it in Australian Rules Football memorabilia, and flown in a couple of the game’s legends. With Australian beer and meat pies on hand, and the game beamed-in live by satellite, we had invited our most important clients. What could go wrong?

It was raining heavily as the first guests arrived and as the morning wore on, things seemed unusually quiet, with a very poor attendance compared to previous years. Cancellation calls began to come in. The InterContinental’s ballroom had no windows, so with the hall less than half-full and the game underway on the big screen, those cheering and jeering were oblivious to what was happening outside on the streets of Manila.

It was the day that Typhoon Ondoy hit. Although spared high winds, the rain was torrential. The Marikina River broke its banks and an estimated half a million people were displaced by floodwaters. According to the Philippines meteorologic bureau, Hurricane Katrina dropped around 250 mm of rain on New Orleans in 24 hours; Typhoon Ondoy dropped almost twice that on Quezon City, a district of Manila. Flood waters in some suburbs reached over 6.5 m deep. More than 250 people died, and tens of thousands of homes were damaged or destroyed.

The following Monday, many people were absent from the office and efforts were made to contact the missing. Almost 40 GHD people and their families were affected; some faced flooding of a few centimetres of water through their house, while others faced utter devastation. One spent Saturday night sitting on the roof of his home with his two-year-old son awaiting rescue. The scale of the disaster was immense. Every Manila resident had a friend or relative whose house was affected in some way, but as the waters subsided, the Filipino spirit of communal effort for communal good, shone through. GHD people worldwide rallied to the cause with funds rolling in to assist Filipino colleagues who had been affected.
The Hospicio de San Jose, the first social welfare agency in the Philippines (located on the only island in Manila, Pasig River) has given refuge to orphans, abandoned children and the elderly, for more than 200 years. In early 2011, the Manila-based Australia and New Zealand Association (ANZA), a philanthropic organisation run by expats, identified Hospicio de San Jose as a worthy cause for priority support. The word went out to Australian and New Zealand businesses to help renovate a derelict building on the Hospicio site for it to re-emerge as a refuge for women and girls who had escaped from human trafficking or suffered other forms of abuse.

Our Property and Buildings Group, supported by GHD management, offered assistance. People volunteered their time and GHD provided financial support as principal sponsor. With GHD partnering SKM on project delivery, The Sanctuary opened its doors at Christmas 2011, and today serves as a refuge for up to 30 disadvantaged and abused girls and women.

Filipinos were the first non-Australian shareholders of GHD and many of our Filipino colleagues have migrated to join GHD offices in Australia, New Zealand, UAE and Qatar, and have been seconded to almost every operating centre in Australia and New Zealand. Filipinos were also the first non-Australian GHD expats to provide their services overseas when the company commenced long-term water contracts in Indonesia.

In 2012, the Philippines celebrated another first, when Anne Lavers, who had spent her first years in the Philippines as a Technical Director, was appointed as GHD’s Operating Centre Manager in the Philippines. Filipino Mario Dimagiba was appointed as the Operations Manager. Under the leadership of Anne and Mario, the Philippines began to deliver ever stronger operational performance.
One of the most significant projects tackled in this period was the Biliran Geothermal project. A 100MW geothermal development on the island of Biliran, north of Leyte, the project involved the design and construction supervision of all non-drilling infrastructure, from roads to drill pads, water supply, environmental monitoring and permitting and social inclusion activities. GHD provided project management services to support the client who had limited staff.

The Biliran Geothermal project, like all major projects, had many challenges but the most significant was the impact of Typhoon Yolanda (international name Haiyan). At the time, it was the largest storm in history to make landfall, and passed within 120 km of the project site. Over 10,000 people died, mainly in Tacloban – the main entry point for the project. Fortunately, everyone involved with the project was safe, but there were three very nervous days whilst we attempted to make contact with the site staff to ensure they were secure.

This project, together with GHD’s environmental and owner’s engineer role for a string of renewable energy sector investments, established the company’s reputation in the region as a high-quality local consultant with a reputation for timely delivery. As the project consultant, GHD had been involved in over 1 GW of renewable energy development across the country, including more than 70 percent of all solar development.

During this time, GHD sought to increase efficiency through the establishment of global shared services teams, to support the company’s day to day operations around the world. With a significant investment in information technology and systems infrastructure, Elizabeth Harper, GHD’s CIO, led the establishment of our 24/7 Information Services support team in Manila. The shared services has now expanded to support the corporate functions in finance, people, marketing and internal auditing.
In 2015, at the conclusion of Anne Laver’s support of the corporate function for South-East Asia, Carl Willis took over the leadership of the Philippines operations as Operating Centre Manager and has continued a remarkable phase of strong growth and financial performance.

In early 2016, GHD was awarded our single biggest contract with Manila Water – to provide project management consultancy for Package 1 of the Rizal Province Water Supply Improvement Project, which involved the development of a 50 ML/d water treatment plant (expandable to 100 ML/d) to extract water from Laguna de Bay – the largest freshwater lake in the Philippines. The work involved the construction of raw water intake structures, raw water pump station and pipeline, water treatment plant, waste treatment and disposal facility and pipeline, as well as a process optimisation research facility. The Manila office has grown to more than 390 people servicing the local market and clients across GHD. Geographic expansion continued in 2016 with the opening of a new office in Cebu, the country’s second-largest city.

The Philippines had truly become a centre in the GHD world for project delivery and support services. Walking around the office, you can see teams working on projects from across Australia and the world. The service-oriented, fun and friendly Filipino way of working has enhanced the GHD culture, providing what has been described as one of the best office environments for GHD’s famed camaraderie.

Christmas parties in Manila are legendary for the quality of employee-provided entertainment, costume, and commitment from everyone in the office. Who could forget an unrecognisable Paul Hansford attending in fancy dress as Imelda Marcos, the wife of the former Philippines president.
History has shown the Philippines is a place to expect the unexpected. Whether typhoons, epidemics, dramatic political changes, or traffic chaos, GHD has never experienced a dull moment and will continue to provide exciting challenges for all of our dedicated people.

Vietnam

When GHD decided to establish a permanent presence in Vietnam in the early 1990s, the country was preparing to enter the World Trade Organization and its economy was booming. The first and biggest challenge was to sort out which of the myriad of opportunities to pursue. The initial projects were water supply and sanitation, funded by aid organisations such as AusAID, the World Bank and the Asian Development Bank (ADB).

One early example is the Da Nang Water Supply and Sanitation Project. Created to improve access to a safe, sustainable, continuous water supply, and to improve environmental sanitation conditions in Da Nang, Vietnam’s fourth largest city with a population of one million, the project included feasibility studies, detailed design, and procurement and management of construction contractors. The project was completed in the early 2000s, a time when Vietnam was seen as the place to invest, particularly in property development, manufacturing and education. The initial Da Nang study project was the first large aid project awarded to GHD by AusAID for many years, and provided the impetus for numerous subsequent appointments by the World Bank and the ADB among other Official Development Assistance (ODA) funders. It also provided the in-country experience, and the confidence needed to establish the Representative and later, permanent offices in Vietnam. Soon GHD was engaged in delivering a host of building projects for the education sector, including design and construction for the RMIT University Ho Chi Minh City campus, learning resource centres for Vietnamese universities in the cities of Hue, Da Nang, Can Tho and Thai Nguyen.
Chris Lloyd worked for GHD in Vietnam from 1999 to 2012, setting up the GHD Vietnam representative office in Ho Chi Minh City in 2002. The office was established on the back of project management work that GHD was undertaking for RMIT International Vietnam, the first foreign tertiary education institution allowed to operate in the country, and partnered with the American based Atlantic Philanthropies organisation East Meets West (EMW), which funded health and education projects. On behalf of EMW, RMIT University was responsible for delivering four Learning Resource Centres (LRCs) at provincial universities along the length of the country. The LRCs were large and (relatively) high-tech libraries, complete with resources and trained staff, and were unique to Vietnam at the time. GHD managed all aspects of the delivery on behalf of RMIT University.

The representative office typically sourced work from multinationals, including Lafarge and Pepsico, and undertook smaller projects directly for EMW, such as a package sewage treatment plant for Da Nang Hospital, and several Official Development Assistance (ODA) funded projects at the time administered from GHD’s International Group, then based in Melbourne.

Phil Pigram joined Chris to work on the Three Delta Towns (3DT) Water Supply and Sanitation Project, which was secured in 2000. On behalf of the Australian Government, GHD was responsible for the engineering, procurement and construction management of water treatment, supply and sanitation (predominately combined-system drainage) and landfill for three provincial cities in the Mekong Delta – Bac Lieu, Sa Dec and Ha Tien. The project included institutional strengthening and community development (including health awareness and gender equity) and went on to win Engineers Australia’s Sir William Hudson Engineering Excellence Award in 2009.

When we mobilised the 3DT team, the city of Ha Tien, near the Cambodian border, was in drought and had run out of potable water. With the city’s residents drinking poor quality canal water, a cholera outbreak followed. Children were dying and the whole social system had broken down, with the local population, usually women, having to walk great distances every day to source water. Our immediate priority was to fast-track a raw water supply to the city and provide basic treatment.

GHD’s intervention made a big difference to the welfare of Ha Tien’s 30,000 residents and undoubtedly saved many lives. By the end of the 3DT project, GHD’s work had improved the living conditions and provided access to potable drinking water for hundreds of thousands of residents across the three cities covered by the project. The health, and subsequent social and economic benefits from this are still being felt today.

The language and cultural differences in the work environment were challenging – irrespective of how accomplished our translators and interpreters were. Technical discussions with staff from the local engineering consultancy took time, but these interactions were also some of the most rewarding; a tangible example of knowledge transfer.
With about 3000 new motor bikes being registered each week in the early 2000s in Ho Chi Minh City, traffic and related pollution increased significantly as residents converted from push bikes to motor bikes and on to cars. Bird flu and SARS outbreaks posed additional challenges, affecting local tourism and limiting travel to provincial areas. With chicken and eggs off the menu, formal meals with provincial dignitaries were always interesting. You never quite knew what was going to be served up, and you always felt obliged to taste whatever was presented. By the time Chris and Phil departed, they had eaten most types of bird, every conceivable type of seafood, and even snake and ferret – all washed down with lashings of rice wine.

GHD Vietnam – the wholly-owned foreign enterprise, was formally established in mid-2007, however, due to government restrictions, our business worked as three operating centres for some time - the representative office (undertaking work for local clients), GHD Vietnam (working for foreign-invested projects), and the 3DT project. Glen Reinsch began working in Vietnam in late 2006, taking over responsibilities for the representative office from Quoc Van (Charlie) Tang. Along with the office in Ho Chi Minh City, a second office was established in Hanoi on the back of the successful rural development projects for the Asian Development Bank. Chris French relocated from Melbourne to Hanoi for these projects. Project offices were opened as required at several regional locations. Over a two-year period, teams were developed in the International Development Assistance (IDA), water, buildings and urban development sectors, with a technical team of about 40, supported by six people in administration. Although in-country teams were a necessity, GHD Vietnam fostered strong links with other operating centres to leverage our global expertise and resources into the Vietnamese market, and inter-office teams were involved in several urban planning, buildings and water projects.
Virtually every week, GHD was approached by clients to become involved with new projects, but the flip-side of this dynamic environment were the challenges associated with working in Vietnam, which included non-transparent bidding processes, managing client expectations, cost effectiveness and ensuring an appropriate technical team could be assembled to do the work.

GHD grew its presence in the country by appointing people to target key sectors of opportunity that matched our core competencies. Several early engagements showed promise, particularly a number of city masterplanning projects in the south, and the Vinh Phuc Theatre in the north. With the concept design prepared by Andrew Raszewski, Chief Architect from Canberra, the Vinh Phuc Theatre became GHD Vietnam’s first major building/architectural project. In 2009, GHD was appointed to undertake the detailed design. The theatre complex functions as the cultural centre for the province with a viewing podium that opens over a public square. The complex features a 1000-seat and 500-seat auditorium, a 250-seat studio, multi-purpose social venues and an 800-seat restaurant. This project was another example of a ‘whole of GHD’ approach, utilising people in Canberra, China, and Manila, as well as Vietnam.

In 2008 Andre Vanderputt relocated from Melbourne to manage the urban development team and assist with the delivery of the three major urban planning projects in Dong Nai Province: Waterfront City (305 ha), Aquacity (367 ha), and Long Hung Urban (227 ha). The projects were undertaken by Keppel Land and VinaCapital, with participation from local firms DonaCoop and An Phu Long. GHD was responsible for providing a comprehensive range of urban development services to realise the vision for these townships – from urban planning to urban design through to civil infrastructure. The design team consisted of people based in Melbourne, Adelaide, China and Vietnam.
GHD’s office in Ho Chi Minh City was located in an old three-storey French villa, and is probably the only company office that could boast having a swimming pool. Whilst the office had a considerable amount of charm, there were constant reminders that we were in a developing country. Power blackouts were common during the summer months as hydropower dams ran low on water. A portable generator was hired to keep the server running and power up the computers, however it was not large enough to run the office’s air conditioning. Needless to say, productivity was low on those days, as people sweltered in the 30-plus degree heat and 90 percent humidity.

In October 2008, Simon Ernst relocated to Vietnam from Canberra to head up the IDA team. Based in Hanoi he was involved with managing the Quang Ngai Implementation Support Program (ISP). The objective of the ISP was to reduce poverty, and foster secure and sustainable livelihoods for those living in the province’s 43 poorest and most marginal communities. The ISP was funded by AusAID and five other donors including the World Bank, the UK Department for International Development, the Government of Finland, and the Government of Ireland. AusAID contributed AUD12.4 million to the ISP over five years.

By early 2009, GHD Vietnam began to experience the debilitating effects of the GFC. A review of the business resulted in a reduction in staff. Glen Reinsch returned to Australia and Fraser Watt, then Operating Centre Manager – Philippines, stepped in as a temporary non-resident manager while Andre Vanderputt was appointed Operations Manager.

The focus at the time was to reinforce GHD’s systems and procedures through training, and to rectify the numerous IT issues that had plagued the operating centre. Within months, GHD was struggling to sustain its work in Vietnam as local competition increased and
market forces changed. Our reliance on support from more expensive operating centres made it difficult to compete with other international companies based in Vietnam, who had more in-house resources, and our withdrawal from the IDA sector which contributed to the dwindling workload. In early 2010, the Vietnamese business was handed over to Stephen Porter, then OCM Hong Kong, and the focus was redirected to international organisations and foreign direct investment clients doing business in the country.

Toby Garafillis was appointed Office Manager for Hanoi in 2010. Later that year, GHD was engaged as lead consultant to deliver architectural, interior design, engineering, environmentally sustainable design, security, landscape design and construction management services for the United Nations’ new headquarters in the country – the first of 16 pilot projects around the world to co-locate multiple UN agencies in a single building. The innovative six-storey building known as the Green One UN House was completed in 2015.

Declining work forced GHD to wrap up its Vietnam-based operations in mid-2011. In the years that followed, Vietnam has developed considerably and there is now less aid and philanthropic funding being allocated to the country, with funds directed into less developed neighbouring countries such as Cambodia and Laos. Debts of many state-owned Vietnamese enterprises have increased significantly, which has contributed to a slowdown in investment. Foreign investors have also found that establishment and delivery of many projects in Vietnam have taken too long to complete and to provide a return, resulting in many international companies looking elsewhere to invest. GHD continues to service our Vietnamese project clients from other offices and retains company registration in the country.
Anne Lavers’ journey as an engineering professional began at Mount Isa, Queensland. “My father thought that girls didn’t have much future in the education space so I left after year 10,” says Anne, who was born in the small town of Crows Nest, north of Toowoomba.

“My first job was as a trainee tracer working on underground drill logs, colour coding the bores and rock types, and working on canvas. Now it’s all digitised of course.” After this early career start, Anne took her tracing skills to the Gold Coast City Council before a job with an architect added new strings to her bow. Drafting architectural plans had whet her appetite for construction engineering and the qualifications to help realise the dream. By 32, with an Associate Diploma Civil Engineering (Distinction) and a Bachelor of Engineering – Civil (with Dean’s commendation) under her belt, and two small children, she was in the Atherton Tablelands running her own NATA-registered soil testing business.

Anne joined GHD in 1995 working out of the Cairns office. “We were so much smaller then, there were about 60 people. The first day I remember I was given two cane rail bridges to design. For a new graduate to be thrown in at the deep end in this way was fantastic, I was scared, but the support was there. It was and is a very family-orientated business. Then, like now, it’s all about teamwork.”

With the new job and demands on her as a mum, after two years her daily commute from the Tablelands was too much. In an early example of GHD’s ability to adopt flexible working practices, Anne worked from home – a precursor to setting up the company’s office in Mareeba. “I’ve always been a believer in ‘if you don’t ask you don’t get,’” says Anne, who went on to manage GHD’s Wellington and then Townsville offices, before being posted to the Philippines in 2010.

Two years later, Anne took over the reins as Operating Centre Manager and her experience in Manila reinforced some vital lessons. “You have to learn how to do business in cultures like the Philippines. To get the best out of local people you have to gain their respect, you have to encourage and learn how to ask the right questions,” says Anne.
With a population of more than 100 million, a fast-growing middle class, and demand for power in the country outstripping supply, GHD’s portfolio in the country has been dominated by energy projects. Anne identifies the Biliran Geothermal Project, a flagship project for GHD in 2013, as the most challenging of her career. At Biliran, a volcanic island north of the island of Leyte, GHD was providing civil works design and supervision for the country’s first geothermal power plant. Work on the pioneering project in November 2013 fatefully coincided with Typhoon Haiyan which devastated the region and killed at least 6300 people. One of the strongest tropical cyclones ever recorded, workers at Biliran were caught in the catastrophic destruction and had to be airlifted out. In the weeks after, GHD was instrumental in the clean-up, flying a replacement team in and getting Biliran back to being a functioning province.

With over 300 people making up GHD’s Philippines operation in 2015, Anne puts the company’s achievements in the country down to some time-honoured principles.

“It’s about building relationships, making sure you sit down at the start of the project and look at all the potential risks, and above all, it’s about understanding what it is that keeps clients awake at night.”
GHD’s proud history in the Middle East is characterised by some amazing highs, coupled with some devastating lows – a result largely due to the exaggerated economic cycles inherent in the region. The opportunity to work on some of the world’s largest and most challenging projects in a truly multicultural environment is being sought after by GHD’s people as a wonderful chance to learn and grow in their chosen professions.
2000 - 2006 Acquisition and expansion

At the turn of the century, GHD was following a formal globalisation strategy under the leadership of Neil Rowlands. The most prospective international markets being tested at that time included Chile, Spain and Ireland, with the Middle East yet to feature in any significant strategic discussion. In the immediate aftermath of the Sydney Olympic Games, Jeremy Stone, then managing GHD's Philippines operation, recognised a potential connection between the recent announcement that Qatar would host the Asian Games in 2006 and GHD's experience via the successful Sydney Olympics. Jeremy had formerly worked with Meinhardt in Asia and saw an opportunity for GHD to enter the region through Meinhardt's fledgling business in the Middle East.

In December 2000, following discussions with the two managing partners of the Meinhardt Middle East business – Sherif Seleem, an Egyptian architect, and Paul Sancandi, an Australian structural engineer – GHD acquired the business which consisted of about 30 people in Doha, two in Abu Dhabi, and a trade licence (but no staff) in Dubai. Sherif was appointed as the inaugural Operating Centre Manager – Middle East. The Meinhardt business in Qatar had established itself thanks to a major retail mall design, the Doha City Centre, secured via a design competition in partnership with the renowned Australian architectural practice Davenport Campbell. With a gross floor area of 300,000 m², this was the largest mall in the Middle East at the time, and much bigger than comparable projects in Australia. Paul and Sherif delivered the design from a small office above a clothing store in Al Saad, Doha.

GHD's business in Abu Dhabi was located in a 65 m² office in the old sector of the city. Safwat Youssef, one of the two foundation staff members in Abu Dhabi, recalls that the office was situated above a butcher’s shop, had only one computer, and internet connectivity was intermittent at best.
In November 2001, GHD secured the contract to design and supervise the expansion of the new Doha International Airport in Qatar. This was not only the first major project to be awarded post-acquisition, but also GHD’s first contract in the Middle Eastern aviation sector. Managed by Michael Kemp, who had been working with Meinhardt for five years in Qatar, the project incorporated extensions to the arrivals and departures halls, plus upgrades to the existing terminal building. The foothold gained into the aviation sector via that initial piece of work proved to be of enormous long-term strategic value. For many years GHD continued to provide design services to Qatar Airways on developments associated with the Qatar International Airport. The experience and market credibility gained via the Doha airport work enabled GHD to secure its first major project in Abu Dhabi, namely the design of the new Terminal 2 Building at Abu Dhabi International Airport, the contract for which was executed in 2002.

The Middle Eastern business continued its steady growth trajectory in the early 2000s. In 2002, GHD acquired Taywood Engineering, the consulting arm of Taylor Woodrow. Taywood’s presence in the Middle East comprised about 20 people in Dubai, including structural and geotechnical engineers, along with a facades testing laboratory.

After the acquisition, Paul Morris, who had transferred from the Brisbane office to Doha in early 2001, again relocated, this time to the UAE, to integrate and then manage the new Dubai office. Under Paul’s leadership, the Dubai team successfully secured and delivered a portfolio of masterplanning projects through 2003 and 2004, including the Dubai Maritime City and Dubai Fishing Harbour Redevelopment. Urban planning quickly became the focus for GHD’s newly-established but rapidly expanding Dubai office.

In late 2004, the Dubai office secured contracts from the Dubai Government developer Nakheel to produce master plans for the Palm Jumeriah and Palm Jebel Ali islands, the biggest urban development projects embarked on by GHD in the history of the company. Palm Jumeirah would have a population of 100,000 and Palm Jebel Ali will ultimately house a population of 140,000. Tom Pinzone, called on to help spearhead the project, note that aspects of the vast project were familiar; “It was reminiscent of the early days in Canberra, when we were masterplanning a city from scratch and designing whole neighbourhoods.”

Reflecting on the project, Paul Morris says GHD’s input broke new ground, “What made the Palm Jumeirah masterplanning unique was not only its size and the fact that it was reclaimed from the ocean, but because GHD was attempting to masterplan a city-sized development well into the construction phase.”

A master plan for Palm Jumeirah had first been completed in 2000 when the project was launched. However, the development was generating incredible interest, with sales far exceeding the developer’s predictions, partly due to the fact that Dubai was the first location in the Middle East to offer freehold land title to foreigners.
The originally planned population swelled from 25,000 to 50,000 and then to 100,000 people; whilst Nakheel was ecstatic about the success, few had stopped to consider the associated implications relating to infrastructure.

As part of GHD’s master plan development, the main trunk road swelled from two-lane roads with at-grade roundabouts to a six-lane motorway with interchanges. There was simply not enough room to fit more than a four-lane bridge over the island’s connecting waterways, so the master plan incorporated a two-lane tunnel. District cooling that was well under construction had to be ripped up and redesigned as cooling demands were re-forecast. The state utility companies were adamant that they simply could not service the vastly expanded power and water demands. Nakheel, somewhat unperturbed, decided to form Palm District Cooling and Palm Water, the first private utility provider in the Gulf. With all the land effectively committed, the only option for siting infrastructure was to go underground or under-structure. GHD delivered the concept design for underground treatment plants and raised the main trunk roadway to become an elevated structure with services jam-packed underneath. The AUD10 billion infrastructure and development project was delivered by Nakheel in less than a decade. The gross floor area alone rivalled a city the size of the Gold Coast, Queensland.

During that period, the Abu Dhabi office was also experiencing a period of growth as the UAE Government embarked on its plan to diversify the economy away from a dependency on oil. In response, Alan Lindberg was transferred from Chile to the UAE to manage the Abu Dhabi office and capitalise on the emerging opportunities, which included large-scale residential and infrastructure projects.

One of Alan’s first goals was to establish a relationship with Aldar, the Abu Dhabi Government developer responsible for delivering much of the UAE’s planned urban expansion. GHD’s first engagement with Aldar came in May 2004 with a commission to
design an extension to the Al Jimi Shopping Mall. The relationship sparked with Aldar ultimately led to some of GHD’s largest and most successful commissions in Abu Dhabi over the following decade. Later that year, GHD secured what could be described as its first truly iconic Middle Eastern building design – the Al Bidda Tower in Doha. In early 2004, the Doha office had been invited to enter a design competition for a private tower earmarked for development in a prime location at the end of the Doha Corniche. The client’s key stipulation was that the tower had to be iconic, given its prominence in the Doha skyline. Sherif Seleem sought concept design ideas from the architects employed in GHD’s Qatar office. Unfortunately, the initial design submitted by GHD failed to capture the client’s imagination, at which point it appeared the opportunity may have passed. However, one month later, GHD was approached again and invited to submit an alternate concept, and a design by Shadi Saliba, a young architect in the Doha office was selected and put forward. The client loved it. With an innovative ‘corkscrew’ type design, the concept incorporated elevations derived from the imagery of a tornado and a twist in the tower that gives the impression of dynamic movement.

GHD was subsequently engaged to deliver the design of the Al Bidda Tower, based on Shadi Saliba’s concept sketches. The Al Bidda Tower is iconic not just in terms of GHD’s portfolio of building projects, but as a beacon of design excellence on the world stage. It has been designated by the Council on Tall Buildings and Urban Habitat as one of the 100 greatest high-rise buildings in the world. GHD’s success on the Al Bidda Tower was quickly followed by a commission for another iconic building – the Burj Dubai (now known as the Burj Khalifa), the world’s tallest building. Appointed by Emaar, the project developer, GHD acted as the independent verification and testing agency, tasked with monitoring the quality of the project’s steel and concrete construction.
By 2004, GHD had established itself as a substantial market force in both Qatar and the UAE, but in spite of the successes, aspects of the business posed real challenges, most notably the matter of securing payments. When it was noted by Richard Holliday (Chief Financial Officer) that GHD's cash collection was less than satisfactory, Sherif Seleem reportedly quipped: “Well don’t blame me – debtor performance here has been this way for the past 3000 years!”

In response to the growth and associated challenges being experienced in the Middle East business, David Ryan was appointed Operating Centre Manager - Middle East, whilst Sherif Seleem was appointed as Demand Stream Leader – Buildings. In January 2005, GHD expanded into Egypt, after the opening of an office in Maadi, a suburb of Cairo. Established to service building design projects being delivered in Qatar and the UAE (rather than to pursue local business opportunities), the Cairo office was staffed initially by about 25 engineers, but grew rapidly as major projects were secured in the region.

During early 2005, the relationship fostered with Aldar in Abu Dhabi saw GHD in receipt of a letter of invitation to tender for Phase 1 of the Al Raha Gardens development, including full architectural and engineering design services for a 76 ha mixed-use urban village, comprising villas, apartments, townhouses, a 100-room hotel, offices, retail space, polo club and equestrian sports facilities. GHD’s tender for the work was submitted in May 2005. Following submission, GHD received word that its price was too high and that the project was to be awarded to someone else. A disappointed Alan Lindberg began archiving the bid files, only to receive a call two days later inviting GHD to visit Aldar’s office to negotiate.
GHD received a Letter of Intent from Aldar on 1 June 2005, in an amount of approximately AED34 million. Tony Ryan was mobilised from the Canberra office to manage the project, which upon its conclusion in 2013, had generated a fee of in excess of AED85 million via the award of subsequent stages.

Ian Shepherd was appointed as General Manager – Middle East in January 2005, taking over from Mike Polin. In February 2006, a business case was presented to establish an office in Sharjah, UAE. As early as 2002, GHD had been involved in projects in the emirate, most notably the expansion of Sharjah International Airport, which had been successfully managed by Michael Kemp, out of the Doha office. The business case was approved and GHD’s Sharjah office officially opened in April 2006. A number of substantial project wins quickly followed, including the design and construction supervision of a new 4-star Centro Hotel and a VIP terminal at Sharjah International Airport.

As 2006 drew to a close, GHD’s business in the Middle East had grown to approximately 500 people, with offices in Doha, Abu Dhabi, Dubai, Sharjah and Cairo, along with a trade licence to operate in Kuwait. The years that followed would be some of the most exciting, and in some cases, challenging times in GHD’s history.

**2007-11 Boom and bust - the GFC hits hard**

Through 2007 and 2008, the Middle-Eastern property market, most notably Dubai, went into overdrive with prices skyrocketing and new developments being announced on an almost daily basis. At the peak of the boom in 2008, Dubai’s annual real estate expo Cityscape featured the somewhat surreal sight of prospective real estate investors jostling for position, and in some cases, literally throwing deposit cheques at developers.
in the hope of securing a property. This frenzy of development activity provided a wealth of opportunity for GHD. In Dubai, high-profile projects such as the Dubai University Hospital and Al Barari developments were secured, whilst GHD’s work on the Palm Islands and the Burj Dubai continued at pace.

In July 2007, the Abu Dhabi office received a letter of award from Aldar for the Al Raha Beach project, one of the largest commissions ever secured by GHD, with a fee value in excess of AED150 million. Working alongside Benoy Architects, the project encompassed the design and documentation of a mixed use residential, hotel, retail and commercial development comprising 64 individual buildings up to 25 storeys tall. Stephen Burns was mobilised from Sydney to manage the project in Abu Dhabi, with work packages delivered via GHD’s offices in Brisbane, Sydney, Melbourne, Doha and Hong Kong – a truly global effort.

Nicholas Beaulieu-Asselin, GHD’s Deputy Project Manager, recalls that “by mid-2009, it was calculated that approximately one-third of GHD’s entire global workforce, or roughly 2,000 people, had contributed to the Al Raha Beach project”. Ian Shepherd remarks that “Al Raha Beach proved beyond doubt that GHD could build scale internationally. It played an important part of GHD’s growth history”.

By early 2008, GHD in the Middle East had grown to more than 800 people, with some 350 in Doha, 200 spread across Dubai and Sharjah, 150 in Abu Dhabi and 100 in Cairo. This rapid growth prompted a decision to divide the Middle Eastern business into three discrete operating centres, with Qatar led by Michael Kemp, Abu Dhabi led by Alan Lindberg and Dubai led by Jeffrey Wilson, who had recently relocated from the Sydney office. David Ryan stepped into the role of General Manager, Middle East.
Meanwhile, finding appropriately skilled engineers and architects to service the intense project workloads became a key challenge, with salaries escalating rapidly as the demand for professional services greatly outstripped supply in both Qatar and the UAE.

In late 2008 however, the Global Financial Crisis hit the region with devastating consequences, particularly in Dubai, whose economy, unlike that of Abu Dhabi and Qatar, was not underpinned by appreciable oil and gas revenues. Property prices across the region went into free fall, with approximately 60 percent wiped off the value of Dubai property in a matter of months, as well as substantial, albeit somewhat less dramatic, falls in Abu Dhabi and Qatar. As a result, many of GHD’s developer clients faced critical cash-flow issues. Projects across the region went into suspension as the property market imploded, whilst payment delays and defaults on ongoing projects created enormous challenges. By mid-2009, the dire implications for GHD (and indeed the entire construction industry) had become fully apparent; new project awards almost disappeared.

Andrew Hogan, GHD’s Operations Manager in Dubai at the time recalls the dire situation: “Our developer clients had simply run out of cash. There were no tenders being released, no project awards, and in most cases, no payments forthcoming. We, along with most of our partners and competitors, effectively became unsecured creditors, pursuing what we were owed, but all the while knowing that we’d be sharing the pain to some extent”.

The only feasible response to the crisis was to reshape the business in response to the radically changed market conditions. The Dubai office was downsized dramatically, to the extent that by late 2009, it was staffed by less than ten people, most of whom were delivering projects in Abu Dhabi. The Cairo office, which had proven challenging since its inception, was closed in June 2009, and within months the Sharjah office, which had failed to deliver on its early promise, was also closed. In Doha, staffing numbers were reduced appreciably. However, in spite of the savage downturn being experienced elsewhere, the Abu Dhabi office continued to thrive. Although the Raha Beach and Gardens projects were in their later stages, they continued to provide a solid baseload of work, whilst major new commissions were secured with the Abu Dhabi Tourism Development and Investments Company (TDIC) and the Abu Dhabi Airports Company (ADAC).

In particular, the Saadiyat Beach Apartments “SB19” project for TDIC, secured in August 2008, provided an enormous boost. Comprising the design and construction supervision of six large luxury residential complexes with associated communal facilities, the project enabled GHD not only to maintain the team in Abu Dhabi through the depths of the GFC, but to accommodate the relocation of a number of valued people from the ailing Dubai office. Whilst Dubai and Qatar struggled, the Abu Dhabi office delivered strong results in both 2009 and 2010; a result attributable to outstanding, timely delivery of major projects with Aldar and TDIC.
The period surrounding the boom and subsequent crash also saw GHD’s environmental business take great strides forward in the Middle East. As early as 2004, the company had established environmental groups in both Qatar and Dubai, working predominantly on environmental impact assessments and waste management plans for new property developments. In 2006, Angus Fraser and Chris Benjamin, GHD’s environmental business leaders in Qatar, identified that appreciable demand existed for marine sciences, particularly given the extensive coastal and ports development occurring in Qatar and the UAE.

In March 2007, GHD’s first major marine survey was secured, with the contract executed for long-term environmental monitoring at the New Doha International Airport. This was one of the largest environmental commissions ever secured by GHD at the time, comprising ongoing quarterly surveys of the marine ecology in the surrounds of the airport, including coral, fish, marine mammals and benthic ecosystems.

Later that year, GHD was commissioned by the Saudi Arabian Mining Company (Ma’aden) to undertake a comprehensive study of the marine environment and the environmental impacts of a purpose-built industrial city, comprising a bauxite refinery and alumina smelter, phosphate fertiliser works, power station, desalination plant and port, on the Arabian Gulf in Saudi Arabia. GHD’s environmental team surveyed the marine environment, including fish, jellyfish, marine mammals, coral and seagrass beds, before undertaking a detailed assessment of the environmental impacts of the development, including those associated with cooling water discharges. As a result, by 2008 GHD had effectively positioned itself as the preeminent marine environmental consultant in the Middle East. In particular, having a highly committed team of environmental scientists holding commercial dive tickets, set the company apart from the competition and
ensured a steady stream of exciting project opportunities, in spite of the downturn in the property development sector.

In Abu Dhabi, GHD was engaged by the Abu Dhabi Government to develop a framework for the new Environment, Health and Safety Management System (EHSMS), a mandatory system to be adopted by all public sector entities in the emirate. Whilst a major commission in its own right, the EHSMS work was of enormous strategic value as it provided GHD with subsequent opportunities to engage with each of the various governmental entities and departments in Abu Dhabi, tailor a program specific to their needs, and then provide training in the adoption of the new system.

By 2010, GHD’s Middle Eastern business was a far different entity to that which preceded the GFC. Total staff numbers had been consolidated down to 300, split between Doha and Abu Dhabi, and the Dubai office was effectively mothballed. Having led the Abu Dhabi business through its period of initial growth, the boom and the GFC, Alan Lindberg returned to Brisbane in 2010. The Abu Dhabi and Dubai operating centres were subsequently merged into a single UAE Operating Centre under the leadership of Jeff Wilson.

After serving ten years in the Middle East, Paul Morris transferred back to Brisbane in 2010, to assume the Global Market Leader role for Property and Buildings. David Ryan returned to Melbourne, with John Baird appointed as General Manager – Middle East.

By mid-2010, new project opportunities had started to re-emerge, though competition was fierce, with governmental budgets tightened appreciably and clients focused on driving the best possible value for money out of their consultants and contractors. Foremost among the project opportunities being pursued by GHD was the New York University in Abu Dhabi, a multi-billion dirham development on
Saadiyat Island. The concept design for the university had been completed by the world renowned Rafael Vinoly Architects (RVA) in the US. The Abu Dhabi Government investment authority (Mubadala) tasked with delivering the project decided to tender it under a design-build model, with an aggressive program to meet the UAE’s commitment to accommodate the first intake of students in 2014. GHD elected to partner with Al-Futtaim Carillion. When Carillion was announced as the preferred tenderer for the work, GHD entered into formal negotiation to serve as lead design consultant, providing the architectural, structural, civil and landscape design for the project, and a recruitment program was implemented in anticipation of the imminent project award. At the eleventh hour, GHD’s project director, Peter Rodda, received an email from the concept architect, stating that they (RVA) would be engaged as the lead consultant and would complete the architectural design. The message went on to invite GHD to submit an offer for civil, structural and landscape design services.

After recovering from the initial shock, the realisation dawned that RVA was indeed likely to be engaged as the lead consultant and GHD submitted the requested offer. The contract between Carillion and Mubadala was executed in May 2010, with RVA (and GHD) signed up shortly thereafter.

The project proved to be one of the most demanding but rewarding structural and civil engineering projects undertaken by GHD. Comprising 37 buildings, from three to twelve storeys on a podium, the design incorporated a range of challenging structural design elements such as the need to incorporate a basketball court spanning across an Olympic-size swimming pool, all underneath a library. The vibration analysis on that element alone caused GHD’s project manager and lead structural engineer, Iain Caution, to lose quite a bit of sleep. The design was completed on schedule in 2012, with the university successfully opening in early 2014.
2012 - 2015: Strategic shifts and new opportunities

Despite the devastating impacts of the GFC, the governments in both the UAE and Qatar remained fully committed to achieving their long-term visions, centred on diversification away from an economic reliance on oil and gas. In the UAE, this meant a focus on tourism, aviation and industry, whilst Qatar was buoyed by the award of the FIFA World Cup and the associated requirements for major infrastructure development.

In 2012, there was a leadership transition in both the UAE and Qatari businesses, with Andrew Hogan taking on the combined UAE Operating Centre and Cameron Gillanders stepping into the leadership of the Qatar business following the retirement of Michael Kemp. John Baird returned to Brisbane, with Phil Duthie moving from Melbourne to Abu Dhabi, to assume the role of General Manager, Middle East and Europe.

In the UAE, completion of the Aldar project portfolio, coupled with the finalisation of the New York University design had left the business temporarily without a major buildings project on the books. Furthermore, the luxury residential market was oversupplied, meaning that opportunities with GHD’s traditional developer clients remained scarce. In response, a new business strategy was formulated, essentially focussed on the aviation and industrial sectors, into which the UAE Government appeared poised to commit substantial capital investment over the coming decades.

GHD already had a strong presence in the aviation market, through its work on both the Abu Dhabi and Doha airports, whilst an environment-led strategy would provide access into the industrial sector. In June 2012, GHD received a call from ADAC, requesting attendance at an urgent meeting at Abu Dhabi International Airport, the topic of which could not be discussed over the phone. At first, it was assumed the meeting was to discuss the new Terminal 1 and 3 Arrivals Hall that GHD was in the progress of completing, with long-standing partner Al Jaber LEGT Engineering & Contracting (ALEC), a UAE construction firm. At the meeting, it was revealed that the governments of the UAE and USA had agreed to build a US customs pre-clearance facility at the airport. The facility was to be built and fully operational within six months – an extremely challenging task.

ADAC stated that GHD and ALEC, both of whom had an exemplary record in the delivery of projects at the Abu Dhabi International Airport, would be appointed in partnership to design and build the facility. Bryson Millers (then serving as manager of GHD’s Property and Buildings group) was dispatched to Washington the very next day, to meet with US Homeland Security, to ascertain the requirements for the new facility.

The US Customs and Border Protection Pre-Clearance Facility was successfully designed and built on-budget and within the six-month period; it was an enormous achievement and one that cemented GHD’s standing as the Middle East’s leading aviation consultant. In the years that followed, GHD continued to secure major aviation projects in the UAE.
These included the new Abu Dhabi Terminal 1 Passenger Segregation Facility (affectionately known as ‘The Donut’ for its peculiar shape), Etihad Airways’ upgraded Catering Facility, and the new VIP Terminal at the Al Maktoum International Airport in Dubai.

In September 2012, GHD’s environment-led push into the industrial sector netted its first major success, with a commission to undertake the Environmental and Social Impact Assessment (ESIA) for one of the world’s largest alumina refineries, to be developed in the KIZAD Industrial Zone, north of Abu Dhabi. Known as Project Shaheen, the ESIA necessitated GHD’s environmental team to study not only the project site itself, but also the mine site in Guinea from which the facility’s raw bauxite would be sourced. In order to meet the requirements of the project’s international financiers, the ESIA was completed in full accordance with globally recognised standards, including the Equator Principles. Further opportunities quickly followed, including the facility’s bauxite residue (‘red mud’) storage dam, the design of which was successfully led by GHD’s Brisbane office. Reflecting on the project, Nick Pohl, GHD’s Project Manager for Shaheen says: “It was genuinely rewarding to be involved with this global-scale industrial project and to observe how GHD’s ESIA influenced many of the big ticket engineering decisions, resulting in leading environmental outcomes”.

Early 2014 saw a dramatic slump in the global oil price, which significantly impacted government budgets and fiscal spend among the region’s oil producers, including Abu Dhabi. In spite of this, GHD’s UAE business continued to thrive, thanks to its strong portfolio of clients and projects in the aviation and industrial sectors. These sectors were considered by the government to be critical income-generating infrastructure and hence were not subject to the budgetary cuts experienced elsewhere as oil revenues declined.
In Qatar, opportunities in the property and buildings sector remained reasonably scarce, although GHD was able to secure a steady stream of commissions that enabled the business to maintain a relatively stable performance through 2012 and 2013.

The year 2014 brought about two of the most exciting and challenging projects undertaken to date by GHD in Qatar. In February, the Qatari Government had announced that the Doha Sheraton Hotel was to be stripped out and completely refurbished in time for the Gulf Co-operation Council Heads of Government Conference in December. The hotel operator was instructed to vacate the premises immediately. Early on a Thursday morning, the Doha office received a call from the contractor KCT appointed to carry out the refurbishment, asking that GHD attend a meeting that same afternoon on-site. Having recently completed another high-profile project with KCT, GHD was asked whether we could provide a full 40-person strong design team “by Sunday” to work as KCT’s lead consultant. Calling upon its connected global network, GHD was able to rapidly draw together the required design team (not quite by Sunday, but very soon thereafter). Within weeks, some 14,000 construction workers had been mobilised to the site by KCT, with all architectural, facade and structural design aspects under the management of GHD. Against all odds, the project was completed within an eight-month timeframe and the Heads of Government Conference went ahead as planned.

In April 2014, GHD was commissioned by the Qatari Ministry of Municipality and Urban Planning (MMUP) to undertake a comprehensive flood study for the State of Qatar. Comprising a detailed planning and policy level study of flood-prone areas and mitigation measures, the project showcased GHD’s ability to call upon specialist skills from across the its global network, including hydrologists, ecologists, climate change specialists, economists, civil engineers and community consultation professionals.

In July 2014, Phil Duthie returned to Australia to take up the role of General Manager – Australia, whilst Ashley Wright stepped into the position of General Manager – Middle East and Europe.

Early 2015 saw further leadership transition, with Bryson Millers and Bassam Halabi taking up the operating centre manager roles in the UAE and Qatar respectively, following decisions by both Andrew Hogan and Cameron Gillanders to return to Australia after substantial tenures in the region.

Although the global oil price showed no signs of recovery, thereby constraining government expenditures, GHD achieved continued growth in market share through 2015 and 2016. In the UAE, masterplanning, a hallmark of the firm’s early years, experienced something of a renaissance, with GHD completing significant master plans for the Al Ain International Airport (for ADAC) and a major new residential precinct, the Lagoons District, on Saadiyat Island (for TDIC).
Meanwhile GHD was also building its luxury automotive client portfolio. Previously, in 2011, GHD had been appointed as Porsche’s regional architect, a long-term agreement to design the company’s showrooms across the Middle East and Africa. In September 2015, GHD was also named the regional architect for Bentley Motors, tasked with designing its showroom and workshop facilities across the Middle East, Africa, India, Australia and New Zealand. In order to ensure its appointed architects had a comprehensive feel for their product, GHD was loaned a brand new (convertible) Bentley. The sight of GHD’s architects driving a AUD200,000 automobile around the streets of Abu Dhabi inspired some jealous glances.

In Qatar, GHD secured the detailed design of the Lusail Rail Transit System Depot Complex, at Lusail City, along with the environmental studies associated with the project. The depot itself is the nerve centre of the mass transit system, consisting of maintenance, stabling and administration facilities, covering an area of over 15 ha. Developed by Qatar Rail, the LRT is an integral component of Qatar’s National Vision 2030.

GHD’s proud history in the Middle East is characterised by some amazing highs, coupled with some devastating lows – a result largely due to the exaggerated economic cycles inherent in the region. In an environment where a chat over a cup of coffee is generally more important than any words appearing in a contract, developing strong and mutually beneficial relationships with our clients will continue to be of paramount importance. The opportunity to work on some of the world’s largest and most challenging projects in a truly multicultural environment is being sought after by GHD’s people as a wonderful chance to learn and grow in their chosen professions.

As Paul Morris recalls, “A wise colleague by the name of Rob Harrap in Brisbane once remarked that a lot of past principals of GHD had cut their teeth in management by moving to regional Australia to take up management of a small office, say like Alice Springs. I guess when you think about it, Doha is just a bit further west, actually 11,000 kilometres”.

Lusail Rail Transit System Depot Complex, Qatar
Based in Abu Dhabi, Salma Bin Breik is a Senior Environment, Health and Safety (EHS) Manager. With more than ten years’ experience of working in the United Arab Emirates (UAE) she is at the forefront of delivering GHD’s EHS services in the Gulf region.

Salma was encouraged to study environmental sciences by her father, who worked in the energy industry. Being raised alongside five high-achieving brothers, prepared her for life’s personal and professional challenges. She says, “It was tough. I was constantly proving to my brothers that I was one of the boys, but I think it helped develop my character and made me unafraid of challenges that are thrown at me.”

After graduating from The American University of Sharjah in 2005 with a Bachelor’s Degree in Environmental Science, Salma began work at the Abu Dhabi Environment Agency before moving into consulting. Within a year of joining GHD in 2011, she was managing her first project – the development of an EHS Management System for Emirates Foundation, and writing her first Environmental Impact Assessment (EIA) for the new Abu Dhabi-Dubai highway. Salma says her first EIA presented some unique challenges, “The road was going through privately-owned land and endangered species inhabit the area, and on top of those issues the environmental approval had to be obtained within a tight timeframe. So managing the project required a lot of negotiation with stakeholders and the engineers, to ensure its timely delivery. I was really pleased with the outcome. We completed it on time and made profit.”

Reflecting the evolution of EHS in countries like the UAE, Salma is an example of a new generation of environmental scientists helping deliver world-leading projects in the region. “When I first decided to pursue an education in environmental science there was not just a lack of environmental professionals in the United Arab Emirates, but a lack of appreciation of the need for them. That’s all changed now.”
As Project Director for a host of EHS projects, Salma's work involves environmental monitoring and compliance across all GHD's service lines. “Working at GHD has been and continues to be a great experience for me. I’m constantly challenged and out of my comfort zone and that allows me to grow”

Building trust and establishing compatibility is key for any international company working in the Middle East, says Salma, who sees her role as a bridge between Western and Arabic business cultures.

“As a local I’m able to help deal with what is a very specific business environment. Many companies come to the Middle East thinking it’ll be business as usual, but things are done differently here, and what worked back home won’t necessarily work in the UAE.

“I see things in the locals’ perspective, so I’m able to tell my colleagues how I perceive their words and actions, and the effects they have on Emiratis, and that helps the kind of relationships GHD creates here.”
In May 2015 the Project Winston acquisition was completed and the GHA Livigunn (GHA) business joined the GHD family in the UK. The GHA business, led by Mark Ingram, Stewart Tennant and Craig Stockton, added a further 160 team members to the UK business, bringing the total for UK OC to more than 240 people.
GHD’s entry to the UK had been planned for some time before it established a permanent presence in 2006. In their more youthful days, many of the company’s Australian engineers had worked in Britain. This created an affinity with the country and served to establish early relationships with a number of local consultancy businesses.

Plans for a UK presence were first laid during Ken Conway’s period of leadership. GHD had formed a joint venture with Transmark (part of British Rail) to win rail work, mostly around Sydney, Australia. Halcrow eventually bought Transmark and the JV between GHD and Transmark was disbanded. GHD’s efforts in forging and maintaining strong relationships were soon rewarded when one of the senior Halcrow people, Dave Roberts, joined GHD to lead the rail business in Sydney.

Years later Ken Conway and Mike Polin held several meetings with a specialist rail consultancy which was part of the Corus Group. Discussions ensued with Corus about partnering, or forming a more formal arrangement, but an agreement could not be reached. Meanwhile the senior leaders in the rail consultancy were attracted to the prospect of joining GHD. David Marsden and Jeremy Blake left Corus and subsequently joined GHD in 2006, establishing a new business in the UK and becoming Operating Centre Manager (OCM) and Operations Manager respectively.

Meanwhile, in the mid-2000s Roger Byrne, former leader of GHD’s Asset Management Group, established a relationship with the London company AMCL which specialised in asset management, principally in the rail sector. An alliance agreement was signed in 2006 with AMCL to aid GHD’s entry into the transport and utility markets. So, after a period of gestation, GHD was finally established in the UK. Tom Pinzone moved to the UK from Sydney to help establish the business which initially focused on rail and asset management.
In October 2006, the historic York Minster cathedral was selected as the venue in which to formally launch GHD’s UK operations. Attended by GHD people from the UK and overseas, as well as partners and prospective clients, the launch was a great success and gave GHD a strong foothold to start the new venture.

The first six months were tough! Mention “GHD” and most people thought hair straighteners. Indeed, during the first year several were sent to our office for repair!

An office was set up in York and GHD took space for two employees in AMCL’s London office. Despite support from the local authority development agency, Yorkshire Forward, it was a hard slog to get potential clients engaged with an unrecognised brand. The company struggled to represent a distinctive offering in a saturated market. To address this, it entered a period of intense business promotion, concentrating on key areas of differentiation from competitors.

Early in 2007 GHD promoted its services by holding a seminar on sustainable asset management. Speakers included Tim Nevard (a former GHD Environmental Business Leader), Roger Byrne, and as a keynote speaker, David Bellamy OBE, the celebrated UK botanist and environmental campaigner. Attended by more than 70 infrastructure owners and representatives of government agencies, the event generated much interest and raised GHD’s profile with a number of target clients.
To build on the success of the launch, a client reception was held to celebrate the new GHD/AMCL alliance. The event attracted a number of key clients who had relationships with AMCL and who were interested in the wider offer GHD presented. Further momentum began to build. By late January 2007 the UK team consisted of 10 people. Around this time the business began to win work and its focus moved towards project delivery – building relationships with new clients as well as business development.

The marking of Australia Day that year was a new experience for most of the team, who decided to mark the occasion with a gathering for team members and their families, all of whom had taken a leap into the unknown by joining GHD. While their Australian colleagues were celebrating with barbecues on the beach, the UK team donned thermals and celebrated with a barbecue in the snow. All 10 of the original UK team – including Andy Robinson, Andy Howard, Phil Duddles, Brian Hutchinson, Paul Wilkie, Sue Jackson, Steve Bottom and Brian Kerr (who came over from Melbourne for the first two years) – along with those mentioned previously, were present.

The first big win for the UK Operating Centre came with the Railway Safety and Standards Board. The project’s remit was to undertake a study into the provision of training within the various UK rail companies and operators and to identify improvements. This project eventually earned revenue of around GBP100,000 (circa AUD200,000) and was considered a large win for the small team.

In the following years the UK business continued to grow and had some major successes, including the award of a framework contract with Network Rail, the nation’s heavy rail infrastructure owner. This win led to about GBP3 million (approx. AUD6 million) of work in and around London over a three-year period and created the foundation for later growth. Much of the effort to win and deliver this work was led by Andy Howard, supported by Andy Robinson and Brian Hutchinson, whose efforts made GHD the favoured consultant for project development work, a key differentiator for GHD’s work in the UK to this day.

In November 2010 the first development stage of the UK business concluded with the retirement of David Marsden, under whose leadership the business had been established and was well positioned for growth.

From 2006 to 2010, the UK business trialled various options for expansion, opening offices in Birmingham, Bristol and Liverpool, alongside its centres in York and London. The business added environmental and water-based service offerings and during this period the team grew to nearly 30 people. In parallel, GHD also established a business in the Republic of Ireland. The Irish business grew to around half a dozen people before the GFC hit Ireland hard and it became clear that the time was not right for a business in the “Emerald Isle”.
As well as this abortive venture, the market for environmental and water services was hard to crack with existing suppliers, and proved too great a challenge to overcome during the recession that followed the GFC. Accordingly, GHD chose to exit these markets and focus its efforts on rail and asset management.

Mergers had always featured as part of the plan for establishing a sustainable business in the UK and studies had been made of which target businesses were a best fit. Discussions with various companies were promising, but following the GFC, the focus switched to achieving a break-even status in a challenging market; making the business ready for its first UK merger was uppermost in mind. In 2009 a relationship with rail specialists CollinsonDutton Limited (CDL) had been established and then steadily developed.

GHD supported CDL in a submission for the four-year engineering framework for Transport for London (TfL). The submission was prepared by two CDL Directors, Neil Franklin and Richard Spence, both who later became service group managers in the development of the GHD business.

The winning of the framework, alongside other major players in the UK, placed CDL and GHD on the TfL map, and this was to become a key component in the ongoing relationship with CDL. In reality, the relationship was already well established, as CDL was responsible for providing sponsorship to the GHD Personal Track Safety certification for Network Rail, a mandatory requirement for working on mainline railways in the UK. This relationship continued to grow and in late 2009 this resulted in the initial request from David Marsden, UK OCM, to seek clarification about CDL’s plans for the future.

In July 2010, John Baird relocated to Qatar to take up the role of General Manager - Middle East and Europe. As a member of the Practice Management Group, John was keen to see the development of the region and in particular, growth in and around the UK and Europe. Soon after his arrival in Qatar, John took a leading interest in bringing CDL into the GHD family. After considerable efforts by both parties, the share purchase agreement was signed in York by John Baird and Jeremy Blake for GHD, and Andy Collinson and John Dutton for CDL. In July 2011 a new era for GHD in the UK commenced.

With the agreement signed off, work began on integrating the two organisations which had offices around the UK. It seemed appropriate that the two London offices came together in the CDL office, and the CDL York team moved into GHD’s York office. John Dutton took on the OCM role for UK/Europe and work began on the development of the UK/Europe Strategy with the newly appointed OCM Management Group.

The combined businesses created a footprint of 45 people and it was important that strategic direction was created quickly and rolled out to the team. The UK – OCM Business Strategy Pack was completed by December, outlining the company’s focus for the next
GHD worked with HMI+ on a high profile project (Lostock) in the UK to provide additional 60ML/day output for a 180ML/day capacity works, helping to support future Haweswater Aqueduct outages.

three years. The same month the new London office was well underway after securing the sixth floor of 10 Fetter Lane.

By March 2012, the first OC management meeting was convened in the newly appointed board room before the wider team took occupation soon after. The office benefitted from the team having access to the GHD systems and processes, which by this time were starting to bed themselves in as part of the overall integration process. However, none of this would have been possible without the sterling work of Mike Edwards who created and implemented the architecture for information services.

During this period, the combined business continued to work with a range of clients including, Network Rail, Transport for London, Arriva, Abellio and Heathrow Express, as well as projects undertaken with our new colleagues around the world, in particular, in Australia, Qatar and the US. Following the enhanced capability of the UK business, new clients began to emerge. With the UK team settled into the London and York offices, and with the business starting to consolidate after integration, people numbers grew.

Client diversification was key to our ongoing development and the creation of a sustainable business. It was around this time that Andy Collinson undertook a long-term assignment on a major railway project in Qatar – a new railway line in the heart of the country which involved a number of railway specialists from the UK business.

By the end of 2012/2013, the business had grown to about 60 people and was working with over 40 clients across the UK and globally. The UK office’s skill-set that emerged over the year included the enhancement of the rail design engineering capability
GHD assisted Network Rail to upgrade platform 20 to allow use by domestic services at the Waterloo International Terminal, London, UK

(principally in York), an expansion of our asset management service offering, and change-management skills.

Meanwhile maintaining our capability in the UK rail franchise bidding area was paramount. In 2013, the UK OC ran a leadership development programme for the Heads of Service and took the opportunity to link each individual in these roles to a global GHD ‘buddy’, to enhance and develop further the One GHD approach. As the business moved on from this point, it was still grappling with the issue of brand awareness and a working group was established to drive this forward.

The journey from the share purchase agreement to completion of integration and beyond was never going to be easy, and it was a challenging one for the expanded UK OC. Over two years a significant amount of financial investment, as well as personal investment by all team members, was required. The leadership team had to show adaptability, grace and courage on their journey to create a robust, sustainable and strong business for the future. The destiny of the UK business remained tied to both organic and acquisitive growth, both of which were required to achieve the long-term objective of a sustainable business.

In December 2013, John Dutton was invited to a meeting in Nottingham to meet with two individuals who would play key roles in the wider GHD business and the UK business respectively: Ed Roberts, President of CRA, and Nigel Leehane, Managing Director of CRA Europe.
At the same time, John Dutton and Jeremy Blake were developing a relationship with an organisation strategically termed ‘Project Winston’ – an acquisition target that first emerged in 2008 when Jeremy Blake and David Marsden were looking for growth in the UK prior to the GFC.

GHD merged with CRA in July 2014, and as it did so, GHD’s global reach grew overnight to an 8500-person business. The integration added 25 people to the UK business, adding skills in the environment sector and taking the UK presence to about 80 people.

The CRA Europe Environment team, led by Nigel Leehane, brought additional regional presence to the GHD business, with offices in Calverton and Liverpool, and their breadth of experience created synergies and benefits from the start. A few months prior to the completion of the CRA merger we were joined in the UK by Anne Grogan from the Doha office. Anne joined to lead the implementation of the client relationship management program. At the same time, Colin Forsyth joined from New Zealand, to develop a water business in Scotland, with help from a strategic partner Allen Gordon who had supported us in Christchurch.

During the early part of 2014 progress was still being made on Project Winston and although agreement of terms was close, it took several months of discussion to achieve full alignment. Due diligence commenced in January 2015. In the intervening period activity progressed, raising our brand awareness and securing positions on a range of frameworks with strategic clients. The UK team was successful in securing framework positions with Transport for London and Network Rail.
In May 2015 the Project Winston acquisition was completed and the GHA Livigunn (GHA) business joined the GHD family in the UK. The GHA business, led by Mark Ingram, Stewart Tennant and Craig Stockton, added a further 160 team members to the UK business, bringing the total for UK OC to more than 240 people.

GHA added a further five offices across the north-east and north-west of the UK to GHD’s global network, and the acquired skills in water, energy and resources, and property and buildings, gave the UK OC full coverage of these sectors.

The GHA business was itself the result of a series of mergers. Originally formed in 2005 as the vehicle to facilitate the merger of George Hutchison Associates Ltd (GHA), and Livingston Gunn Projects Ltd (LGP), it was originally called, very functionally, GHA Livingston Gunn (Holdings) Ltd (Holdings). The director/shareholders in place at the formation of GHA Livigunn were Mark Ingram and Craig Stockton coming from LGP, and Stewart Tennant coming from GHA, and were the shareholders who ultimately sold the business to GHD in 2015.

Group turnover for GHA in 2006 was around GBP5 million (circa AUD10 million) per annum with around 70 employees. In July 2009, GHA acquired Birkett Colman Stevens Partnership Ltd (BSCP), then based in north-west Leeds. Bringing in BSCP to the group increased annual turnover to over GBP7 million (circa AUD14 million), and numbers to more than 100.

Livingston Gunn Projects Ltd was originally formed in 1989 by Mark Ingram. Active trading commenced in August 1991, initially as a vehicle for Ingram to work as a contract chemical engineer, but always with the intention to move into engineering design and consultancy.

Work at that time was scarce given the UK recession of the early 1990s and initial contracts were limited to two blue-chip clients, Unilever and Courtaulds. Growth within this business started in earnest at the end of the recession in the mid-1990s, coinciding with the recruitment of Craig Stockton as a director/shareholder in 1996. Stockton brought with him contacts within the UK water industry and that facilitated a move into that market sector to start diversifying away from the chemical sector that had been the staple of Livingston Gunn Projects since foundation. The business grew steadily through the late 1990s and 2000s, establishing a key niche within the industry by providing detailed process, mechanical and electrical detailed engineering design services to multiple sectors, predominantly water and chemical.

In 1998 Livingston Gunn Projects was introduced to George Hutchinson Associates by a mutual client, Christiani and Nielsen. George Hutchinson Associates had been providing civil and structural engineering design services to Christiani and Nielsen for a period of years on a number of projects, and at that time Christiani and Nielsen were looking for process, mechanical and electrical engineering support. The two companies started working together for Christiani and Nielsen.
£114m project upgrade to the ageing Victorian sewer system was designed to better manage stormwater and sewerage overflow after extreme rainfall, Preston, UK

It became apparent to both companies that there was little overlap of services and it would be beneficial to both to undertake joint marketing and offer a full engineering design service for all disciplines to their clients. This collaboration was enhanced in 2002 when both companies were successful in being appointed as design consultants to KMI Water who had recently won a process framework with United Utilities.

George Hutchison Associates Ltd was formed in 1987 by George Hutchison, a chartered civil engineer who had previously worked both in the UK and Nigeria for several of the UK’s leading engineering consultancy firms, notably Oscar Faber and GC Maunders. In 2001, Hutchison brought in Stewart Tennant as a director shareholder. Having joined GHA as a graduate engineer in 1989, Stewart re-joined GHA in 1995 having gained valuable experience in the water sector working for Yorkshire Water and Biwater Treatment. GHA provided civil structural engineering services for the recently privatised water industry, and this branch-out into a new sector, driven by Stewart based on his experience, was a major success and a catalyst for the growth of the company from 2000.

The oldest of the constituent bodies of GHA Livigunn, BSCP can trace its roots back to 1959 when it started life as HW Dowe and Partners, the practice changing its name to Birkett Stevens Colman Partnership in 1975.

In 1987 the company was sold to Abaco Investments plc (a financial services company) who were part of British and Commonwealth Company. In 1988, British and Commonwealth acquired a computer company (the infamous Atlantic Computers) which brought the company down and led to them being taken into administration. The Birkett Stevens Colman directors bought back the company from the administrators and the structure of that company remained unchanged until its acquisition by GHA Livigunn in 2009.
With Ashley Wright moving from the General Manager – Europe & Middle East (EME) role into the CEO role in March 2016 (replacing Ian Shepherd), Mark Ingram was appointed as EME General Manager, and UK OCM, replacing John Dutton in the latter role, who took on the role of Transport Director.

Major efforts in 2016 centred around brand building, with all three UK entities, GHD, GHD Environment Ltd (formerly CRA Europe) and GHA Livigunn, now aligned under the GHD brand. Some restructuring was undertaken to allow the UK to come together as a single operating centre, assisted by the introduction of a new financial system (a pilot for the GHD global system) in July 2017.

Benefits of the increased UK scale were seen very shortly after the acquisition of GHA Livigunn, when Galliford Try, an existing customer of GHA Livigunn, was bidding on a design and construct basis for four EFW (Energy from Waste) projects. Before becoming part of GHD, GHA Livigunn would not have contemplated bidding for the full design role on more than two of those projects (the projects to run concurrently), as it would not have been able to access sufficient resources and would have resulted in an excessive exposure to a single client.
As part of the GHD family, GHA Livigunn was able to enlist support from GHD’s Brisbane, Australia office, and with the single client exposure concern dropping in significance, was able to bid all four EFWs, with support from Galliford Try. As is turned out, one project was delayed by over a year, but three went forward, with collaborative working between the Chester office and the Brisbane office.

In December 2016, the UK business comprised 292 full-time GHD people, serving GHD’s five global market sectors.

Our stronger profile in Britain has led to approaches from former employees of other, previously employee-owned companies, and in January 2016, we started to build a Power team in Newcastle upon Tyne, recruiting former mostly SKM/Jacobs people looking to re-form under a different flag and who were drawn to the GHD story. That team currently sits at 25 people, with a growing workbook based upon a zero start point. This may well be a model we pursue in the future – recruiting teams of good people looking for a different business approach, and who would fit within the GHD culture and ethos.

GHD designed the civil and structural elements of a redevelopment for the Ilkley Tennis Club. The scheme included a two-storey extension, increased car park, and new pedestrian access.
Born in northern California in 1957, Iver Skavdal had a tough start. One of three children living on a mining claim outside the small town of Eureka, Iver lost his father in a car accident at just six years old.

Eureka, near the Oregon border, was and still is a timber and fishing community. The boom times of the timber industry were still going strong when he moved there with his mother and siblings in the mid-1960s. At school, the young Iver studied hard and worked in a lumber yard as he plotted his future. The years passed. Mum remarried a local businessman. Stan Cloney, the owner of the town’s drugstore became Iver’s stepfather.

A conversation they had together has always stayed with Iver. Discussing career options one day, Stan told his teenage stepson that regretfully a position in the family business, a business handed down previously through three generations, was no longer an option. The times were changing and independently owned pharmacies couldn’t compete with the big corporations. The advice spurred Iver to look to new horizons. By the age of 20, he had secured a part-time internship with Winzler & Kelly, a small but ambitious firm in Eureka who provided water and wastewater services. As he learned the ropes, he studied for a Bachelor of Science in Civil Engineering at California State University.

In 1979 he married his high school sweetheart Cindy and graduated. Working full-time for Winzler & Kelly, Iver became a dynamic member of its small team, driving the company’s growth. As the firm developed, opening offices in Santa Rosa and San Francisco, (both of which Iver went on to manage), its reputation for providing clients with smart environmental and construction management solutions grew.

Over the next two decades, hundreds of projects across California, Oregon, and along the Pacific coast, propelled the company’s growth – with Winzler & Kelly delivering highly-regarded environmental, construction management, and sustainable design services to clients in diverse markets.
In 2002, Iver was appointed CEO. With the company making increasing inroads into the vast California infrastructure market, firm grew to over 300 staff and operations in 11 offices in California, Oregon and Micronesia. By the late 2000s, the synergies between GHD’s ambitions in the US and Winzler & Kelly were hard to ignore.

“By 2010 we’d reached a plateau,” says Iver. “We were working out our next journey, and we had a vision; a vision of using our scientific knowledge to improve lives throughout the world, so being part of a global company became part of our strategy.”

In 2011 the two companies merged, allowing Winzler & Kelly to offer more innovation and efficiency to its clients as well as greater professional development opportunities to its staff, and providing GHD with an opportunity to grow its presence in a vital US market.

“I tie it all the way back to that conversation I had with my dad about the old drugstore in Eureka. In our industry, a middle-market firm is going to be a dinosaur soon, and you either survive and succeed as a highly specialised, niche-market firm, or you need to be much larger – a company that can adapt, use economies of scale, and play in the global marketplace.”

The joining of Winzler & Kelly and GHD created a group of about 700 people in North America at the time. Today only six years later, other acquisitions and organic growth have resulted in a company of nearly 4000 people in North America.

Looking back Iver says integration has been “a crazy ride, an adventure” blending the best of several companies. “It’s been built on time and trust and understanding, and what makes it work is the unity we have in our goals. I like to believe that I played a role in helping to shape the GHD of the future in North America.

“In California, one of the largest economies in the world, the opportunities that exist are ‘blue sky’ still. There’s a lot of room to grow.”
GHD’s operations in Chile have grown consistently over the past decade. Diverse projects have been completed across the length and breadth of the country, from Arica near the Peruvian border, to Punta Arenas on the Magellan Strait.
GHD’s presence in Chile, one of Latin America’s fastest growing and strongest economies, began in January 2002, with the integration of the Chilean engineering services company Promina Ingeniería y Construcción. The merger supplemented the capability of the multidisciplinary team in Promina, which had strengths in mining and energy, ports and marine, as well as construction management.

The decision to establish a presence in Chile followed a comprehensive study of countries around the world conducted by Neil Rowlands, then GHD’s Director Global. Chile was chosen due to the strength, resilience and growth potential of its economy, its reputation for ethical and transparent business processes, and opportunities for infrastructure development, particularly in water and transportation. The country had also been a pioneer in the privatisation of infrastructure.

It was both an exciting and challenging time for the business in the those first few years. Mike Rodd transferred from Australia to Chile to lead the new business, with Alan Lindberg in support. The Promina business was not as coherent as expected and work commenced on developing a strong South American platform from which to grow. At the same time, extensive work was done of translating much of our GHD’s systems into Spanish, and training local people in their application. Roberto Abeliuk was recruited to lead the development of an environmental business in Chile.

Between 2003 and 2007, GHD’s multidisciplinary capability saw the company deliver landscaping, buildings, potable water, esplanades, roadworks, electricity, sanitation works, and environmental studies for the building of the Zona Exterpuataria de Actividades Logísticas (ZEAL) for the port of Valparaíso. The ZEAL area is a key piece of infrastructure for the port, coordinating the flow of container trucks to and from berthing fronts. Much of the fruit and wine exported from Chile has a first stop in this area, together with many other goods leaving and entering the country.
In addition to the markets historically targeted by Promina, GHD saw opportunities to establish relationships with businesses with a strong Australian connection. One such business was Australian renewable energy company Pacific Hydro. GHD supplied environmental studies associated with water rights for Pacific Hydro’s planned run-of-river hydro power plants in the Cachapoal Valley in the Andes and the Tinguiririca Valley, south of Santiago. Similar studies were conducted for Pacific Hydro’s potential hydroelectric projects on Chiloé Island. In 2015, GHD's local presence was critical in winning the contract to assist IFM Renewable Energy with technical due diligence associated with the sale of Pacific Hydro assets.

The growth of GHD in Chile in the early 2000s saw the business relocate to Av. Apoquindo 4775, Las Condes. In April 2005, Roberto Abeliuk, previously head of the environmental area, was appointed General Manager following Mike Rodd’s return to Australia. The environmental business in particular continued to grow.

Between 2007 and 2010, GHD conducted an assessment study on the quality of surface water in the Limarí River basin in the north of the country. Commissioned by the Agricultural and Livestock Service (Servicio Agrícola y Ganadero), the objective was to monitor the quality of water destined for irrigation in a valley that produces high-quality grapes for the manufacture of pisco – Chile’s famous brandy.

At El Salitre, Tocopilla, in northern Chile, GHD designed an artificial beach for swimming and recreational activities. The scope of work included an environmental study, reduction of rocky outcrops, breakwater design, and levelling the area with sand. An additional challenge was that the location had been used as a deposit of copper tailings from a mining operation nearby, and extensive remediation work was required. GHD came up with a novel solution involving...
the recycling of contaminated soil that was utilised to fill a 500-ton geomembrane used as core material for the breakwater.

Power generation

As the only member of the Organisation of Economic Cooperation and Development (OECD) in South America, Chile is the fifth-largest consumer of energy on the continent, but unlike other large economies in the region, it is only a minor producer of fossil fuels and is heavily dependent on energy imports. In addition, the Chilean Government has set a target for at least 20 percent of energy production to be renewable by 2025.

With the country keen to strengthen its own energy resources, by the late 2000s, GHD environmental group in Chile had evolved into an influential player in the country’s energy sector; responsible for numerous site selections and environmental impact assessments for hydroelectric projects, coal-fired power plants and combined cycle power plants.

A signature project for the environmental group was the preparation of the EIS for the massive HidroAysen transmission line – a 2000 km direct current transmission line, crossing almost half the country on a route that ran through sensitive natural environments. The HidroAysen transmission line aimed to connect five hydroelectric power plants in the Aysén Region, two on the Baker River and three on the Pascua River, to Chile’s main electricity transmission network. The dams were to generate a total of 2750 MW with further capacity for 18,430 gigawatt-hours (66,300 TJ) on average annually. The projected cost was estimated at USD3.2 billion, making it the largest energy project in the country’s history. The EIS led by GHD began in 2007 and required a permanent team of 50 specialists and 300 subcontractors before its completion in 2012.
This project was eventually stopped, not due to issues with the transmission lines, but because the dams in the south of the country did not receive regulatory approval.

In 2006, GHD was appointed by Colbún, one of the country’s largest energy companies, as owner’s engineer for the development of the first 350 MW unit of the 700 MW coal-fired Santa Maria Power Station at Coronel, 500 km south of Santiago. This project extended until 2012 and was key to establishing GHD in the Chilean energy market. It included assessment of coal use – comparing imported coal with local sub-bituminous options, combustion calculations to estimate stack emissions, coal forward-pricing assessment, and the presentation of the sustainability of coal-fired power plants to the Chilean environmental authority, CONAMA.

Numerous other service lines were involved in the Colbún project including: environmental for advice on permitting; materials handling, for coal offloading and delivery; marine, for advice on the seawater cooling systems; mining for advice on international coal pricing, qualities and shipping arrangements; and infrastructure for designing the ash disposal facility.

Acciona Energy engaged GHD in 2014 for an EIS for a 51 MW wind farm in the south of Chile in Valdivia. In addition to wind and solar renewable energy projects, GHD was also appointed as owner’s engineer for a geothermal power plant in the south of Chile close to the Andes Mountains. GHD developed the EIS for a 680 MW combined cycle power plant in Bulnes, 420 km south of Santiago for client BioBio Genera. The EIS was approved in August 2016.
Resources

Chile has abundant natural resources in metals and minerals, especially in its northern desert region and none is more important than copper, for which it is the world’s number one producer. Reserves of fine copper are estimated to be in excess of 100 million tons. Chile is the world’s second largest producer of gold and contributes over half the global production of lithium. Accordingly, the development of mining as a key sector has become the focus of our business in the country.

In 2011, GHD completed a study of operational and maintenance services on high and medium voltage electrical assets of the Andina mine facilities owned by the National Copper Corporation of Chile (Corporación Nacional del Cobre de Chile), known as Codelco. Located 3000 m above sea level, the Andina mine draws its energy from the national power grid via more than 100 km of transmission lines and 10 power substations. GHD undertook an audit of the organisational structure, including Codelco employees and external contractors in charge of construction and maintenance activities. The study enabled the corporation to update its maintenance practices, boosting operational efficiencies and further mitigating safety risks.

Between 2013 and 2016, a contract assignment with Codelco saw GHD provide multidisciplinary engineering services for a hundred brownfield projects, including the new concentrator and related facilities through a local office at Calama. The contract worth AUD10 million involved the creation of flotation cells and a mill to boost the 600,000 tons of copper mined annually at the Chuquicamata field.

The relationship with Codelco has grown since 2013, where the risk team developed a complete critical risk assessment for all of the company’s divisions, including the headquarters in Santiago.

Earthquake resilience

On 27 February, 2010, a magnitude 8.8 earthquake and tsunami hit central Chile leaving over 500 people dead and a major part of the country’s transport infrastructure damaged. GHD took part in preparing for the reconstruction of eight railway stations – Curicó, Talca, San Javier, Linares, Parral, San Carlos, Chillán and Concepción. The task involved evaluating the condition of the stations (built largely of adobe bricks in the late 19th century), and recommending actions to be followed, whether repairs or demolition.

GHD was appointed to provide engineering services to ASMAR, the Chilean Navy-owned shipyard, to repair the docks of Talcahuano Naval Station. The docks were completely destroyed by the tsunami which modified the bathymetry (underwater topography) of the area. In some locations, the seabed rose several metres, and in other areas it became much deeper. To undertake the project, GHD opened an office in Talcahuano, close to the city of Concepción, providing services for review and approval of the concept.
design, support during the tender review of the Engineering Procurement Construction (EPC) contract, along with review and approval of the detailed engineering produced by the EPC contractor. GHD also supervised work execution by EPC contractor. This project was completed in 2015.

The 2010 earthquake and tsunami caused damage along the Chile’s coastline from Valparaiso to Region IX 700 km to the south. With the port city of Lebu sustaining major damage, GHD was tasked with recommending solutions for dealing with soil uplift affecting berthing fronts used by fishing craft in the river basin.

**Transport and ports**

The Malleco Viaduct built in the late 19th century is located more than 100 metres above the Malleco river basin in the Araucanía region. GHD was commissioned by the State Railway Company (EFE– Empresa de Ferrocarriles del Estado) to undertake conservation of the viaduct to preserve the bridge without altering its original design. Demonstrating the ‘One GHD’ concept in action, engineers from Australia and Chile applied their technical knowledge, and great practical ability, using harnesses to work suspended from heights to inspect the bridge piece by piece. This job was not for those afraid of heights.

Easter Island, 3700 km west of continental Chile, is dependent on shipping to supply goods for the local population and for its burgeoning tourism industry. The island however lacks a sheltered all-weather port. Ships that arrive to the island unload goods offshore onto smaller boats. These boats unload the goods at a small dock in Hanga-Piko; a system which limits the delivery of goods to the island and increases transport costs.
In 2011, GHD was contracted by the Chilean Public Works Department to carry out pre-feasibility engineering studies to determine where to build an island port, based on marine, environmental, land-use, cultural, social and economic considerations. The port team led the project, supported by the water team (modelling wave conditions) and the environmental team (assessing the environmental, social and cultural aspects of each port site).

In 2010, for Puerto Williams, the world’s most southern city, GHD developed a proposal to address the growing need for tourist-related infrastructure to transform the area into a stopover for cruise ships. Puerto Williams is the gateway to Antarctica, but just 2000 tourists visit annually, roughly equivalent to the town’s population. This is in stark contrast to the Argentinian town of Ushuaia – located 40 km across the Beagle Strait – that welcomes more than 200,000 tourists and 250 cruise ships every year. Engaged by the Chilean Ministry of Public Works, the Regional Government’s Department of Port Works and the National Fund for Regional Development, GHD began examining ways to upgrade existing naval port infrastructure in a cost-effective manner and construction began in 2015.

The Ministry of Public Works also engaged GHD to complete the development of the first wharf to be located at Fildes Bay, Rey Jorge Island (King George Island), in the Chilean Antarctic Territory. GHD’s work includes land-based and maritime studies, engineering and architectural design associated with new infrastructure.

King George Island hosts research stations from Chile and a host of other nations, and the key driver for the new infrastructure is to establish a loading point that removes the need to transfer goods from cargo ships to small boats called pangas – a practice undertaken in often precarious and dangerous conditions. The new infrastructure is to
include a wharf with a capacity to directly unload containers from cargo ships and will be
designed to endure harsh climatic conditions that include the freezing of the bay during
winter months.

In October 2015, GHD was awarded a contract by the Ports Division of Government
(DOP – Dirección de Obras Portuarias) to undertake detailed engineering studies
and bathymetry for a new passenger terminal and ramp at Chaiten in southern Chile,
increasing the port’s tourism capability. In 2016, GHD began reviewing the basic
engineering for the expansion of the Valparaiso port, one of the largest ports in Chile.

Expanding reach

GHD’s operations in Chile have grown consistently over the past decade. Diverse
projects have been completed across the length and breadth of the country,
from Arica near the Peruvian border, to Punta Arenas on the Magellan Strait.
With multinational clients extending services to Colombia, Peru and Antarctica, the Chile
Operating Centre is becoming a gateway to opportunities throughout South America.

In late 2015, Ric Robaina, a Spanish-speaking Australian relocated from Australia
to Santiago as Operating Centre Manager – Chile. Ric replaced Carlos Vejar who
had been appointed in 2012 as General Manager with a particular focus on
developing the mining business. During 2012, Gavin Morrison had also relocated
from Canberra to assist with operations. In December 2015, GHD rationalised
its accommodation and relocated to the former BHP Billiton headquarters at
Av. Americo Vespucio 100, 9th floor; Las Condes.
With geographic distance, time zone, and language challenging opportunities for deep connection with the broader GHD family, it is increasingly important to continue to build strong communication links and opportunities to work together across our connected global network. The strong resources sector in Chile and South America are areas of capital investment and sustained operations for many of GHD's global clients. While economic activity and GHD’s business will likely cycle with the long-term trends in global commodity prices, the sustained demand for copper and lithium will underpin the success of GHD in South America.
Jorge Pautasso arrived in Australia with his wife and four-year-old daughter in 1992. Determined to transfer his engineering career away from his country of birth, Argentina, to a more economically stable environment, it was a gamble. Like most migrant stories, the early years were the hardest, involving night classes to learn extra trade qualifications and the language of his adopted country.

He found his first engineering job in the small regional NSW town of Scone, later moving to Newcastle, the place he’s called home ever since, where he worked for Bechtel. Jorge joined GHD in 2000 and today there’s no more passionate an advocate of GHD’s world-beating technical services. “It’s where my heart is,” says Jorge. “The depth and breadth of talent harnessed within our services lines never cease to amaze and surprise me.”

As Service Line Leader – Structures, Jorge coordinates a team of 400 people across five continents, activating the networks that deliver GHD’s structural engineering know-how to clients across Australia and around the world. Jorge describes his role as that of ‘an enabler’ – someone who binds teams, fosters collaboration, and nurtures effective workflows. And while the technical details of his job may occupy most of Jorge’s attention, there’s a deeply philosophical side to this driven engineer’s make-up.

“From an early age I was mystified by all kind of structures, and I still see beauty and magic in the equilibrium that such large, heavy and complex shapes have, things that most people take for granted.”

As leader of one of the largest service lines in the company, Jorge says a vital part of the job is nurturing younger colleagues. “We work closely with project managers to find the right skills needed for any given project, and when we’re putting service lines together I like to mix less-experienced people with those who have more experience. It’s about spreading our knowledge.”
Jorge’s approach to inter-generational learning encapsulates ‘the GHD way’.

“It’s that approach that allowed me personally to grow. It’s about a culture of openness, of the most experienced people being accessible, of us all being part of one network. That’s what makes GHD different.”

With his 30-year track record in structural design and design management, Jorge argued for GHD’s early adoption of Building Information Modelling (BIM) in 2007 – the transformative technology that has changed the face of multidisciplinary engineering design. He continues to lead the company’s BIM team as it explores ever greater utilisation of the technology in our projects.

“It’s easy to get your ideas across at GHD,” he says. “It lets you fly higher and think ahead.”
Determined to grow our USA toehold, GHD began to implement a carefully considered mergers and acquisitions strategy, identifying firms that had a similar culture and service mix.
Small beginnings

GHD’s roots in the United States were established more than 80 years ago. Today, as we approach the third decade of the 21st century, approximately half of GHD’s 8500 people are based in North America, split evenly between Canada and the US. From Alaska in the north to Florida in the south, from California to Massachusetts, GHD’s American story is one of achievement, growth, and ambition realised.

The phrase “From small things, big things grow” couldn’t be more apt to describe this rich chapter in the company’s history. In July 2001, Roger Byrne, GHD’s expert on whole-of-life water infrastructure solutions, and trailblazer for our work in this area in New Zealand, embarked on a speculative journey. Roger set out to speak to key US government public works agencies and like-minded companies who could be considered future asset management partners.

By the turn of the millennium, it had become clear that the US offered huge opportunities for GHD’s work in this area. Roger’s market analysis showed a viable way forward, using the same approach as undertaken in New Zealand. That approach was to identify potential clients and partners with a view to forming a first joint venture. Roger targeted key local and national government public works agencies, and established a relationship with the Environmental Protection Agency (EPA) that was to have far-reaching consequences.

After an introduction from EPA, Roger’s shortlist of potential partners narrowed to one business on the West Coast. That company was Parsons Engineering – a much-respected California-based firm who saw their future as dependent on growing their management consulting services. For Parsons, GHD’s potency in asset management was the perfect fit, and with one of Parsons’ biggest clients keen to improve their systems in the area, the timing could not have been better. The Orange County Sanitation District (OCSD) wanted a comprehensive asset management system – with the focus on sewers and water.
With GHD’s help, Parsons wanted to persuade Orange County to follow the Australian model, and in October 2001, GHD teamed up formally with Parsons to bid for the contract. Headed by Roger Byrne, with Brenton Marshall and Ross McPherson in support, the bid was one of ten submitted. Legend has it that GHD’s was ranked in third place, based on the written proposal, but during the interview, the Parsons-GHD team’s straight-talking approach was so compelling that the county officials were quick to make a decision the same day. A beachhead had been won and a joint venture agreement with Parsons followed.

GHD’s first project in the US was underway. Responsibility for creating our inaugural office stateside fell to Mike Polin, then General Manager for Development. As the USD1 million Orange County project rolled out, Mike embarked on a larger mission: to develop a permanent and growing presence for GHD on American soil.

Stepping out with new opportunities

By 2003, the EPA was convinced that funding the construction, operation, and maintenance of municipal wastewater facilities using traditional approaches, was unsustainable. A new approach was needed. To win hearts and minds, and having established the relationship with GHD, the Agency sought the company’s help to deliver a series of asset management training courses across the US.

The seminars for wastewater treatment operators saw hundreds of participants attend, eager to use GHD’s tried and tested approach. With the EPA as the instigator of the seminars, and consultants Doug Stewart and Duncan Rose providing the training, GHD was able to present itself as a leader in what was an emerging field. Seeds were sown.
and more priceless contacts made for future business development. With the training enthusiastically received, the visibility afforded by this initiative was complimented by GHD’s attendance and presentations at a host of professional society meetings. For decision-makers in the US market, GHD was fast becoming a nationally recognised ‘breakfast table name’ in asset management.

In July 2004, Jim Giannopoulos relocated to Southern California, becoming GHD’s first Operating Centre Manager stateside. By the end of the year, we had four employees in country with projects generating about USD1 million in annual revenue.

Finding office space in a location that allowed us to serve OCSD, as well as future clients, was realised in October 2004, in Irvine, California. When the Parsons joint venture concluded in 2005, several Parsons staff, including Duncan Rose joined GHD’s asset management group. Don Graf was appointed US Operating Centre Manager in August 2006 – our sixth employee in the US, and by year’s end we were ten, with Matthew Oakey and Andrew Sneesby transferring from Australia.

Building the footprint

Determined to grow our USA toehold, by 2006, GHD was engaged in a two-pronged strategy for expansion. We added people to our Irvine office and expanded to locations close to new clients. We also began to implement a carefully considered mergers and acquisitions strategy, identifying organisations that had a similar culture and service mix, and in particular, companies with strong utility planning and design experience.

The award in 2006 of a whole-of-city asset management program to be delivered over a number of years for the City of Charlotte in North Carolina, kick-started our geographic expansion on the East Coast. In January 2007, we leased an office in downtown Charlotte and began to build the team. Wayne Francisco, out of Canberra, transferred to Charlotte and took the reins as office manager. To add to our knowledge, we teamed up with the much respected New York-based wastewater engineering firm Stearns & Wheler, to win the Washington Suburban Sanitation Commission asset management program. This was a seminal win for both companies. By combining GHD’s international profile in asset management and Stearns and Wheler’s experience in computerised asset inventory management, we were able to beat most of the tier one consultants for one of the largest water utilities in the US. This multimillion dollar commission allowed GHD and Stearns and Wheler staff to work closely together and develop mutual respect for each other’s capability and culture.

By October 2006, GHD was implementing a “double crescent” approach to US growth. One crescent started in the state of Washington, and went south and east, through Arizona and California. The second crescent began in New York and went south and west through Virginia, the Carolinas, Georgia and down to Florida. Target locations within the arcs were selected according to five criteria: the area’s economic health,
the size of the potential market, transport links, the perceived openness of the markets to new consultants, and the similarity of local business cultures to GHD.

Mike Polin led the initial acquisitions effort, with Don Graf charged with the identification and vetting of potential candidates. Finding companies that shared our sense of creating opportunities was the essential first step; not all leaders and owners of engineering companies were so inspired. Many had given little thought to their eventual departure from the companies they had founded, or to the benefits of merger or acquisition. More than a few did not share GHD’s commercial focus for a return on behalf of employee shareholders.

GHD met with many companies in 2007 and 2008, principally in California, Arizona, New Mexico, and Washington. One of the Californian companies, Winzler & Kelly, fit our criteria to a tee, but the time wasn’t right; it was embarking on its own expansion. Meanwhile others were persuaded to join the fold in early 2009. RoseWater Engineering, with 35 employees in Seattle, was one of the early acquisitions, along with Arizona Engineering Company, an organisation of 40 staff with offices in Phoenix and Flagstaff, and CSA Engineering, also in Phoenix. With Arizona Engineering providing wastewater services, business growth in the south-western state took advantage of new synergies available by combining the work of the Phoenix offices and leveraging client contacts of the newly acquired companies. Meanwhile GHD’s asset management expertise bolstered the service offerings of the local companies.

By the late 2000s, regular collaborations with wastewater treatment experts Stearns & Wheler had developed into an ever closer relationship. Joint asset management projects nurtured a feeling of deep trust, which in turn enabled merger negotiations to proceed. They joined the fold in February 2009.

Based on the north-east coast, this company was attracted by GHD’s commitment to employee ownership, and the potential to work on a global stage. Within six months of joining, it was clear that the experience and talent of the merged organisation, operating in a multi-office environment, was a key strength for our further growth in North America. The highly developed wastewater treatment capability of Stearns & Wheler’s East Coast offices was soon greatly respected within the global GHD network.

Rip Copithorn was instrumental in building Stearns & Wheler’s business in the Chesapeake Bay area, and is a leader in wastewater treatment. Rip says the merger’s success was down to a sharing of core values.

“Both companies give a high priority to their people, and focus on good engineering and not strictly maximising profits. I remember hearing, as we were considering the merger, that GHD had the opportunity to go public, basically sell out for big profits to the owners, but they decided without hesitation to remain employee-owned.
“To me, this meant that GHD was the kind of company that put slow steady growth and the development of a talented and loyal staff ahead of immediate profit. This is not to minimise profit and good business practice, but there was a balance that recognised the investment required to grow.”

The next level

A leadership change in GHD’s American operations took place in 2009. That October, Mike Polin retired and Don Graf became General Manager – Americas, overseeing our offices in Canada and Chile, as well as our growing US presence. Jerry Hook, former president of Stearns & Wheler, became Operating Centre Manager – US. Between 2009 and 2011, the impact of Stearns and Wheler’s integration was paying major dividends, with projects such as major low-nutrient reduction wastewater treatment plants at Onondaga Lake, Syracuse, NY, Lake Simcoe in Barrie, Canada, and several plants in the Chesapeake Bay catchment.

In 2011, Richard Wankmuller took up the baton as General Manager – Americas, at a time when the effects of the GFC were still being felt. Like many companies, GHD managed its response to the GFC by reducing staff numbers in some offices, and increasing staff in others. This included the closure of offices in Flagstaff and Seattle. The GFC affected the US civil engineering market significantly, and for GHD our West Coast clients – reliant on local government and government-owned utilities – felt the downturn more than any other US region. Despite this, our mergers and acquisitions continued to drive our growth.

Targeting large water projects on the West Coast, GHD needed more feet on the ground, once again approaching Winzler & Kelly, with its 350-person California-based team and
multidisciplinary credentials including the award-winning Santa Rosa Recycling Water Project. About a quarter of Winzler & Kelly's business was in the water sector and the two companies merged in September 2011. Two of GHD's original trailblazers in the US returned to add their precious experience to the integration. Mike Muntisov and Nick Apostolidis relocated to San Francisco to put their shoulders to the wheel in business development. With a major pipeline project win in the week following the merger sign-off, it could not have got off to a better start.

Unsurprisingly, the scope and complexity of projects being undertaken in US grew significantly after the Stearns & Wheler and Winzler & Kelly mergers. Nowhere was this more evident than in GHD being selected by Poseidon Resources in 2012 (in collaboration with Butier Engineering Inc), to provide owner's engineering services for the 50 MG/day Carlsbad Seawater Desalination Project in Southern California. Poseidon selected GHD based on our experience in large-scale seawater desalination, primarily in Australia. Following its commissioning in 2015, the plant provides about nine percent of water demand for San Diego County, and is the first large-scale desalination plant on the West Coast.

Continuing Winzler & Kelly's long history of working with California's Department of Corrections and Rehabilitation, GHD provided lead engineering services for a 1722-bed medical and mental health care facility (USD1 billion), near Stockton, California, for design-build contractor Granite Construction. This was the largest design-build project undertaken by GHD in North America at the time, and it included civil, structural, traffic, hazardous material, mechanical, electrical, plumbing and LEED services. Another example of GHD's globally connected network, the projects were resourced across a number of offices working together as part of an integrated team.
On the environmental front, since 2009, GHD has been working with Humboldt County Resource Conservation District in California to restore the Salt River ecosystem, which had been degraded since the mid-19th century. Working with a number of public agencies, the contract placed GHD at the forefront of one of the biggest environmental projects in California’s history. GHD’s role has included providing design, permitting, and outreach services to restore more than seven miles of the Salt River and its floodplain, and 300 acres of tidal wetlands.

Two more companies came under GHD’s wing in late 2011. In Pennsylvania, Commonwealth Engineering Technology, a 100-person water engineering practice in Harrisburg came onboard, along with Robson Woese, a small highly skilled mechanical electrical firm in upstate New York. With strong capabilities in the buildings services sector, the Protection Engineering Group, with 40 people working out of offices in Washington DC, Baltimore and Atlanta, joined in 2014, bolstering GHD’s fire, safety, security and technology practices.

CRA

The union with Conestoga-Rovers and Associates (CRA) in 2014 was the largest merger to date in GHD’s history and one that redefined GHD’s position in North America. CRA’s growth in the US was itself the result of a bold mergers and acquisitions policy and the development of new businesses. It began in earnest in 1979, when its first US office was opened in New York State, to provide environmental engineering services to chemical corporations involved in the remediation of Love Canal at Niagara Falls.

Leveraging its groundwater expertise and practical experience gained on the Love Canal project, the 1980s saw CRA consolidate its position in the US, with a decade of exponential growth from 30 people to 240 staff by 1990. Additional offices were opened in St. Paul, Minnesota, and Chicago, Illinois, along with a roll-call of global clients including Occidental Chemical Corporation, Honeywell, Westinghouse, IBM, General Motors, Ford Motor Company, Chrysler, Coca-Cola and Caterpillar to name a few.

The 1990s saw CRA continue to strengthen its US services, largely due to a joint venture with Occidental Chemicals Corporation (OXY) and a number of key acquisitions. OXY was one of CRA’s largest clients in the early 1990s and expressed an interest in developing a technology-based environmental remediation business. Together, CRA and OXY formed TreaTek-CRA in 1992 and used it as a platform to develop innovative technologies (primarily biological treatment of waste) and to acquire regional remediation firms. These acquisitions included BK Environmental (1995), a remediation/construction company in Michigan; G&E Engineering (1997), an engineering and oil and gas remediation company in Louisiana; and HSA (2000), an engineering and remediation company in Florida.
In 2000, CRA purchased the other 50 percent ownership of TreaTek from OXY and merged it into its US business. In the early 2000s, CRA had also entered the municipal market in western New York State with the purchase of R&D Engineering (Buffalo, NY). In the mid-2000s CRA moved into the oil and gas environmental market nationally by acquiring BNC (Houston, TX) in 2005 and Cambria (Emeryville, CA) in 2007. With organic growth and acquisition the main drivers, the CRA family of companies continued to grow. By 2010 more than 3000 employees, across 100 offices in Canada and the US, were delivering CRA’s world-class services.

The company’s emphasis on technical excellence and an entrepreneurial spirit made it the perfect merger partner, and in 2012 merger discussions began with GHD. For CRA, the goal was to leverage its outstanding environmental, geotechnical and forensic engineering capabilities and broaden its business in municipal infrastructure markets. With GHD looking to consolidate its acquisitions on North America under a common platform, and expand into the environmental industry, CRA was the perfect partner.

Former CRA President, Ed Roberts, takes up the story:

“With the crumbling infrastructure across North America, we were looking to diversify, both in the US and Canada, particularly in the public sector, including water, wastewater and transportation services.

“We also wanted to enter the mining sector, due to our large commodity-based economy. At the same time, our international clients in the oil and gas sector were looking at global purchasing strategies and they wanted us to have a footprint beyond North America.”

One of five companies that CRA identified, GHD was the frontrunner by early 2013. Despite GHD being twice as large as CRA, as Ed Roberts explains, the deciding factor was the synchronicity between the firms on many levels.

Crucial to the merger, says Ed, was the fact that it was based on the companies’ shared growth agenda. “It wasn't based on driving up revenues for the sake of showing growth, nor was it based on ‘synergies' that could be gained through attrition of staff post-merger.”

The mechanics of any merger are complex, and the uniting of CRA and GHD is a work in progress based on solid foundations. Both organisations approached the transaction as a coming together of equals, and each appointed a team to work through the myriad of issues which needed resolving through the planning and implementation stages. Decisions around roles and systems were made by taking the best from both companies. One example is the principal-led structure used by CRA, which is to be adopted across the integrated business, reinforcing GHD’s differentiation as a fully employee-owned company.
As part of the merger process, CRA directors, Ed Roberts and Diane Lundquist, joined GHD’s board with Tony Ying joining the Executive Management Group. GHD’s North American operations come under the leadership of a North American Executive Committee, initially led by Richard Wankmuller and subsequently by Steve Quigley.

A unique feature of the CRA merger is that it is one of the largest ever private stock transactions in the engineering and environmental consulting industry. Given its scale, the integration was always seen as a ‘five-year plus’ process. At the time of writing much has been completed. The vital short-term objectives have been achieved, particularly around retention of clients and people, and the focus has moved to delivery of medium and long-term goals.

For GHD, the merger with CRA has not only provided greater exposure to the US and Canada markets, but created a global leader in engineering, environmental consulting, and construction services. The result is a company that is more than 8500 people strong, with 4000 employees in North America alone. Together we build on each other’s strengths, providing our clients with a deeper and more diverse talent pool across five continents.

The Metamora Landfill Superfund Site is a former municipal landfill located within an inactive sand and gravel pit in Lapeer County, Michigan. Since 1991, GHD has provided comprehensive feasibility and remediation services of this complex project.
Born in Buffalo, New York State, Rip Copithorn grew up in the small town of Babylon on the south shore of Long Island. One of three children, his father worked as an engineer at Grumman Aerospace, nurturing Rip’s passion for aviation from a young age.

By 17 he had a private pilot licence, closely followed by a commercial licence and instructor rating. For Rip the sky was the limit. After studying aerospace engineering at the University of Michigan in 1971 he emerged with a Bachelor of Engineering, but a career in the aerospace industry wasn’t to be. With the industry depressed a change of tack was needed.

After marrying the love of his life Jan, he returned to university, this time to study environmental science, completing a degree in environmental engineering at The Johns Hopkins University. Washington DC offered Rip his first work as a design engineer before he moved to upstate New York to join Stearns & Wheler in 1981. Mentored by company founder Gordon Wheler and treatment plant design guru Don Schwinn, Rip was given the reins to open an office in Maryland’s Chesapeake Bay area in 1992. It was a region ripe with opportunity, with new regulations being introduced for wastewater plants discharging into the bay.

By 2008, the office had established strong relationships with local utilities and had participated in leading-edge technology projects. With GHD looking for a US partner, the synchronicity couldn’t have been better:

“Our firm hit their radar,” says Rip. “We teamed up on several major asset management projects, including one with the Washington Suburban Sanitary Commission, a major utility in the DC area. We forged a great relationship and it was an easy decision, given our mutual goals and similar culture.” Reflecting on the changes he’s seen over 40 years, Rip says regulatory change, technological innovation, and cost drivers forced the US industry to evolve.
“In the beginning, the focus was on secondary treatment driven by federal funding programs and this created a huge expansion in treatment plant projects, but over the years sensitivity to costs forced greater attention on alternatives, based on total present worth, on new more innovative technologies, and on projects which phased the expansion of facilities for future growth.

“Although there’ve been changes in technology and regulations, some things have remained and will stay constant. Being successful in winning work requires strong personal relationships and success in maintaining clients requires strong project management skills. There’s no substitute for well trained and motivated people.”

Rip says the success of the GHD/Stearns & Wheler merger was about parallel core values: placing a high priority on people through training and career advancement, and a focus on good engineering, not simply maximising profits.

“As Stearns & Wheler was considering the merger, I heard that GHD had an opportunity to go public, basically sell out for big profits to the owners, but they decided without hesitation to remain employee-owned. This meant that GHD was a firm that put steady growth first and the development of a talented and loyal staff ahead of immediate profit.

“I believe that GHD is poised to take the next leap forward in terms of the type of projects for which it can compete. Looking back, Stearns & Wheler were basically a specialised regional firm. As GHD, we are recognised as a firm that undertakes much larger projects as a team and competes nationally and around the world.

“We’re at a point where we can compete with any large consulting firm in any market in the US. Winning work still requires strong local relationships, but GHD has the talent and strength to make it a desirable teaming partner for large projects, even without a well-established local office.”

Rip says he looks forward to GHD’s water and wastewater groups continuing to establish relationships with research organisations, universities, and large utilities, to co-research and develop emerging process technologies.

“GHD is special. It recognises that its people are its primary resource. As global technology leader for wastewater, I saw GHD was unique because of its willingness to invest in research. It’s also committed to being a ‘traditional’ engineering firm, in the sense that it believes in the value, the cost of maintaining long-term client relationships, strong project management and quality controls. All these things make GHD what it is today, and what it will be tomorrow.”
The merger of CRA into GHD was based primarily on a share swap, as opposed to a buy-out of shares, meaning both parties had a vested interested in the future growth and profitability of the combined business.
It could be argued that GHD first established a business in Canada in 2008, when Colin James, a dual Australian-Canadian citizen, had the audacity to move from Newcastle, New South Wales, to Toronto. His mission: to establish a new business from scratch. From today’s perspective, a more comprehensive story of our Canadian journey begins some 50 years earlier, and is intrinsically linked to the formation of two Canadian companies - Conestoga-Rovers and Associates (CRA) and GM Sernas & Associates (Sernas). GHD merged with Sernas in 2012, and CRA in 2014.

CRA

CRA, the larger of the two companies, traces its heritage back to Conestoga Engineering Limited (founded in 1972) and Frank Rovers & Associates (founded in 1975). Brought together by their complimentary skillsets in the twin city of Kitchener-Waterloo, Ontario, the firms provided a one-stop-shop in what was then a rapidly developing area of Southern Ontario. Meeting the demand for new municipal and solid waste services was at the heart of this growth and in 1976 the two companies merged.

Led by founding partners Don Haycock, Frank Rovers and Ron Schwark, with 10 people, CRA specialised in municipal infrastructure, hydrogeology, and groundwater impact studies for landfill sites, before encountering a project that would elevate its reputation to new heights, and in turn, lead to ground-breaking development in environmental legislation in the US and beyond.

Tony Crutcher joined in 1977, adding further expertise in the environment engineering field, but as the Canadian economy slowed and projects thinned out, Frank Rovers embarked on a new venture in the down time; one that was to be a major turning point for the company. Frank accepted an invitation to teach a groundwater/hydrogeology course at the University of Buffalo, to help students and the industry understand more about the theory and impacts of chemicals in groundwater. Frank’s entrepreneurial spirit would lead to a very positive business opportunity.
In late 1977, Hooker Chemicals & Plastics (Occidental Chemicals Corporation (OXY)) commissioned Frank and CRA to conduct a series of groundwater impact studies. The key study was for the infamous Love Canal, a neighbourhood of the city of Niagara Falls in New York State, where 21,000 tons of toxic waste had been buried in the early 1950s. The US Environmental Protection Agency, assisted by CRA's study, led the clean-up of the site, and the remediation process resulted in the radical transformation of environmental legislation in the US.

In 1980, Congress enacted the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA), developed specifically to remediate such sites where no private corporation or party could be identified as responsible for the clean-up. The Superfund program was born.

By late 1979, CRA's ranks had been bolstered with the likes of Jim Kay, Rick Shepherd and Alan Van Norman joining. Meanwhile, a major increase in business saw CRA's first custom-built headquarters and laboratory, after purchasing a lot on 651 Colby Drive, Waterloo, and the opening of its first US-based office in Niagara Falls, NY.

The company was involved in another major remediation project with far-reaching consequences in November 1979, after a 106-car Canadian Pacific freight train came off the rails, carrying explosives and poisonous chemicals. As a result of the accident, known as the Mississauga train derailment, more than 200,000 people were evacuated in what was the largest peacetime evacuation in North America, until the New Orleans evacuation of 2005. Once again CRA's work was a pathfinder for regulatory change. The role the company played in the environmental remediation of the accident became the driving force in the updating of Ontario's environmental protection legislation.
After such high visibility projects, the 1980s saw a decade of exponential growth for CRA; employee numbers rise from 30 to 240 by 1990. It was also a period when the diversity in the company’s offerings increased markedly, with water and waste treatment, electrical, mechanical, and trenchless technology, adding to its globally-recognised environmental remediation services. As the company’s order book grew, landfill groundwater studies work expanded, driven by greater environmental awareness and regulation. In 1984 CRA opened offices across the border in St. Paul, Minnesota, and Chicago, Illinois. New global clients were beating a path to the door, including the likes of Caterpillar, Coca-Cola, Chrysler, Ford, General Motors, Honeywell, IBM, and Westinghouse.

The 1990s saw CRA widen its service offerings with key acquisitions and organic growth. Led by clients’ work, CRA opened various offices across both Canada and the US. TreaTek-CRA, a joint venture established between CRA and OXY, was established in Niagara Falls, NY in 1992. Many of CRA’s existing employees in Niagara Falls were transferred into this joint venture at that time.

In 1995, CRA entered the remediation/construction industry for the first time with the acquisition of BK Environmental in Michigan. This was followed in 1996 with the establishment of CRA Contractors Limited in Waterloo to serve as its remediation/construction entity in Canada. 1997 was a significant year of growth and diversification for CRA; in the US, TreaTek-CRA acquired G&E Engineering in Louisiana and CRA Limited acquired partial ownership of Inspec-Sol, a Quebec-based geotechnical and engineering materials testing business.
Inspec-Sol

*A chapter in the CRA story*

Established by Nat Agensky in 1972, Inspec-Sol’s focus was on the private sector in the early days. The company’s philosophy was simple: every project warranted the same consideration, personalised involvement and prompt service – irrespective of the size of the contract. Soon after opening its doors, Inspec-Sol was contracted to undertake inspection and testing services related to the construction of the twin pyramid-shaped Olympic Village towers that would house the athletes at the 1976 Montreal Olympics.

Alfred Derais, former draftsman at Inspec-Sol, takes up the story: “After winning the contract in January 1975, the deep-foundation piling work was set to begin almost immediately. ... we had neither the experience, the equipment, nor the personnel to handle the job. The situation precipitated the hiring of a piling specialist and several technicians who, along with existing employees (draftsmen included), received on-the-job training to become piling inspectors. The construction was behind schedule before it began, and so the piling work had to be done on two 12-hour rotating shifts during one of the coldest months of winter.”

Alfred also tells the story of the legendary tattered Montreal street map which adorned the office, upon which Inspec-Sol’s engineers would diligently inscribe a reference number for each geotechnical study carried out: green highlighting Inspec-Sol projects, and yellow for work done by others.
“Over the years, that precious map, hidden away for a time in a closet, was preserved and eventually replaced. The data was painstakingly transferred and its newer version is now posted in a place of prominence where it continues to serve us well.

“I’ve often heard Nat Agensky say that he would never be satisfied unless the entire surface of the map was filled with green spots. As far as I’m concerned, his dream has been admirably fulfilled.”

By the time Inspec-Sol joined GHD as part of the merger with CRA, it had 30 offices across Quebec offering geotechnical engineering, construction materials testing, metallurgy, building science and a host of other disciplines. The growth CRA experienced in the 1990s, under the leadership Frank Rovers, then CRA president, both in Canada and the US, from approximately 240 people in 1990 to approximately 1000 people in 1999, was all the more remarkable for occurring during a period of major recession in North America as the environmental sector matured. It was during the latter half of this period, that Frank Rovers began planning for the effective transfer of management to the “second generation”.

Frank had the foresight to affect this transition about a decade before the retirements of CRAs founding shareholders. Such forethought kept the firm invigorated and growing in the mid-to-late 1990s, and averted its possible collapse; an experience all too common in first generation companies.

As the millennium turned, a new management team, along with a seven-person executive committee (all in their late 30s or early 40s) was appointed – all shareholders with 15 to 20 years of CRA experience. The initial Executive Committee was comprised of four new officers; Ed Roberts (President), Glenn Turchan (Executive Vice-President), Bob Pyle (Secretary), and Tony Ying (Treasurer); plus three additional shareholders – Steve Quigley, Ian Richardson and Jack Michels.

From 2000 through to the merger with GHD in 2014, the Executive Committee was expanded to 12 members as CRA continued to grow and diversify, and in 2007 Steve Quigley replaced Bob Pyle as Secretary and Ian Richardson was added as a second Executive Vice-President. In 2011, Dave Chambers replaced Glenn Turchan as an officer. Other shareholders who served various terms on the Executive Committee, included Greg Ferraro, Greg Brooks, John Ferguson, Greg Carli, Scott MacLeod, Diane Lundquist, Joe Cruseturner, Vince Nacewski, Sean Cooper, Sal Oppedisano, Kevin Ormsby, and Peter Oram.

As a result of the rapid growth experienced by CRA throughout the 1990s, its internal infrastructure and systems had lagged behind, creating an impediment for continued growth. Correcting this situation was one of the first tasks the new Executive Committee set out to remedy in 2000. Over the course of the next few years, new accounting (multi-currency), HR, and Quality Management systems were put in place.
CRA has provided comprehensive environmental consulting, regulatory permitting, design, construction management, and operational support services for the Green Lane Landfill in St. Thomas, Ontario for 40 years.

The entrepreneurial spirit of the CRA Principals, now supported with a scalable and sustainable internal infrastructure, set the stage for continued growth and diversification through the 2000s.

As CRA was rapidly expanding south of the border in the US, it was also expanding in Canada. In 2001, CRA established, under the leadership of Karen Mayfield, an external IT service provider branded eSolutions Group in Waterloo, acquired partial ownership of MGI Limited – an environmental/water resources firm with offices in the Atlantic provinces of Nova Scotia, New Brunswick, Newfoundland and Prince Edward Island – and opened an office in Calgary, Alberta, to expand its presence in Western Canada beyond its sole office at the time, located in Vancouver, British Columbia. CRA continued to expand its presence in Western Canada in 2003 with the acquisition of Cushman Ball, an environmental firm with its main office located in Calgary.

In 2005, CRA acquired the remaining ownership of MGI and due to the success of eSolutions Group, spun it out as a separate company. In 2006, CRA expanded its presence in the geotechnical engineering market in Ontario, with InSpec-Sol’s partial acquisition of Geologic Inc., located in Peterborough, Ontario.

In 2007, CRA established a new operating company, for the sole purpose of operating a municipal solid waste landfill for the City of Toronto, Canada’s largest city. CRA’s first involvement with the landfill dated back to the mid-1970s when Frank Rovers, then operating as Frank A. Rovers & Associates, was initially retained by St. Thomas Sanitary Collection Service Ltd, a small family-owned waste collection and disposal company located south-western Ontario, to locate a new landfill for their expanding business. As a result of Frank’s work, a new landfill site was approved just west of London, Ontario. By the time the new landfill site was approved, CRA had been established, and
was retained to design and monitor the original landfill. CRA continued to work on the landfill, later renamed Green Lane Landfill, and under the project management of Ed Roberts who successfully guided it through three heavily contested landfill expansions, starting in the early 1990s through to 2007, when it became the largest approved municipal solid waste landfill in Canada.

Commensurate with the expansion approval of the landfill in 2007, CRA’s long-standing client wanted to sell their asset. Recognising this as an opportunity to enter the landfill operations business, Ed Roberts assisted the client by brokering a deal to sell the landfill to the City of Toronto, who was in need of a long-term solution to their residential municipal waste. At the time the waste was being transported to the US for disposal. As part of the sale, CRA successfully negotiated a seven-year contract with the City to operate the landfill – a first for CRA, which led to the formation of CRA Landfill Operations Ltd. The company successfully operated the landfill from April 2007 through to March 2014, at which time it re-bid the operations contract, and was awarded a second seven-year operating contract through to 2021.

The CRA Family of Companies continued its growth in Canada with InSpec-Sol opening new offices in both Quebec and Ontario between 2007 and 2010, and CRA opening a new office in Newmarket, Ontario, in 2009. A downtown office in the City of the Toronto and a third office in Western Canada in Fort McMurray, Alberta, was opened in 2010.

2011 was a significant year in CRA’s history with its acquisition of the remaining 50 percent of Inspec-Sol, who since the time of CRA’s initial investment in 1997, had grown from primarily a small Quebec-based company to more than 500 employees, located across most of Quebec and Ontario. In 2013, Inspec-Sol, a wholly-owned CRA Family company purchased the remaining ownership of GeoLogic Inc.

From 2000 through to the 2010, the CRA Family of Companies, both in Canada and the US, had grown from approximately 1000 employees to 3000 employees, split evenly on both sides of the border, in approximately 100 offices. CRA had become a nationally recognized firm in both countries that could offer local services – a unique model, consistent with that offered by GHD in Australia.

By 2010, the CRA Family of Companies was heavily vested in both the Canadian and US markets in the environmental industry, with approximately 30 percent of its revenue in the oil and gas sector. With the crumbling infrastructure across North America, CRA’s management were looking to diversify domestically, in both the US and Canada, into the public sector, including water/wastewater and transportation services, and also into the mining sector, due to the large commodity-based economy in Canada. At the same time, many of CRA’s international clients in the oil and gas sector were looking at global purchasing strategies and wanted CRA to have a footprint beyond North America. From 2010 through 2012, CRA considered a variety of smaller acquisitions, but for various reasons was not successful in closing any deals.
In 2012 focus was shifted to a merger and/or acquisition of a much larger firm, up to the size of CRA at the time. Via a search of possible candidate firms, GHD was one of five companies that CRA identified. After meeting all five firms in the fall of 2012/early winter 2013, GHD, although it was twice as large as CRA, was the clear front runner. CRA broke off discussions with the other four companies and focused on GHD. The reason GHD was such a good fit was its strategy dovetailed into CRA's, it was looking to consolidate its recent acquisitions on North America under a common platform, and expand into the environmental industry, especially in the US market. The locations and services GHD was offering in North America at the time had very little overlap with the services offered by CRA. This lack of overlap would make it easier to combine the two operations.

In addition to each company satisfying the other company’s strategic growth plans in regard to geographic expansion and services, both companies shared very similar cultures. Each had a very strong desire to remain a private employee-owned company, and each had a very strong commitment to safety, its employees, and its clients. Both companies shared very similar revenue and profit per employee. The merger was not based on driving up revenues for the sake of showing growth, nor was it based on “synergies” that could be gained through attrition of employees post-merger, as it is with a lot of mergers or acquisitions. Rather it was built on the opportunities for growth and the opportunities it offered all GHD/CRA employees in the ever more competitive global market.

The similar valuation per employee made the merger of the two companies easy to complete on a financial aspect. The merger of CRA into GHD was based primarily on a share swap, as opposed to a buy-out of shares, meaning both parties had a vested interested in the future growth and profitability of the combined business.
Sernas

Sernas may be smaller than CRA, but its impact on GHD and its work in North America has been no less significant. With a presence in the Greater Toronto Area (GTA), Richmond Hill, Whitby, Mississauga and Kitchener, by 2012, the firm had grown to 220-plus people, with more than 35 offices in Canada and the US.

Sernas, and its associated business units of Ourston Roundabouts, Geomorphic Solutions, Nexgen Utilities, Transtech, SRM Associates and Sernas Associates, has a 50-year history, providing services in municipal and water resources engineering, transportation planning, land use planning, geomorphology, and environmental consulting. Founded by Martin Sernas in 1962, in the early days the company was largely involved in land development, but over half a century diversified into water management, transportation, municipal services, power, and telecommunications, along with geomorphic and environmental sciences.

Legend has it, that the 2011 meeting which led to the Sernas merger, attended by Colin James and Sernas president, Reg Webster, took place at a popular Italian restaurant in downtown Toronto, on Saint Valentine’s Day. Whilst a fitting place to start a relationship, from the outset, the coupling presented some challenges. The Sernas Group operated as discrete businesses under a common umbrella – quite different to the traditional GHD approach. Sernas, always open to opportunities that brought value to its clients, employees and shareholders, saw GHD as the right fit, and for GHD, the Group aligned well with both our culture and market sectors.
GHD provided comprehensive services to remediate an ocean estuary at the Sydney Tar Ponds, Nova Scotia, Canada

Back to the future

Sernas and CRA were established businesses when Colin James arrived in Toronto in April 2008. Vitally, Colin’s pioneering efforts were supported by Bala Araniyasundaran, York Region’s water and wastewater branch director, who was instrumental in establishing our foothold in Canada. With GHD’s acquisition of Stearns & Wheeler’s Amherst and Cazenovia offices, by the late 2000s, a capability had been established to pitch into the Greater Toronto marketplace.

As in the US, asset management provided the initial successes, although strangely enough the first win was not in Ontario, rather it was an asset management implementation study for the Province of Saskatchewan in 2008. It would be a memorable first project for the GHD man from down under. Colin eagerly hopped on a plane to Regina, some 2000 kilometres north-west of Toronto, to meet the client, only to be greeted by an outside temperature of minus 46 degrees. He was advised it wasn’t cold yet.

Meanwhile, back in Ontario, other early successes included asset management work for the City of Kingston and water supply system risk assessment for the Municipality of Peel. Following completion of a whole-of-government asset management strategy for the City of Barrie, GHD was commissioned to undertake a study to optimise the aquatic health of Lake Simcoe. Asset management work for municipal authorities continued to open doors for the emerging Canadian business, which drew support from other parts of the business, particularly across the border.

In 2009, GHD was engaged by York Region, a municipality forming part of the Greater Toronto Area, to enhance its capital delivery improvement processes by integrating sustainability into the process. With Sernas, GHD had been able to expand its work particularly with municipal clients, whilst continuing to service the private sector. One example of this was our first project with the Region of Halton involving an environmental
assessment study for the Oakville Water Purification Plant. The EA's major components included an options analysis for the intake design, a geomorphic assessment (to determine the extent and impact of the sediment plume from Sixteen Mile Creek), and rerating and process optimisation to ensure regulatory compliance with the Ministry of Environment. The win was the culmination of efforts over 18 months to establish work with the Region by a team led by Kevin Castro from the Cazenovia office and the Markham water group.

A joint proposal from GHD and CRA landed its first major tunnelling project in Canada in (2014) with the Region of Peel. The contract worth CAD1.3 million – to install an 6 km watermain in the City of Mississauga – is part of the Region’s master plan to ensure that infrastructure and related services are able to meet the needs of projected growth.

GHD is one of two consultants appointed to Toronto’s professional services assignment for the Water and Transportation Services Program Management 2015-2017 Capital construction years. GHD’s team will plan, coordinate and manage the design, construction and post-construction services for an estimated $CAD 75 million capital works program, which includes watermain and sewer replacement, road reconstruction and road resurfacing.

Colin also recognised that he could leverage our strong GHD asset management brand to build the client base and grow in the Canadian market. Starting off with one asset management project in 2008, GHD within five years became the dominant asset advisory consultant in Ontario adding over 20 new clients. In 2016, building on client relationships established by CRA, GHD won asset management work with CN Rail and four municipal clients in Western Canada. The asset management practice was also able to introduce the engineering teams to new clients to expand their market potential.

GHD has provided civil engineering services and facilitated agency approval for West Queen West, a new neighbourhood in Toronto.
Ed Roberts is a GHD Principal and the former President of CRA. Born and raised in Halliburton, north of Toronto, Ed traces his involvement in engineering to his father - a roads superintendent, whose experiences growing up in the Great Depression underpinned his belief in the value of hard work and education. Some of Ed’s fondest childhood memories are of travelling Central Ontario’s country back roads beside his dad as he went about his business. As a 10-year-old, he and his father built a log cabin from scratch, including felling the trees.

The youngest of three brothers, Ed made the most of his high school years, taking advanced maths and science, along with an early technical course in drafting. The University of Waterloo, renowned for its engineering programs followed. Majoring in civil engineering, he focused on structural design, and even before his final year was complete, his 30-plus year odyssey with CRA was underway. It was the mid-1980s and despite a recession the company was looking for an intern to support their increasing workload.

Tasked to assist their resident engineer with oversight construction management of an engineered clay-lined soil containment cell for PCB-impacted soils, it was Ed’s first exposure to the newly developing market of environmental engineering. Working largely on environmental investigation and remediation projects across the US in the early years, Ed says it was a remarkable education.

“I had the luxury to be exposed at a very young age to what was a rapidly developing multi-jurisdictional environmental regulatory US market. I was given responsibility to manage projects for a variety of clients, while at the same time, developing a practice in Ontario in the solid waste business.”

Working with CRA President Frank Rovers, in 1991, Ed was appointed an Associate. Three years later he was selected as a Principal, with his duties including leading the company’s HR functions. As the founders of CRA passed the baton to a new generation, in 2000, at age of 39, Ed was named the company’s president. With six other Principals, CRA’s Executive
Committee was established as the leadership team in North America, managing 1000 employees, with eight offices in Ontario and 30 offices across the US.

Under Ed’s leadership, between 2000 and 2010, the CRA Family of Companies grew to some 3000 staff, diversifying in the mid-2000s away from its traditional environmental client base in industrial manufacturing, into the US oil and gas environmental market.

With CRA keen to leverage its outstanding environmental, geotechnical and forensic engineering capabilities, and to broaden its business in municipal infrastructure markets (and GHD keen to establish a larger presence in North America, especially in the environmental sector), Ed believes the integration of CRA and GHD created an extraordinary opportunity for all GHD employees.

“What CRA and GHD were able to accomplish - the merger of two large private employee-owned firms, had never been accomplished before in our industry,” says Ed.

“At a time when the management of many privately owned companies was selling out to public companies, GHD and CRA shared a common fundamental commitment to remain employee-owned, while at the same time providing a sustainable long-term profitable global growth platform.

“This cornerstone to the merger enabled us to integrate the two companies in a very short time frame, and align all our employees with a common vision and purpose. It has been a tremendous experience to be involved in the genesis of the merger and implementing the integration, including the transition to a new global management team, that will stay the course with a continued commitment to our people”.
GHD’s formal Innovation program is about creating growth through ideas – realising new technologies, business models, and new approaches to the heart of our business – client relationships.
GHD’s formal Innovation program is about creating growth through ideas – realising new technologies, business models, and new approaches to the heart of our business – client relationships. Innovation has been a cornerstone of GHD’s growth and success since its foundation. For example, in researching this chapter, a technical bulletin was uncovered entitled ‘Innovative Thinking’, authored by Bob Goakes and published in February 1977.

Our formalised approach to innovation dates back to 2005, when Michael Polin and Tom Pinzone proposed to the Board that the company would benefit from more emphasis on innovation, to better leverage its intellectual property. This was followed by a session at the 2005 Annual Conference that struck a positive chord with attendees and the concept was further refined via ongoing engagement with the Strategy Committee.

In November 2006, a report by a branding consultant provided the tipping point. Whilst GHD had long been delivering innovation, this was not an attribute which came through strongly with our clients and the market. The report went on to recommend “internal processes and staff training could be implemented to focus on increasing GHD’s capacity to innovate and secondly, increase emphasis in GHD’s promotional activities highlighting...innovative solutions.” To complement these goals, “GHD could celebrate innovations through internal communication activities involving both the client and consultant”.

Under CEO Des Whybird’s direction, an innovation mandate was prepared (led by Jeremy Stone). Subsequently approved by the Board in March 2007, the mandate set out objectives, targets and resources required to design, establish and manage the company’s first formal Innovation program.
Underpinning the program were actions in three areas: to create a deeper understanding of clients’ needs, enabling better solutions to be provided; a whole-of-organisation approach, aimed at connecting and recognising GHD people; and performance – contributing to top and bottom-line growth. The key to implementing the Innovation program would be the commercialisation of our intellectual property, and the development of a capability to sell or licence GHD ideas and assist clients to commercialise their own.

The program, designed by Jeremy Stone, Group Manager of Innovation & Commercialisation, and Nicole Keating, GHD’s inaugural Commercialisation Manager, sought to add more weight to encouraging innovation within projects, capacity building within the company, and industry engagement, to connect and position GHD as a leader in this field. Julie Frost, an industrial designer from Sydney, joined soon after to assist in the implementation of the program.

One of the first tools to assist our innovation drive was an online ‘idea management platform’ built by Maree Courts from GHD’s Information Services team. Branded ‘theZone’. The online tool used the Lotus Notes platform to enable people across the company to submit, respond, collaborate and vote on ideas. theZone effectively crowdsourced ideas in an open and non-hierarchical manner, utilising skills and experience across geographic regions, technical disciplines and market sectors. A number of offline initiatives were designed and also rolled out, including the Join the Dots facilitation approach to ideation and brainstorming sessions.

By 2013, about 3000 people were connected via theZone and more than 2000 ideas had been submitted involving 7800 collaborations. More than 10 patents were secured via ideas conceived in theZone and many were successfully implemented. The Innovation program was trialled in New Zealand and Victoria before its global launch in March 2008. Since then the seeds of GHD’s investment in innovation have born ripe fruit.
In 2015, GHD launched IdeasPlus, the company’s most recent ideas crowdsourcing initiative. Every year, each of the five market sectors will run a campaign to identify and deliver the best ideas related to market sector growth, development of the technical service lines, and commercialisation of new ideas and business models.

Commercialising our ideas

In December 2011, Matthew Bowler joined GHD as Commercialisation Manager, continuing the team’s efforts to convert GHD ideas into successful outcomes. Examples include:

DAFerd
In July 2008, Mark Woodthorpe from the Melbourne office submitted his idea, the Energy Reduction Device (later patented as DAFerd), to reduce the most energy-intensive part of the Dissolved Air Flotation (DAF) water treatment process. A positive displacement pressure exchanger, DAFerd reduces the pumping energy required by transferring the pressure energy available from process waters moving from high-pressure to low-pressure states.

GHD obtained two patents for this unique energy recovery device design and the integration of the device within the DAF process. In late 2012, an agreement was reached with the Chinese Golden State Water Group Corporation in Beijing to purchase DAFerd technology, recognising the benefits it held both for DAF but also wider water treatment processes such as desalination.

PumpCheckr
First submitted to theZone in 2011, Thomas Devine’s (Cazenovia office, USA) online pump efficiency meter idea, subsequently patented in the US as PumpCheckr, is an algorithm designed to calculate the efficiency of pumps in real time, enabling
StormDMT, a unique water treatment technology

infrastructure managers to easily and efficiently identify pumps operating at sub-optimal levels. Simple to use and able to be retrofitted in a wide range of pump systems, PumpCheckr has been successfully licensed and implemented at a site in Skaneateles, New York, USA, and in Victoria, Australia, in partnership with Schneider Electric.

StormDMT
In October 2008, Dr Konstantinos Athanasiadis, Business Development Leader – Industrial Water and Coal Seam Gas, from the Brisbane office, submitted an idea to utilise passive multi-barrier filter media technology, as a cost-effective process to remove nutrients and dissolved heavy metals from water. The idea responded to increasingly stringent environmental discharge limits being imposed in both urban and industrial settings.

In 2012, Xstrata/Glencore appointed GHD to design and implement the first trial of StormDMT at its Port of Townsville site, with the results confirming the technology’s ability to achieve the client’s treatment objectives at a fraction of conventional costs. In 2014, to bring StormDMT to the urban stormwater treatment market, GHD licensed the technology to Ecosol, an Australian company providing a range of innovative stormwater treatment solutions to the Australian, New Zealand and Asian markets. In 2015 GHD began to extend StormDMT into North America, beginning discussions with a number of potential licensees.

FLUXSmart
In 2010, Lindsay Mott based in Melbourne, who had been with GHD for more than 40 years, started to reimagine the way in which water could be managed at the precinct level. Lindsay conceptualised an entire approach to water management which would become
known as FLUXsmart, a means of timer-based retention for water or wastewater. In 2011, FLUXsmart concepts were applied to pressure sewer units operated by Australian water retailer Yarra Valley Water. In 2016, FLUXsmart patents were purchased by IOTA, a subsidiary of South East Water, another Australian retailer, as part of a partnership agreement to commercialise FLUXsmart globally.

**Commercialisation support for clients**

There are diverse benefits when GHD assists companies commercialise their own ideas. Not only do these companies grow, but the recipient asset-owner benefits from safer, more efficient and/or cheaper solutions. In 2010 GHD extended its innovation and commercialisation program from a focus on GHD technologies and ideas to include those of third parties.

An example of this is Phoenix Water, one of 22 small-to-medium-sized technology organisations GHD worked with in 2014 through the Victorian Government’s Innovation Voucher Program.

Phoenix Water is an industrial technology company, focused on creating world-class applications in water and solids recovery in the large and growing markets of desalination brine discharge, industrial wastewater treatment and mineral commodity recovery. The company aims to be the leader in the recovery of water and commodities from previously untreatable waste streams.

GHD assisted Phoenix Water by undertaking a technical review, an assessment of their business plan, and the development of a global market strategy.

To undertake this assignment, the Innovation team reached out to GHD’s five market sectors and service lines around the world, seeking feedback on Phoenix Water’s solutions, market potential and client opportunities. One major outcome of GHD’s work was to shift the company’s market focus from desalination to mineral extraction, with the extraction of lithium a key target. Through working with GHD’s Innovation team, Phoenix Water has secured a lithium off-take agreement with a large global battery manufacturer and is finalising an agreement with a major US energy company to implement a full-scale pilot plant.

**Innovation on projects**

Identifying and delivering more great ideas for our projects is at the heart of our Innovation program. Nowhere is this better illustrated than in our Ideas Framework that helped win and deliver a competitive alliance project for Sydney Water.

In 2014 the Malabar Process and Reliability Renewals (PARR) Alliance, comprising GHD, UGL and John Holland, was awarded the contract to upgrade the Malabar Wastewater
GHD helped DC Water implement an innovation program.

Treatment Plant in Sydney. Due to be completed in 2017, the alliance benefitted from ‘join the dots’ sessions and the use of GHD’s PIVOT online ideas management platform (the web-enabled version of theZone), enabling alliance members to specify project challenges and opportunities, and encouraging open team collaboration.

During the project's development phase, the team generated 40 ideas to address safety, technical and commercial risks and opportunities. Twelve ideas progressed to implementation. Reflecting on the project, Geoff Watson, Alliance Design Manager, says the Ideas Framework helped drive high performance. “It provided numerous benefits - including more good ideas generated and implemented, greater transparency on the value of ideas, and greater engagement and enjoyment in getting involved within a team.”

Innovation capacity-building for clients

Innovation has also become a key plank for other organisations as they look to implement fresh ideas to grow their business. Given our own experiences, clients have turned to GHD to assist them build innovation capacity. Myles Coker, Senior Advisor Innovation & Commercialisation, has assisted several, including Powercor, and Saskya Hunter from our Brisbane office is coordinating our input as we assist the Queensland Government establish and manage the Engineering, Construction and Resources Innovation Hub.

Another example is DC Water, a major water authority in the US with some 1400 employees, serving the District of Columbia and parts of Maryland and Virginia, the utility has an active research and development division and was keen to implement an organisational-wide innovation program to increase revenue, deliver operational efficiencies, and improve the working environment for its staff. DC Water appointed GHD
to assist in creating an innovation roadmap and implementation plan. Commencing in April 2014 with a joint Australian and US team of Jeremy Stone, Claire Dixon, Seth Yoskowitz and Gage Muckleroy, the services included workshops with over 50 staff, ideation facilitation training, technical assessment of online idea management platforms, and guidance in the roll out of the implementation plan. The project was presented at the 2015 Water Environment Federation’s Annual Technical Exhibition and Conference (WEFTEC) – the largest annual event for the water industry in North America.

Seth Yoskowitz, GHD’s Principal for Business Consulting, says, “DC Water is a dynamic organisation that wants to be at the forefront of innovation. They know there is even greater untapped potential amongst its talented staff. GHD, with its deep history of business and organisational consulting services, depth of technical knowledge of water and wastewater utilities, and our own journey in innovation, has been a strong partner with DC Water through their development of innovation.”

Smart Seeds

Smart Seeds is an industry-led annual innovation program developed and delivered by GHD. The program engages young professionals to generate fresh ideas for complex infrastructure challenges. Its success story epitomises innovation – how a great idea grows from a concept, to piloting, learning and feedback, collaborative development and then rapid take-up when the market sees proven value.

The program was conceptualised in 2012 by Claire Dixon, GHD’s Senior Advisor, Innovation & Commercialisation, as a means to engage vacation students in Victoria. One of the great ideas generated by a team was ‘Boomabridge’, a boomerang-shaped bridge to solve complex pedestrian and boat movements in Melbourne’s Victoria Harbour.
Smart Seeds has since expanded to a program that involves young professionals in 13 cities in Australia, New Zealand, UK, Canada and USA, working in private and public organisations. Multidisciplinary teams of young professionals from different organisations and sectors develop a creative concept to tackle a complex infrastructure challenge and present it to industry leaders at a showcase event.

At the Sydney event in 2015, where the Secretary for Transport for NSW was a judge, he was so impressed with one of the ideas – Scale above the rail, that he asked the group to present to his executive team, with the aim to support the concept for trial and implementation. Faced with the challenge of harnessing the space above railway lines in urban areas, the team proposed smart, modular elevated platforms that can be used for numerous community functions.
In Innovation Interchange

In 2010, GHD secured AUD950,000 from the Victorian Government through a competitive procurement process, to develop a program to assist Small and Medium-sized Enterprises (SMEs) grow, through more effective commercialisation of their innovative technology.

GHD proposed to develop and pilot a program focused on the global water market over a 24-month period. Called Innovation Interchange, it offered online and offline services including:

- Mentoring and partnering services to 12 Victorian SMEs
- Design, delivery and management of a collaboration portal called Marketplace, a technology matchmaking site between asset owners and technology providers

At the conclusion of the pilot, GHD continued to offer innovation mentoring and partnering services to a range of technology providers, assisting them commercialise their technology in the infrastructure industry.

In 2012, Innovation Interchange was established as a GHD subsidiary company, with Tammy Lau as Digital Solution Manager, plus ongoing design and management input from Julie Frost. Its vision is to build a global community of infrastructure organisations through their use of one or more online ideas management products, including RoundTable, PIVOT, and Marketplace.
As Chief Information Officer, Elizabeth is responsible for the management of GHD’s global ICT systems. Born in Wellington, New Zealand, she was driven to pursue a career in the fast-moving IT industry at age 16. As a data entry operator during the first years of the personal computer explosion, she found herself fascinated by technology changes and filled with a desire to be part of it all.

Elizabeth moved from New Zealand to Brisbane in her early 20s and in 1988 was appointed IT Manager for Mitre 10, one of Australia’s leading hardware store chains. For the next eight years, she honed her skills by refining the organisation’s information technology systems. Elizabeth became the IT manager for the Queensland Cotton Corporation and later the Queensland Treasury Corporation, where she completed her MBA. After a stint as General Manager – Corporate Services for a major sustainable fertiliser specialist she joined GHD as Chief Information Officer in 2010.

Her first task she says was to overhaul a fragmented IT business unit. “The key challenges were to improve the culture within the team whilst improving the client experience through better service delivery,” Elizabeth recalls. “I achieved success through providing a framework to change the IT team members’ behaviour and approach, focusing on clients’ needs and expectations.”

One of her most successful projects to date involved establishing a shared service team based in Manila. The ‘IS HELP team’, began offering 24/7 global IT support services in 2011 and is now handling more than 65 per cent of GHD’s IT requests. From its inception, Elizabeth’s vision for IS HELP was for it to be more than just an internal helpdesk.

“I’d hired 21 staff in Manila before submitting the business case. I’m an ‘ask-for-forgiveness’ rather than an ‘ask-for-permission’ kind of person,” says Elizabeth.

With IS HELP filling the gaps in GHD’s internal IT support infrastructure, Elizabeth took the initiative one step further, turning a function normally regarded as a company overhead
into a revenue-generating business, sharing innovative IT helpdesk support, network
design, application hosting and technology solutions with clients.

“We’ve just begun tapping into the IT consulting market. This complements GHD’s
traditional offerings perfectly, and the sky’s the limit as to where we can take this.” Elizabeth’s
achievements in the traditionally male-dominated fields of IT and engineering have been
widely recognised as inspirational with a slate of prestigious awards. For Elizabeth it’s all
about relationships.

“If you do a good job, communicate effectively and build relationships across the business,
you can achieve anything, and at GHD that is truer than at any company I’ve ever been
involved with.

“What makes GHD special is the people who work here, people who live our key values
of safety, teamwork, respect and integrity. These are not slogans plastered on the wall.
They’re applied every day, on every project. A project will not go ahead if it conflicts with
any of our values, and that’s something I’m extremely proud of.”

Elizabeth’s career in IT has spanned wave after wave of change in the digital space.
When asked what the future holds for GHD in that space, her message is simple.

“Technology and the way we deliver outputs and services to clients is changing so quickly,
so dramatically, we have to take ownership of our organisation’s development. We must
lead the change, not be dragged along behind it.”
Chapter 27.

Technical services underpin all of GHD, and in turn, it is an area underpinned by our people – practitioners in engineering, architecture, sciences, advisory services and project delivery. Many are pioneers in their field. All share a common trait; a deep passion for their vocation combined with an innate ability to inspire others to follow them.
The French have an expression: *fil rouge*. It translates literally as “red thread”, but its true meaning is a continuous line – a core theme, timeless and inviolate. Throughout GHD’s history *fil rouge* serves as the most appropriate metaphor for our foundational suite of civil engineering services. GHD’s *fil rouge* – the consistency of our core services – provided a platform on which to weave in new ventures as we grew and diversified our market presence. That constancy has enabled GHD to forge an enduring identity and reach out to the world, but perhaps most importantly, it has allowed us to create a foundation for agility and adaptation in the face of sweeping societal and technological change.

**Tales of synchronicity**

The December 1992 issue of GHD News gives a telling snapshot of how our *fil rouge* has steered our course over the past quarter of a century. One article entitled *Winds of Change* begins with the following statement:

“The Australian aviation industry is currently experiencing the greatest change since Lawrence Hargrave flew powered model planes in the 1890s. GHD is at the forefront of these changes, undertaking significant airport development projects across the country.”

Twenty-three years later, one of the most significant wins for GHD in 2015 was its appointment to provide business advisory services to the Australian Government for the Western Sydney Airport project – at the initiation of undoubtedly one of the most significant projects for the next decade on the Australian infrastructure front. Strategic long-term positioning, connecting with technical partners and building enduring relationships with clients and stakeholders had enabled the organisation to win this work, but the foundations were laid many years before.

A second story in the same publication reported on a project to plough the seabed off the Sydney coast in up to 200 m of water, using a specially designed plough. The task: to
survey 60 km of the PacRimWest optical fibre submarine cable route. The GHD project team deployed leading-edge technologies at the time, including a radio-location system, a global positioning system, instrumentation and video camera, all fitted onto the custom-fabricated plough that transmitted the vital data to recording equipment on a support vessel. Two decades on, GHD’s maritime and coastal team is regularly called upon to deliver services for submarine cable systems across the world. Since 1992, our services have grown to include investigations and approvals, environmental monitoring and management, cable route development and consultation with government agencies – a holistic offering covering all aspects of the physical engineering, permitting, approvals and environmental impacts, necessary to deliver a complete submarine cable system.

As we follow the fil rouge from the early 1990s to an underwater vehicle called the Seaglider in 2008, GHD’s technical specialists continue to lead the way. In what is believed to be the world’s first commercial application of this advanced technology, GHD entered into an exclusive agreement with the equipment owner, AUV Pty Ltd, to apply the Seaglider to offshore commercial applications for environmental management and compliance, and engineering design.

With GHD’s innovative application led by Dr Jose Romero, the technology (used mainly by oceanographic research institutions), offered offshore operators a new and cost-effective way of collecting high-quality spatial and temporal data for ocean and estuary environmental monitoring, without the costly and often dangerous use of ships or the inflexibility of fixed buoys.

Pioneers and legacies

The fil rouge continues to weave GHD’s services into the fabric of our cities. As Sydney awaits the completion of the light rail system from Circular Quay through the central
business district to the south-east suburbs, GHD can look on proudly at its contribution over two decades – from the city's first light rail project of the modern era in the mid-1990s to the present day project of which GHD forms part of the consortium.

Technical services underpin all of GHD, and in turn, it is an area underpinned by our people – practitioners in engineering, architecture, sciences, advisory services and project delivery. Many are pioneers in their field. All share a common trait – a deep passion for their vocation combined with an innate ability to inspire others to follow them.

When *A Firm Foundation* was published in 1988 – the book that charts GHD’s history from its conception through to the late-1980s – GHD described itself as a firm of “Consulting Engineers, Planners, Surveyors and Project Managers”. Before the service line structure, technical services were loosely structured around the cooperation of industry-led or technical-based groups in the various offices, uniting in an informal, collegiate manner to operate as a national practice.

Between 1988 and 2000, our technical services were grouped into the disciplines of building, environment, survey, hydraulics, hydrology, water technology, geotechnical, transport, planning, management services, structural, mechanical and electrical. In the pre-Internet age, knowledge sharing and peer networking were achieved through a biennial program of National Technical Group Seminars.

Today our Service Line Technical Conferences are run like well-oiled machines, led by the Regional Technical Leaders, managed by the GHD Business School and attended by scores of practitioners. In the mid-1990s, GHD diversified into management services to complement its engineering and environmental practice, expanding the scope of these services beyond project management to cover management consulting, asset management, facilities management, contract operations and maintenance management.
This was a natural evolution of the services GHD's founding fathers had provided to their municipal clients in New South Wales, Victoria, Tasmania, and Queensland. In those early days, GHD undertook commissions in regional towns where there was no readily-available expertise in managing the operations and maintenance of the water supply and sewerage schemes. When the schemes became operational, GHD's commissions were often extended to manage the technical aspects of operations and maintenance.

The addition of management services was driven by a number of GHD's people who were passionate about the professional disciplines of project management, asset management and facilities management. One of those individuals was Ken Conway, regarded as the forefather of our specialised project management services. With a passion for innovation and excellence in project delivery, Ken led a swathe of major projects, including the design and installation of the Sydney monorail (installed in 1988 and later demolished under GHD guidance in 2014), and the Homebush Bay Infrastructure Development project for the Sydney 2000 Olympics. Ken's focus was sector-wide and he was committed to fostering the linkages between industry and academia.

Richard Fechner, GHD's Technical Services Leader (2014-2016) has continued delivering on Ken's legacy by leading growth in new advisory services in his role as Executive Manager Infrastructure Investment and Economics from 2016. He remembers Ken fondly as a larger than life character who stood out with his presence, personality and passion.

Ken’s legacy lives on in a notable group of project management specialists at GHD today. Special mention also needs to be made of David Wunder who retired in 2015 – a name synonymous with excellence in major project delivery. Des Boland, also retired, was another seasoned project director who was highly sought-after to deliver major projects.
The Major Projects Advisory Group (MPAG) gives a snapshot of the strength of our project management skills. Made up of 16 senior GHD people who have individually successfully bid for, and managed, major multidisciplinary projects, MPAG is not only the cornerstone of GHD’s governance model for the delivery of major projects, but plays a key role in helping our people bid, win and deliver them.

Roger Byrne, who retired in 2008 is fondly remembered as the guru of infrastructure asset management, having authored many of the most respected manuals and guides, and developed the world’s first quality framework approach to life cycle asset management. Roger was instrumental in leading GHD’s efforts to win a strategic asset management project with the Orange County Sanitation District (OCSD), near Los Angeles, paving the way for the establishment of our first office in USA. The roll call of our practitioners who transformed GHD’s approach to technical services over the past 25 years would not be complete without mentioning David Lenox who joined the company in the late-1970s after an illustrious career in the RAAF. David bought to GHD not only attributes that reflected his military training – team management, team building, reliability and commitment, but also a detailed knowledge of Defence requirements in maintenance planning and procurement.

In the 1980s, David assembled a highly competent team of practitioners in maintenance engineering at our Newcastle office, and over two decades this group completed numerous assignments for both Defence and the broader industry, applying their advanced philosophy to maintenance planning. The team also assembled many operating and maintenance documents to Military Specification (Milspec) Standards for a wide range of aircraft, naval vessels and ground-based support systems. Today, GHD continues this history of supporting Defence and security in Australia and the Pacific region. Our services for Defence now include such specialised areas as explosive ordnance planning, specialist weapons and training ranges, blast-resistant design and weapons storage.

Over two decades, GHD has continued to evolve its suite of management services through organic growth as well as mergers and acquisitions, expanding its offerings to cover strategic advice in transportation and energy economics, transportation policy formulation, transportation logistics, as well as regulatory and policy advice in energy, water and transport-related areas.

In the post-GFC world, these management services place GHD in a unique position to meet clients’ increasing expectations; clients wanting to do more with less in the areas of asset utilisation and productivity.

Today the cohort of asset management professionals extends to our US and Canadian operations, where Roop Lutchman, Gage Muckleroy and Seth Yoskowitz continue to showcase our business consulting skills. Roop, based in Mississauga, is the author of three books: Computerized Work Management Systems for Utilities and
Gage, based in our Bowie, Maryland office, has been the principal instructor on an Advanced Asset Management course at the University of Wisconsin-Madison. Seth is a Stanford University graduate who manages our Asset Management Service Group based in Bowie, and specialises in asset management and strategic organisational development. But it’s not all about the boys. Jill Hannaford joined GHD in 1989 as a graduate planner and was instrumental in establishing a community consultation business in the mid-1990s, which evolved into the Stakeholder Engagement and Social Sustainability service line. A passionate supporter of diversity at GHD, Jill is one of the many women who have made their indelible mark in an industry that is changing from its a male-dominated roots. This cohort comprises, inter alia, Sue Trahair, Stefania Fikus, Anne Lavers, Lucinda Murray, Van Tang, Jo Metcalfe and May Ngui.

These women joined GHD in the late-1980s and early 1990s, becoming role models in breaking through the gender barrier in engineering and construction industries. Some took time out to have children and returned to work at GHD, a process which saw the introduction of flexible working practices, years before the company adopted a formalised human resources structure.

Sue Trahair has conducted more than 400 environmental, compliance and due diligence audits, over 250 greenhouse gas audits, and has been project manager/peer reviewer for an additional 320 audits. Lucinda Murray is a highly experienced senior structural engineer in our Melbourne office, and a great role model for young women aspiring to become structural engineers. Others mentioned have gone on to senior roles in the firm. Anne went on to run our successful office in Manila. Jo Metcalfe, a landscape architect
by vocation, and Van Tang, a civil engineer and aviation specialist, are now managing the Canberra and South Australia operating centres respectively. May Ngui, an electrical engineer, became GHD's first female director when elected to the board in 2009.

Building on legacy

The *fil rouge* continued to tie together GHD's technical services as the business grew via mergers and acquisitions from the mid-1990s until the present day. The merger of the Western Australian Water Authority's water engineering group into GHD's Perth operations, brought 39 people into our fold, adding considerable specialist and technical leadership skills.

Two years later, GHD's stable of skills was augmented by the mergers of Works Australia and the LongMac Group. The CSC (Corcoran Shepherd Consultants) acquisition in 1998 brought a step change to GHD's bridge capabilities. With more than 35 years' experience under his belt in the design, construction and management of major bridge projects, Peter Selby-Smith came to GHD via CSC, and became responsible for several major bridge projects including the Eleanor Schonell (Green) Bridge in Brisbane and the Superway project in Adelaide. Peter also held the signing authority as VicRoads pre-qualified Proof Engineer for Complex Structures.

By our 75th year of operations in 2003 our technical community had swelled to 2300 people through further mergers, notably, Egis Consulting Australia and Geo-Eng Group. Of the technical leaders who joined us during this period, Pat O'Dwyer (now retired) is remembered by many service line leaders, as a straight-talking, no-nonsense boss who had a deep understanding across a broad range of services and the ability to galvanise technical practitioners into action.
While the 2014 merger with CRA cemented GHD’s position in the fields of environmental site investigation and remediation, environmental management and solid waste management, the GHD history of Contamination Assessment and Remediation (CAR) really began with the Geo-Eng acquisition and Dr Fouad Abo leading the charge.

With the Egis acquisition followed by Geo-Eng, the company now had three Environmental Protection Agency (EPA) accredited auditors. Fouad was appointed to be the service line leader shortly afterwards. By 2010, CAR capabilities were present in 31 GHD offices, including three outside Australia, and Fouad played the key role in expanding those services. Beginning in 2003, on a visit to GHD’s Middle East offices (which he undertook at his own expense) Fouad persisted in tracking down environmental opportunities, diversifying beyond what was GHD’s predominantly building services and property-based work in this region.

His perseverance paid off in 2005 when GHD won its first environmental, contamination assessment and remediation project in Doha. In the UAE, GHD won a project to set up the Abu Dhabi Environmental Agency’s policies, guidelines, and accreditation. This project kick-started what is now a mature environmental business in the Middle East.

A vital part in strengthening GHD’s presence in the contamination market was to recruit auditors. From a base of three, GHD now has 11 auditors, the highest number for any one company in Australia. Fouad continues to champion our contamination assessment and remediation services, sticking to his belief that such services should always underpin the broader environmental capabilities, a belief that has been reaffirmed by the recent merger with CRA and the growth of this area of the business.

GHD’s expansion in the US, with four mergers in 2009 and three in 2010, brought a number of very strong technical people to the company, Rip Copithorn and Mike Kincaird being two notable leaders in their fields of expertise. Rip had been a senior partner with Stearns & Wheler and was a recognised expert in wastewater treatment, particularly in the area of biological nutrient removal and integrated fixed film activated sludge processes. Through the merger, Rip was able to share his expertise with a broader national and global audience and was soon tapped by GHD to serve as the first designated global technical leader for Water. Having Rip in this position allowed for significant sharing of knowledge and resources across the continents and reinforced the view of GHD as a global operation.

Mike Kincaid came from the Winzler & Kelly merger, and has been with the company for close to 40 years now. Known to have a debonair dress sense with his three-piece suits and tie, Mike is even better known in the engineering community for his vast technical knowledge – whether the subject is gravity pipelines, pump stations, roadway design or surveying. Mike’s passion for engineering is so palpable that one client has been known to have said during a meeting, “Mike you are the most caring civil engineer I have ever met.”
With the US growth that continued through to 2014, an immediate symbiotic relationship developed between key technical people there and GHD’s more mature service lines in Australia and elsewhere in the world.

Commonwealth Engineering & Technology joined GHD with 100 people operating in the areas of multidisciplinary engineering, architecture and GIS services, extending our offerings in water, particularly in advanced nutrient removal, asset management, desalination, industrial water and waste, water efficiency and collection, as well as conveyance and treatment system design.

RobsonWoese Inc. in New York, added electrical, mechanical, and fire protection engineering services, including credentials in mission-critical power systems, fire protection and code consulting, sustainable design, LEED® accreditation services, and energy modelling. Protection Engineering Group (PEG), a 40-person company, based in Chantilly, Virginia, joined in 2014, bolstering our capabilities in the disciplines of fire protection, life safety and code consulting, security and information technology. The PEG people consisted of Registered Fire Protection Engineers, Certified Protection Professionals, Physical Security Professionals, Registered Communications Distribution Designers, NICET certified professionals, and project management professionals.

Our merger with CRA significantly bolstered GHD’s capabilities across a range of areas, but particularly management of contaminated sites, waste management, the water and energy sectors, as well as ecommerce.

The team from Woodhead Architects that joined GHD in 2014 has combined the significant design experience and skills of both companies in architecture, interior design and masterplanning services. We are now recognised as a leading architectural practice under the GHDWoodhead brand.

**Growth and governance**

The launch of Strategy 2000-2005 in 2000 saw some 19 broad professional disciplines streamlined into 54 individual lines of technical speciality. In November 2000, Des Whybird, at the time the director tasked with oversight of technical services, introduced the roles of service line leaders as “key corporate positions with responsibility for the development of GHD’s technical skills and capability”, and appointed 47 service line leaders, many of whom have since built practices around them.

The period from 2002 until 2009 was a period of immense growth as GHD developed through the integration of other companies and overseas expansion. The resultant GHD workforce grew from around 2300 to over 6000 people. The same period saw a significant growth in client requirements for services. Clients were growing not only by number, but also in the size and complexity of their projects requiring our services. Our global community of clients was now demanding new services to address risk management, sustainability, desalination, renewable energy, climate change and tunnels.
GHD recognised the need to respond to these new opportunities and to grow a more sustainable business. New service lines were added as vital components of the organisational structure, and within existing traditional service lines such as Water, additional opportunities were opened to broaden our markets with desalination, wastewater treatment and recycling.

With the establishment of the GHD Business School, a course was designed for training service line leaders. This gave them an opportunity to cross-fertilise ideas. To enable coordinated efforts on key activities, service line leaders were now required to author simplified annual business plans. There is no doubt that the GFC in 2008 impacted the funding that was available. In the immediate aftermath, one symptom of the downturn was reflected in fewer technical seminars and overall support for service line leaders.

In mid-2008, during Pat O’Dwyer’s tenure as General Manager – Services, a Technical Services Advisory Group (TSAG), was launched to enhance the profile of our service lines. The inaugural TSAG was instrumental in coming up with the concept of a technical career pathway which was further developed to be the career planning tool that is used by our people today.

In 2011, the governance structure evolved to include global technical leaders (GTLs) aligned with our five market sectors to provide increased oversight, reinvigoration and direction for the service lines.

The service line concept, while well established in the Australian operations, where it evolved over many years, was less well understood in our emerging operations, particularly in the Americas. Given this and the step change that occurred after the CRA
merger, we moved to have technical leaders for separate geographic regions, replacing the previous five GTLs, but still retaining oversight at the general manager level.

From the small intimate gatherings at biennial seminars, three to four technical conferences are now organised by the GHD Business School annually – events which are eagerly anticipated by our service line communities to showcase their respective achievements. The GHD Awards for Technical Excellence, presented by GHD’s Chairman, are an integral part of the Technical Conference agenda and have become a prestigious showcase of our prodigious talent.

The power of change

The fundamental laws and principles of engineering, finance, and the legal system are not subject to change, but the rapidly evolving technological advances we see today in our everyday lives, and the resulting societal changes and expectations, have significant implications for us all – implications that present limitless opportunities for the future of technical services at GHD.

We live in a world that is globally interconnected 24/7, a world that is filled with mobile smart devices. The ‘internet of things’ is the conceptual term referring to a vast ecosystem of everyday objects which can be interconnected, and which can communicate in an intelligent fashion within an Internet infrastructure. ‘Pervasive automation’ and ‘ubiquitous computing’ are two of the terms commonly used to describe this state of play.

The implications of the ever-evolving digital technologies in the last two decades have been most keenly felt by our services that provide advice on the application of technologies, such as the electrical, instrumentation, communications and mechanical disciplines, and by those that involve the use of technologies, such as drafting and spatial sciences. Nee Nee Ong and May Ngui, Principal Electrical Engineers based in Perth and Parramatta respectively, have stories to tell about their experiences on technology applications.

In the mid-1990s, May was tasked to design the building management services for an aged-care facility. The facility operators asked for an automatic monitoring system that could track patients, who, typical of dementia-affected people, would wander and get lost. When one considers that the world wide web was only accessible in 1993, and it was only in 1990 that supermarkets introduced product scanning at check-outs, the technology choices at the time were limited. Off-the-shelf technologies, such as pressure pads, motion detectors and CCTV surveillance were available, but all came with the practical problem of discriminating between patients and individuals who did not require tracking.

The same design today would involve Radio Frequency Identification (RFID) technology and video analytics. Technology that can detect and decipher not only that a patient has gone wandering, but also identify their name, their next-of-kin details and their medical history.
In 2006, Nee Nee had to design a water storage tank and chlorination system for a new suburb in Perth. The project was delayed for a year and as a consequence, the initially proposed technology for the project changed, resulting in a redesign of the infrastructure, further delaying the project for another year. The original telemetry communication design required radio, NextG, and the use of repeaters using two different communication protocols. With the delay in the project, technology advanced to a stage where a Digital Network Protocol (DNP3) communication protocol became feasible, allowing direct communication between disparate devices and reducing the communication design complexity. Although there were project delays and considerable communication design iterations, the final outcome, delivered in 2011, was far superior to the initial design, due to technology development during the life of the project.

Technology and service delivery

One example of technical evolution relates to a bedrock of engineering design – that of the drafting process. Greg Scolyer, GHD’s senior technical officer in Hobart, was at the forefront of that evolution. Greg remembers those early days, when drawing boards and tee squares were about to be consigned to history.

“In the mid-1980s the first mainframe computers appeared in some of the larger GHD offices,” says Greg. “These enormous pieces of equipment took up the area of a large room but could do things that no human thought possible... The first computer-aided drafting seminar, which took place in Melbourne in December 1989, provided the foundation for a national approach to the introduction of CAD into GHD.”

Trophies for GHD’s Technical Conference Awards
Following the seminar, the company adopted PC-based computers with AutoCAD as the preferred software package. By 1990, 25 CAD stations had been installed across GHD’s Australian offices. The future had arrived. Slowly, the art of sketching drawings by hand disappeared, along with the multitude of drawing boards, Rotring pens, lettering stencils, scale rulers, and French curves.

As faster internet connections and speedier computers enabled GHD increasingly to link offices, the first Drafting service line seminar was held in Brisbane in June 2002, under the leadership of the inaugural Service Line Leader, Chris Carne. Following that seminar, the GHD Drafting Manual, the adoption of CAMS, along with a united agreement to uphold a GHD drafting standard, positioned the company as a leader in CAD.

Greg Scolyer replaced Chris in 2005 to guide the Drafting service line towards its rapid global growth. In October 2010 it hosted a drafting technical seminar in Manila, the first time that such an event had been held outside Australia. Meanwhile, a paradigm shift was happening in the way documentation was prepared with the adoption of the BIM approach and the use of new modelling software such as Revit, Plant 3D, Civil 3D and Solidworks.

Today our Drafting service line has evolved into a design documentation service, reflecting the changes in technology and their impact on design workflows. People such as Damyon Bobilak, Peter Van Hulst, Barrie Thom, Cameron Hill and David Nicholson continue to champion this agile global community of practice that underpins our engineering design services.

Another service line where technology is central to delivery outcomes for clients is Spatial Sciences. Spatial technology has provided a step change for GHD, from replacing paper forms in the field with GPS and web-enabled tablets. Applying modern spatial software and hardware has driven improved efficiency and data quality across the many different services GHD offers. Building on CRA’s strong capabilities in web mapping, GHD is able to provide industry-leading interactive mapping solutions to clients. The digital challenge is now a prime focus of our growing Advisory business, assisting our clients to leverage technology in their drive for more efficient operations.

GHD’s technical practitioners today are far more collaborative, collegiate and less segregated into disciplines than their predecessors 25 years ago. In this globalised collaborative environment, our people are required to have the softer skills of influencing and leading, of being agile and adaptive in response to constant technological change, and to service our clients in a truly collaborative rather than a transactional way.

No doubt the fil rouge of GHD’s technical services will continue to weave its magic through our work and continue to deliver remarkable solutions for the communities we serve.
Roger Byrne, world-beating yachtsman and GHD manager for 37 years steered the company to uncharted shores. His insightful approach to tackling challenges was evident early on in his career, when he was newly appointed to the Commonwealth Department of Works. At the age of 23, the novice engineer found himself in Victoria’s Puckapunyal army training camp to fix a blocked sewerage system. His inspection found the cause soon enough. No wonder the camp’s recruits found their new home on the nose: the contractor who had built the manholes pre-WWI had left the formwork in place – problem solved.

The experience made an indelible impression – how could his government department not be aware of the condition of such an asset, and wouldn’t it make sense to check its condition from time to time? “It was an eye-opener for me, a kind of defining moment,” says Roger. “That’s when I realised there was a way to do things differently, to do things better.”

Roger was born in St Kilda (he still barracks for them) and grew up in the Melbourne suburb of Carnegie, the son of a toolmaker who bestowed on him a love of mechanics and a robust work ethic. “We weren’t very well off, so the deal with my parents was, ‘you could stay at school until you failed.” Beyond a passion for building things, the young Roger had one other love – sailing. In 1969 he left Australia’s shores for the first time, not to work as an engineer, but to race 18-foot yachts in the US, where he won the first of two world championships. At 25 years of age, with the wind in his sails, he returned to Melbourne and an interview with GHD legends Ben Fink and Ivan Miller; GHD managed the operations and maintenance of 60 water boards at the time in Victoria, NSW and Tasmania, and Roger was welcomed into the fold. So began a career at GHD spanning 38 years. In that time Roger became one of the world’s leading authorities on infrastructure asset management. Authoring many of the most respected manuals on the subject, and having developed the world’s first ‘quality framework approach’ to life cycle asset management, Roger played a central role in expanding GHD’s operations internationally.

His first foray into promoting GHD’s asset management credentials overseas was in New Zealand. Lessons learned ‘across the ditch’ in the early 1990s were put to even greater
effect later in the US, when Roger began GHD’s North American operations. Such ground- 
breaking work paved the way for GHD to expand into the UK and Ireland, with its asset 
management reputation as the trail-blazer. Roger retired in 2008 leaving a vital legacy.

In hindsight, he says that his contribution was essentially a simple one. “My idea was that 
GHD should assist clients in such a way, so as to identify the most logical works programs, 
and major projects, and when we finish building them we hand over everything that 
enables that client to manage their asset effectively, throughout its life.” To get to the core 
of effective asset management, a few simple questions need to be asked, says Roger: “What 
do I own and what condition is it in? How is it performing? How do we want it to perform? 
What’s it costing us? And what’s the cheapest way to extend its life?”

Roger’s pioneering journey into asset management changed GHD, and how the world 
perceived it, forever. Steve Allbee, former department head at the United States 
Environmental Protection Agency perhaps puts it best.

“Roger spelled it out. We thought it was so complex, and it’s so simple. We never quantified 
what was required.”

Possibly the most telling approach to Roger’s philosophy is summed up in a joke he used to 
tell, as he explained the art of asset management to new clients: “The company CEO calls 
his senior managers together and says, ‘What’s two times two?’ And the IT team manager 
pipes up enthusiastically, ‘Four point zero, zero, to infinity.’ The enquiring CEO repeats the 
questions to his senior engineer, and the engineer answers, ‘Oh somewhere between three 
point nine and four point one.’ Finally, he asks the accountant. ‘What’s two times two?’ 
The accountant pauses before answering. ‘What number do you want it to be?’”
GHD has been at the forefront of best practice in community and stakeholder engagement for more than 20 years, leaving lasting legacies in the communities in which we work.
Rapid population growth, climate variability and limited resources are driving stronger demand for infrastructure to service the community. In turn, communities continue to drive change at all levels, and it is this phenomenon that shapes how we conduct our lives, and how we undertake our business.

GHD has been at the forefront of best practice in community and stakeholder engagement for more than 20 years, leaving lasting legacies in the communities in which we work. From our very beginnings, the need for better infrastructure was at the forefront of GHD’s mission.

Initially our community consultation work was carried out by environmental and town planners, who approached communities in regard to large infrastructure projects as part of the environmental impact assessment process. Over time it became clear that even the best prepared Environmental Impact Statement (EIS) was not enough to enable communities to truly understand a project.

Examples of this approach include the Albury Wodonga Bypass EIS (1990), the Coffs Harbour Airport Upgrade (1996), and the Lower Fitzroy River Infrastructure Project (late-1990s). Projects such as the upgrade of the Great Western Highway in NSW, and the APPM Paper Mill Upgrades in Wodonga, Victoria, and Bomaderry, NSW, required increasing levels of consultation and ever greater explanation of the projects’ technical aspects.

Communities’ expectations were shifting away from being accepting of simply receiving information, to an expectation to be involved, and to really understand the decisions that would affect their lives. In Australia and elsewhere, this can be traced back to the 1970s when communities began demanding change; they were no longer willing to simply accept what governments were proposing.
Vocal activist groups formed to put pressure on governments to involve communities in decision-making, and as a response, policy, practice and legislation began to change to ensure this happened.

GHD addressed this evolution in attitudes and expectations by establishing its first community consultation business in the mid-1990s. Jill Hannaford was appointed its leader after joining the company in 1989 as a graduate planner.

With the support of Ken Conway, Sydney Office Manager, Don Dwyer, Director, and senior planning professionals Denis Smith, Vaughan McInness and Deborah Laidlaw, Jill took the opportunity to build the fledgling community consultation practice with both hands. By 1995, a business case had been prepared to establish a designated community consultation team.

In 1997, GHD employed its first community engagement specialist, Lucy Cole Edelstein, and with the support of fellow team members, including Amanda Raleigh, Peter Carson and David Gainsford, the Sydney Community Consultation team was established. A year later the team celebrated its first stand-alone win for a community consultation project.

The project sought community input into the best option for restoring Lady Robinson’s Beach in Botany Bay for the Sydney Ports Authority. GHD’s fee was AUD25,000 and the Community Consultation team was ready for more.

According to Amanda Raleigh, now a Principal Environmental Planner, it was the community focus and variety of clients that attracted her to GHD in 1996.

“GHD was looking for a young town planner with experience or an interest in community consultation,” says Amanda. “Establishing the team was an exciting time; no two days were ever the same. We facilitated community workshops on Magnetic Island, consulted with the community of Mackay, Queensland on an integrated transport study, developed a strategic plan for the Department of Housing in Wollongong, NSW, (which won a NSW Planning Institute award in 1998), and staffed displays for road upgrading projects in small communities in northern NSW.

“By working closely with our engineers, the community and our clients, we were able to develop a broader awareness of the value of community consultation in infrastructure design and the planning process, and ensure that consultation became an integral and accepted part of the project development process.”

In the following decade, GHD went on to employ community consultation professionals in each Australian state capital, and in the early 2000s extended that reach to New Zealand. One of the first engagement projects across the Tasman was the Clear Harbour Alliance, a sewer separation project for Metrowater, which was also the first project alliance in the New Zealand water industry.
With a strong focus on ensuring better management of affected private property owners, the community engagement element which Justin Connolly led to much improved customer service.

During this time the expansion of GHD’s service offerings in community consultation was led by Amy Hubbard and Emily Lazzaro who worked out of Melbourne, Julie Boucher from North Queensland and Sophie Walker from Brisbane. Emily Lazzaro provided thought leadership and significantly enhanced GHD’s reputation in the field with the development of the Engage software tool, based on the work of the American risk communication consultant Professor Peter Sandman.

Amy Hubbard and Sophie Walker worked on many projects in Victoria and were integral to the internal promotion of the service offering. In Sydney, Carolyn Pettigrew focused on community education with Margie Harvie looking after community consultation. Liz Evans and Jo Manion targeted social impacts and human services projects, such as More than Tea and Toast, an assessment of Meals on Wheels in regional NSW.

GHD’s Community Consultation team was quickly becoming a force to be reckoned with, and between 1998 and 2005 the team would see themselves working on the West Charlestown Bypass, the Barron Water Allocation and Management Planning, the Shenhua Watermark project and coal seam gas projects in New South Wales, along with the Sydney Water Desalination Plant, Craggy Ridge Estate Project and the National Broadband Network in Tasmania.

GHD was a founding member of the Australasian Chapter of the International Association for Public Participation (IAP2) and has continued to be a key contributor to best practice community consultation in Australia.
In 2010, Kimbra White, President, IAP2 Australasia said: “IAP2 is delighted to welcome Michael Robertson to the committee of IAP2 Australasia. Michael hails from GHD, a company that has been a long term supporter of IAP2, hosting the original meetings of the committee that drove the establishment of IAP2 Australasia, and supporting Jill Hannaford in her role as one of the first Australians on the IAP2 International Board. GHD’s corporate membership and ongoing commitment and support to IAP2 Australasia is a highly valued relationship that we look forward to maintaining in the future.”

Engineers at GHD have keenly embraced the community consultation service, offering to add value to their projects and to ultimately design better infrastructure. Dean McIntrye, Manager Victoria, saw the benefits in his role on the alliance leadership team for the Murrumbidgee Irrigation Area Renewal Alliance, where feedback from stakeholders was integral to the project design. Reflecting on the project, Dean says community consultation was vital.

“We were making significant changes to 100-year-old irrigation infrastructure and the way farmers managed their properties, so effective communication and engagement with farmers and the local community was as important as the technical solutions themselves, and critical to delivering optimum outcomes for all stakeholders,” says Dean.

In the early 2000s, large infrastructure projects were undertaken using alliances, and Engineering, Procurement and Construction Management (EPCM) contracting. Community consultation was no longer considered a ‘value add’ but rather an essential requirement.

A trend that began simultaneously and also had an impact on the team was GHD’s involvement with alliances. Alliance partnerships integrated the community consultation
team with other services and our ability to offer this service in-house, helped set GHD apart from its competitors. Being a one-stop-shop was attractive to clients and contributed to the success of winning some of Australia’s largest infrastructure alliances.

In 2010, GHD’s stakeholder engagement team was involved in the Horizon Alliance, which provided world-class integrated rail and road infrastructure to the booming south-east Queensland community, and improved rail links for Australia’s mineral exports through the Hunter 8 Alliance and Coal Connect Alliance. Amanda Bromley was the Stakeholder Engagement Lead for the Gateway WA project, which involved GHD undertaking the concept phase and business case for upgrades to the domestic, international and freight terminals at Perth Airport. Reflecting on the project, Amanda describes its unique nature.

“Stakeholder and community consultation was vital part of this work, not just with the airport businesses who were in desperate in need of an upgrade, but all airport users,” says Amanda.

“It was an iconic project for the state and stakeholder interest was high, and it was the first time we incorporated a stakeholder multi-criteria analysis directly into the design process. This was a complex and challenging engagement model which resulted in an outcome that satisfied the client and addressed community concern.”

GHD’s Stakeholder Engagement team was key to the Barwon Water Alliance (Barwon Water; GHD and John Holland) – an alliance established to design and build over 120 projects for a AUD450 million capital works program over five years. The community and stakeholder engagement team’s responsibilities included enhancing
Breaking new ground

Barwon Water’s reputation with its customers by aligning the project team and client’s cultures, integrating engagement into the risk management approach for all projects, and managing the overarching stakeholder engagement program.

Clare Forrest, Senior Stakeholder Engagement Consultant, remembers there was a noticeable shift in the alliance team’s perception of community engagement over the five years.

“They witnessed engagement being seamlessly integrated into everyday processes and procedures,” says Clare. “It became expected to involve the engagement team to identify key project risks upfront, and implement ways to minimise these risks, saving time and money, whilst building new and enhancing existing relationships.”

More recently, since 2011 the success of the Murrumbidgee Irrigation Area Renewal Alliance (MIARA) and the Malabar Wastewater Treatment Plant Improvement Project Alliance for Sydney Water, can be largely attributed to GHD’s strong community and stakeholder engagement approach. In 2016, the MIARA won the IAP2 Core Values award in the infrastructure category.

In South Australia, GHD’s reputation for stakeholder engagement has been enhanced by the work of Birgit Porter who led a project for the South Australian Department of State Development on Prescribed Community Consultation. Birgit completed exemplary work in developing terms of reference for establishing community consultative committees under the South Australian Mining Act and community engagement guidelines for mining companies.

In the Philippines, Chile and the Middle East, GHD’s environment teams are increasingly seeing the value for our clients in providing a discrete community engagement and social impact assessment service. Projects such as SNAP Magat – MARIS Optimization (dam safety and irrigation project) and the Land Acquisition and Livelihood Restoration Plan in the Philippines, are examples of the inclusion of social impact assessment and engagement approaches. Jen Patal-Calpo led the team in the Philippines and has since moved to Abu Dhabi.

Links to GHD’s North American practice have continued to strengthen in recent years with the sharing of our Australian experience, particularly in relation to environmental impact assessment, transport and waste management projects. Katrina McCulloch is Service Line Leader in North America.

As GHD’s stakeholder engagement services with private and public organisations in Australia increased in scale and scope, so did the team’s work with Indigenous communities. GHD assisted the Dunghuti people in South Kempsey, NSW, with an integrated social plan and masterplan known as ‘One Community One Mob’. The work received a 2012 NSW Public Engagement and Community Planning Award bestowed by the Planning Institute of Australia. In 2011, the team helped the Wonnarua National
Aboriginal Corporation establish Australia’s first Indigenous biobank site on a rail corridor between Hunter Valley mines and the Port of Newcastle.

This project set the benchmark for assisting Aboriginal communities in Australia to manage their land, protect cultural heritage and benefit from employment opportunities.

In South Australia, GHD developed the Community Land Use Structure Plans for Yalata, Kooniba and Oak Valley, all of which involved gathering baseline infrastructure data, followed by strategic community ‘visioning’ through workshops involving the community and service providers.

GHD has also been engaged through the South Australian Department of Planning, Transport and Infrastructure (DPTI) Residents Wins Grant Program, to work with the communities of Fregon, Point Pearce and Raukkan to address issues of concern in relation to infrastructure projects and the communities’ suggested improvements.

Globally GHD continues to assist developing and Indigenous communities improve infrastructure, environmental practices and social outcomes.

In 2015, GHD employed more than 70 dedicated stakeholder engagement professionals throughout the world, specialising in social sustainability, social impact assessment, community consultation, stakeholder engagement and research services, communications and risk management.
A commitment to Indigenous economic participation

Although GHD has been delivering services to regional and remote Indigenous communities in Australia for over 40 years, it was not until 2010 that a Business Leader for Indigenous Services was appointed in Peter Dunn.

Peter’s initial work, in support of Closing the Gap, the Australian Government’s strategy for reducing Indigenous disadvantage – was to draft GHD’s inaugural Indigenous Services Action Plan 2011-15, which was approved by John Baird, General Manager (Australia) in 2011.

GHD is proud to be a pioneer in providing career pathways for Indigenous people including cementing a commitment with CareerTrackers, a not-for-profit organisation designed to place Indigenous university students into corporate Australia. The initiative is based on the InRoads program which has been operating in the United States for more than 40 years. Pete Dunn and Jill Hannaford both received awards for their contribution to CareerTrackers in 2012.

BJ Jordan, a CareerTrackers graduate who has been with GHD since 2012 says: “CareerTrackers gave me an amazing opportunity by setting me up with an interview with GHD’s Stakeholder Engagement team. Working at GHD gave me a great opportunity. I’ve gained experience in a wide range of projects and developed skills I had no idea I had, or would ever need.”

In 2014 one of GHD’s CareerTrackers interns, Harry Sabatino, featured in a television documentary about young Indigenous Australian leaders. Harry spoke positively of his
internship in Brisbane and the opportunity it gave him to use his engineering skills to benefit his community on Saibai Island in the Torres Strait, a community who are grappling with the issue of rising sea levels.

In 2015, GHD General Manager – Australia, Phil Duthie signed an agreement with CareerTrackers confirming GHD as one of the 10 Australian companies who had committed to place a minimum of 10 CareerTracker interns each year over a 10-year period.

Since 2011, GHD has hosted over 60 interns working in engineering, finance, environmental science, architecture, stakeholder engagement and law.

In 2011, GHD became an inaugural member of the Australian Indigenous Minority Supply Council (AIMSC), a not-for-profit organisation established by the Australian Government to certify Indigenous-owned businesses. GHD proudly continues to be a member of this organisation now known as Supply Nation.

GHD helped to establish, without any financial interest or legal obligation, several Indigenous-owned enterprises including Barpa Construction, National Aboriginal Construction Partners Projects (NACPP) and Murumal. By 2015 GHD had provided business development and procurement support to more than 50 individual and community-owned Indigenous businesses.

GHD increasingly includes Indigenous businesses in its commercial tenders as both a 'value add' and as a means of supporting Indigenous economic participation. A 2012 sponsor of the World Indigenous Business Forum (WIBF), GHD was invited to deliver the keynote address in Guatemala City in 2014 and Honolulu in 2015.
In an Australian first, in 2015, Pete Dunn introduced one of the successful Indigenous owned businesses, Northern Project Contracting (NPC), to the Australian Government’s Department of Foreign Affairs and Trade (DFAT), with a view to commissioning an ‘Indigenous to Indigenous’ foreign aid private sector model. DFAT supported the initiative and funded NPC, in association with GHD, to undertake private sector development with smallholder cocoa farmers in Papua New Guinea.

**Sustainability**

Principles of sustainability have been the driving force behind GHD’s engineering and environmental practice since 1928, long before the term became a hot topic of governments and communities around the world.

It was in the early 1990s that the concept of what is economically, socially and ecologically practical in infrastructure development began to be challenged by governments on a regular basis, with the end result that sustainability was elevated to centre stage.

At the start of the new millennium, the evolution of environmental legislation and concerns about climate change became two of the biggest issues facing GHD and its client base, and the company rose to the challenge. GHD changed the way it did business and infrastructure developments had to be sustainable for the company to remain competitive in a carbon-constrained environment. Decisions, projects and operations needed to be economically viable, environmentally responsible and socially acceptable.
As this brave new world materialised, in 2003, GHD appointed Stephen Trainor, an environmental scientist with Egis, to lead the company's environmental practice. Under Stephen’s leadership, GHD continued to mould its business in alignment with what environmental professionals call “the greening of engineering”.

By 2000, the environment management discipline was no longer an add-on to projects, it was a service in its own right. As governments realised that a climate-variable future was becoming the norm, GHD embarked on a raft of measures to minimise the impact of its operations on the environment. The company introduced an Environmental Management System (EMS) in 2004, which was accredited to ISO 14001 by NATA Certification International one year later.

In 2007, GHD took a significant step to realising its commitment to sustainability by hosting a world-class event in Australia, Our Planet: Leaving a Legacy, featuring former US Vice-President Al Gore.

The event cemented GHD’s standing in the environmental market and attracted leaders from government and industry keen to identify solutions to reduce the impact of the development footprint.

In many ways, this signalled the maturing of GHD's environmental practice and demonstrated the company’s enhanced credibility on the issue. Consequently, Bill Grace was appointed in 2007 as GHD’s first Sustainability Manager.
GHD is a founding member of the Infrastructure Sustainability Council of Australia (ISCA) and has played a critical role in the project management and development of the ISCA IS Rating Tool. In 2012, GHD sponsored the national launch of the Infrastructure Sustainability Scheme at Australia’s Parliament House in Canberra. Since ISCA’s inception, GHD has been continually represented at ISCA Board level (Nick Apostolides and David Kinniburgh) and also within its various technical working groups.

Sustainability has a strong commercial driver; increasingly our clients face an economic imperative to use their assets more effectively. We are there to help them rehabilitate existing assets instead of replacing them, and looking at ways to improve efficiency and lower operating and maintenance costs.

In addition, we continually look to improve the overall sustainability in the design and construction of new assets, using the ISCA rating process as the guiding principle for our designs. These needs guide the thinking of our teams across our five market sectors.

Since the early 2000s, GHD led key environmental projects in the Greater Gulf Cooperation Council region of the Middle East, including environmental impact review/analysis and sustainability consulting for the iconic Palm Islands development.

The company carried out numerous ecological field surveys for the oil and gas sector in the Gulf as well as airport developments including Doha. In Qatar, GHD completed a large eco-survey of the country’s petroleum gas fields.
By 2010, GHD had more than 700 environmental practitioners working in more than 100 offices in five continents, across 10 service lines – Air and Noise, Climate Change, Contamination Assessment and Remediation, EIA and Approvals, Forestry Management, Natural Resources, Spatial Sciences, Stakeholder Engagement, Waste Management and Health.

By 2011, sustainability had reached a pinnacle of interest for governments and communities globally. The concept of what is economically, socially and ecologically practical in developments was being challenged, and drove a higher demand for the company's environmental services.

Integrating service delivery in transportation, infrastructure and environmental disciplines validated GHD’s leadership in this area.

In Asia, from 2004 we began working with the Development Bank of the Philippines to provide technical advisory assistance services for the implementation of the Environmental Development Project. As part of this project GHD provided assistance with improvements to air and water quality, the sustainable management of fresh water supply, enhancements to water supply and sanitation services, implementation of ecological solid waste management, and investments in renewable power technologies and cleaner fuels.

In the United Kingdom, GHD developed the Low Carbon Strategy for the National Health Service (NHS) in Wales, in order to reduce carbon emissions throughout its operations.
Jill Hannaford grew up in country New South Wales and one experience from her high school days, in the regional town of Griffith, has stayed with her all these years. “I was in a high level English class and I sat next to a girl from a nearby Aboriginal community. I remember thinking that even though she was very bright and capable, no matter what she did, she would never have the opportunities open to me. She wouldn’t go to university. That always struck me as not fair or right.” From that point, an urge to promote inclusivity and diversity was always a big part of Jill’s life and work.

With a couple of breaks, Jill’s been with GHD for more than 28 years. For much of that time she led the Stakeholder Engagement and Social Sustainability team at GHD. It’s up to Jill and her team to interpret technical aspects of GHD’s projects to enable people affected to understand and connect with them - paving the way for community input. It’s a role that she created herself. “I think longer term and could see that communities would want to have a better understanding of the infrastructure affecting their lives,” says Jill, “Which is why I recognised the necessity for setting up the community consultation business within GHD.”

Key to Jill’s approach is going the extra mile with people and communities affected by our work.

“I get a real buzz out of going to community consultations, where for instance, our road engineers have come up with a concept design, and someone who lives in the area says, ‘I’m not an engineer, but would it work if you changed that access point, because that would help my farming, then my cows wouldn’t have to make a two kilometre detour.’ The engineer accommodates the suggestion and the project is better for the local community.

With community engagement not uppermost in the work of most Australian engineering companies in the early 1990s, Jill set about creating new ways to engage communities, and by doing so, achieve better project outcomes.
“We’re about raising the bar when it comes to the community’s understanding of technical infrastructure issues,” says Jill.

“Even if all aspects of an environmental impact assessment have been addressed, no matter how good or technically brilliant the solutions we come up with are, if the community doesn’t understand them, or feel they’ve been excluded along the journey, then there’ll be problems.”

Jill’s story is also one that reflects GHD’s continuing evolution on gender diversity in the workplace. Perhaps it has something to do with her first day with the company in 1989.

“I wanted to resign on the spot,” she says. “I was in a windowless room with a group of visiting British railway engineers. I was the only woman and they asked if I was the tea lady! I thought ‘this isn’t going to last very long’.

“Thankfully I connected with one of the environmental planners, who said ‘you’re in the wrong group, come with us’.”

With an honours degree in Applied Science and a Masters in Urban and Regional Planning – and four children –Jill’s experience as a trailblazer hasn’t gone unnoticed by colleagues who combine parenting responsibilities with their work.

“I suppose I’ve had a role in affecting change over time. I get asked to give advice and to tell my story. I’m happy to fulfil that role and share my experiences. I’ve been one of the people, with others, who challenged some of the traditional practices and biases, and turned the gender and diversity issue around, from being viewed as something ‘we didn’t need to focus on’, to being an initiative that is very important to GHD’s future.”

Following Jill’s advocacy, in 2014 GHD formally signed a partnership with CareerTrackers, the Indigenous internship program which places Aboriginal and Torres Strait Islander university students into corporate Australia.

In June 2016, Jill was appointed to the role of Technical Services Leader, Australia where she is responsible for the development of technical leadership at GHD. She has a focus on developing thought leadership and connects professionals pursuing technical excellence.
Chapter 29.

The exponential growth of GHD in the 2000s found the company increasingly involved in higher risk projects, delivering new services outside typical design work, and facing levels of health and safety risk that were unchartered for the business.
The past decade has seen enormous change within GHD as a result of external and internal pressures, bringing with it both challenges and opportunities in the Health, Safety and Environmental (HSE) management area. Not only have the economic conditions over this period tested many organisations, new legislative requirements and the growth of third-party client pre-qualifications in high-risk industries, have contributed to increased HSE expectations in downstream industries like consulting. GHD has been able to show a determined commitment to meet both internal and external expectations, embedding HSE into every aspect of its operations – protecting the safety of stakeholders (employees, clients, external suppliers) and the environments in which we operate.
The company continues to be recognised for its global leadership in HSE; examples include GHD being awarded Best Workplace Health and Safety Management System 2010 – Private Sector, by the national regulator Safe Work Australia, and more recently, GHD in North America receiving Chevron’s Best in Class Award in 2014 and 2015.

The merger with CRA in 2014 and the acquisition of UK-based GHA Livigunn in 2015, accelerated GHD’s growth in servicing global clients. The next growth phase for the company is development and implementation of a truly global HSE approach across the GHD network. GHD’s Global HSE Management Standards and Strategic Plan (2015-2020) provides clear sight for advancement, and the company’s internationally certified HSE management system (OHSAS 18001 and ISO 14001 standards) establishes the framework for a globally consistent approach to HSE.

Unlike organisations whose HSE improvement focus is directly linked to ‘lag indicators’, GHD concentrates on building a safety culture through employee engagement initiatives and ‘lead indicator’ performance. This approach has served the company well, reducing incident rates (Total Recordable Incident Rate – 80 percent since 2008), and enabling periods of up to 12.6 million consecutive hours (April 2015) without Lost Time Injury (LTI). This ultimately led GHD to achieving IBM ‘world class’ results in its 2016 Safety Culture Survey. This is impressive considering the growth in people numbers during this period and a significant change in organisational risk profile which occurred with the CRA merger.

The following sections illustrate key milestones that positioned GHD for the success it enjoys today.

**Catalyst for change – circa 2007**

By the mid-2000s, GHD was firmly committed to implementing health, safety and environmental management at the local level – a reflection of the organisation’s size, community expectation, and the nature and scale of the projects it was involved in. However, the creation of a health and safety platform that leveraged the importance placed on safety by multinational clients in higher-risk industries would result in greater impact on employee safety while also boosting commercial opportunities.

Like many organisations yet to make the conscious link between health and safety performance and business success, GHD had traditionally managed the HSE function through employees that held an interest in the area, rather than as an integral component of business. By way of example, Kevin Bridgeman (currently Group Manager – Quality) held the health and safety role part-time in 2004, pulling together the blueprint for GHD’s early health and safety management system.
GHD won the 2010 Best Workplace Health & Safety Management System (Private Sector), SafeWork Australia National Award. From left to right: Ian Shepherd, Clayton Harrison and David Beech Jones

Having developed and maintained the internationally certified GHD Quality Management System, it was Kevin’s vision and guidance that allowed the executive team to recognise the opportunities that a coordinated approach to health and safety would bring to the company. Subsequently in 2005, the executive team approved the development and implementation of a company-wide health and safety management system. A short time later, Wayne Reilly of the South Queensland Operating Centre (again in a part-time capacity) began providing high-level health and safety policy and strategy support.

The exponential growth of GHD in the 2000s found the company increasingly involved in higher risk projects, delivering new services outside typical design work, and facing levels of health and safety risk that were unchartered for the business. Early recognition and movement towards change started with GHD legend Pat O’Dwyer, then General Manager – Contracts and Risk. Pat pioneered the introduction of a behaviour management system known as ‘BeSafe’ across Australian and New Zealand operating centres. While the life of BeSafe within GHD was short, enough interest in health and safety had been generated to create a platform to build on.

Having delivered similar roles on smaller, lower profile projects (and prior to Engineering Procurement and Construction Management (EPCM) becoming a popular mode of project delivery), GHD bid for an EPCM role with Port Waratah Coal Services in Newcastle. This landmark project would involve the delivery of a third coal loader terminal, making Newcastle the largest coal port in the southern hemisphere.

The outcome of this bid would become a watershed for health and safety in GHD. The company came second, missing out on the contract award, however the explanation that Port Waratah Coal Services (PWCS) gave to GHD was most enlightening.
While the quality of the technical team submitted within the bid was viewed positively, PWCS believed GHD’s health and safety management systems, performance and culture were not as mature as its competitors who were delivering similar services. While GHD’s attention to health and safety previously had been focused internally on its people, the executive team heeded this important advice and recognised the commercial advantage that health and safety management would bring to future opportunities. The result was a more strategic and cohesive approach.

Clayton Harrison, GHD’s current Group Manager – HSE, joined in late 2007. Prior to that, his career had mostly been within the New South Wales public sector in the areas of road construction and maintenance, including regular interactions with GHD in a design capacity.

“My ‘official’ introduction to GHD was through Geoff Wickens who was the Newcastle Operations Manager at the time,” Clayton recalls.

“Through our discussions, held initially alongside the under-six soccer pitch where both our sons played, it was obvious that GHD had big plans for health and safety management. In hindsight, my ideas and enthusiasm for linking traditional health and safety management into a commercial environment must have struck a chord, as this led to an introduction with then Newcastle Operating Centre Manager, Tasos Katopodis.
“On my arrival at GHD, it was apparent that the company wanted to progress in the area of health and safety, and we shared similar values and ethics. It was obvious that GHD had mentally prepared itself for change, and I love nothing more than a challenge”.

**Global approach takes shape**

Cultural diversity and global spread introduces compliance challenges. Early mapping of GHD’s footprint, identified that it operated permanent offices in 27 different legal jurisdictions, which has now grown close to 50, with the expanded business in North America.

“Unlike many organisations, who are able to focus their health and safety approach on a single industry – manufacturing or mining, for example – providing professional services to the global markets of water, energy and resources, environment, property and buildings and transportation means GHD faces a wide range of risk and legal jurisdictions,” Clayton adds.

“It was clear from the outset, a health and safety discipline-driven approach would be challenging in a commercially focused service-based organisation”.

In recognition of these challenges, the health and safety model GHD has created establishes a suite of global minimum standards. This allows flexibility to implement subtly different approaches within various geographical regions, while being cognisant of specific local legal, cultural and commercial pressures; it’s an approach that resonates within the business.

Early gains in health and safety performance, followed by external recognition in the form of awards, demonstrate the benefits of this approach. The integration of the Health and Safety and Environmental Management Systems in 2011, signalled the start of a major push to simplify the systems across the business. The impact of this integration has been overwhelmingly positive, introducing a heightened level of consciousness of the fundamental importance of effective HSE by people across all levels of the company.

Integration and simplification of management systems has enabled a maturing risk management attitude and engendered further debate about higher risk project opportunities. The merger with CRA in 2014 extended the company’s reach in the oil and gas sector, and in our ability to undertake higher risk environmental remediation projects. By deepening relationships with global resource industry clients, the merger provided a platform for both companies to use each other’s experiences to create a stronger, global approach to HSE.

The path of improvement both GHD and CRA experienced in the six years prior to the merger is strikingly similar. Both companies shared a deep commitment to the wellbeing of their people and a proven understanding of the commercial impact that HSE can have on business. While differences between GHD’s risk-based, and CRA’s behaviour-based approaches were clear, opportunities for improvement in a merged environment were considerable.
Joe Cruseturner, GHD’s Principal in Charge of Safety in North America comments: “The combining of the CRA and GHD HSE approach will establish a new industry standard in North America, one that clients will really appreciate”.

The work is now well advanced in realising this ambition. In the first phase of this change, GHD officially confirmed safety as a core value, and endorsed a suite of HSE Management Standards and a new five-year HSE Strategic Plan, embracing the higher levels of flexibility to cope with regional cultural, legal, industry and client expectations. This enables GHD regions to build the appropriate level of business systems to support their needs at a standard acceptable to the company as a whole.

"While both heritage organisations have exhibited remarkable improvement in safety performance, combining the best HSE attributes of both GHD and CRA will truly result in a ‘game changing’ system that will become the new consulting industry standard from a client perspective," says Joe.

GHD’s first Safety Culture Survey provided a glimpse of this opportunity. The results of the 2016 survey illustrated GHD’s transformational success in changing employee perception of safety – achieving world class results in all three comparable IBM criteria (IBM is GHD’s host for annual People and Safety Surveys).
Clayton Harrison believes the survey marked a vital waypoint for the company. “It was clearly a measure of our success in increasing the profile of safety throughout our business,” he says. “However it was also an illustration that achieving a safety culture is not an overnight fix”.

Of the future, Clayton says new synchronicities will emerge, further establishing GHD’s world-class HSE credentials. “The integration presents many opportunities for GHD. The combined organisation has common historical threads, goals and some might say DNA – it’s a cocktail of energy that will not only see GHD prosper in the years ahead, but will create new industry benchmarks for others to follow”.
Born and raised the Indian state of Tamil Nadu, as a child, Sube was fascinated by the massive concrete and steel structures his engineer father worked on - hydro-electric dams set deep in the remote Nilgiris District, part of the Western Ghats mountain range. For a time his early schooling was on the construction site deep in the remote forests of the region. It was a precarious existence, with flash floods often meaning the classroom’s temporary status was well earned. Perhaps because of this early introduction to mitigating and utilising nature’s forces, Sube’s passion for applied sciences developed quickly.

At high school in the port town of Tuticorin, he relished mathematics, and by 18, Sube had his heart set on a career in civil engineering. After graduating with a CE degree in 1985, an ambitious rail and road scheme in Uttar Pradesh saw Sube embark on his first project as assistant project manager for the Indian government-owned infrastructure company, Rail India Technical and Economic Services (RITES) - supervising construction of a kilometre-long rail and road bridge across the Rihand River.

Keen to enhance his professional qualifications, after five years with RITES, in 1990, Sube headed to the USA to pursue his MS Environmental Engineering at the School of Mines and Technology in South Dakota. His first job stateside came two years later. As an environmental engineer with Michigan consulting company Beckler Consultants, by 1996 Sube had risen to Director of Operations, but a hunger to run his own show couldn’t be denied. Advanced Engineering Solutions was the result. Starting out as a one-person operation managing air quality and delivering IT solutions for automotive clients, by 2003 the company had 40 staff, with offices in Michigan and Toronto.
Sube’s entrepreneurial success had not gone unnoticed and with CRA keen to develop their air compliance services, he and his company was the ideal fit. Over the next decade, Sube went on to establish CRA’s air business in Michigan, the Midwest and California, and position the firm as a world leader in greenhouse gas verification and air permitting. From 2011, the focus widened, targeting the oil and gas sector in the Mid-Continent Region and the Rockies. With a portfolio of successes behind him, including leading the development of FASTRAC - an automated air permitting tool for the oil and gas sector, Sube says it’s all about teamwork.

“Our plan over the next five years is to expand the air services we provide in Midwest, West Coast, South and Rockies, to other states, develop our service offerings, and pass on to clients old and new the remarkable benefits of our global network.

“Today we use the concept of ‘one GHD’ to promote the work we do, it’s about no boundaries between offices and global collaboration. Teamwork is what creates growth.”
Since its inception, the Business School has touched the lives and careers of thousands, and has embodied GHD’s culture of leaders wanting to ‘give back’ and help unlock the potential of the next generation.
30. GHD Business School

David Beech Jones / Gerard Noone

The GHD Business School is the branded name for the iconic organisational training capability that supports our people’s development and underpins GHD’s technical leadership. By providing internal programs and knowledge-sharing environments – training, seminars, conferences and eLearning – as well as collaborations with leading independent providers, the Business School is a key vehicle for delivering GHD’s commitment to skill development across our global network.

To build capability across every aspect of the company’s work, the Business School often works in partnership with world-class international training institutions such as Harvard Business School, and other leading providers. Established in 2005, the initiative is the result of a visionary plan to transform what had been an informal approach to training to a new level, and make GHD a great place to work. Before the Business School opened its ‘virtual’ doors, skills development at GHD was reliant on goodwill and local mentors. Whilst this traditional and time-honoured approach was highly effective in a low-growth era, the Business School was borne of a need to fast track this learning cycle and to share best practice across our global network. It was also a core plank in attracting and retaining the best people in a competitive market for talent.
First advanced as a concept by David Beech Jones and Tom Fricke in 2004, it was enthusiastically embraced as the people-oriented centrepiece of GHD’s Realising Opportunities strategy. In its early days, Jacinta McNena, Steve Young, Joan Sergeant, Rosemary Faraone and Amanda Bennett were instrumental in developing momentum. By 2005, the Business School was up and running, with its cause championed by senior executives, and later Ken Tabart appointed its roving ambassador. Since its inception, the Business School has touched the lives and careers of thousands, and has embodied GHD’s culture of leaders wanting to ‘give back’ and help unlock the potential of the next generation.

Guided by a key objective set down in GHD’s 2005 Strategic Charter: “to develop our people to fulfil their careers and contribute to achieving GHD’s business goals,” the Business School continues to achieve this through imaginative and consistent training systems and environments. In recent years it has been responsible for many fundamental changes in how GHD approaches its internal training environment. Nurturing new models of skills-development, and working closely with GHD’s Technical Services Advisory Group and the then CEO Ian Shepherd, the Business School was responsible for developing the GHD Technical Conference model, building on the long-established Service Line Seminar approach and new style Technical Conferences.
This brought together service line communities and created a new forum to explore new ways to provide clients added-value and smart solutions. Accompanying this approach, the GHD Award for Technical Excellence was developed.

GHD’s Technical Conferences continue to provide some of the industry’s highest calibre training events, covering areas such as water and environment, asset management and stakeholder engagement and all points in between. Since 2008, the Business School has also coordinated the Annual Executive Forum – the meeting of our top 50 executives where we plan strategy and business plan implementation and share best practice.

The Business School was further strengthened in 2014 through GHD’s merger with CRA. Since 2005, CRA operated its own employee training initiative – the CRA Institute, now rebranded as the GHD Business School in North America. Key to this transition have been Gregory Carli, Principal-in-Charge (Niagara Falls, New York), and Barbara Laurens (Niagara Falls, New York, and St. Catharines, Ontario). Through their efforts, the GHD Business School has begun another exciting chapter of its global evolution.

Relying on the passion and commitment of GHD people wishing to assist the career development of colleagues, the Business School echoes a culture of knowledge-sharing, and a philosophy that goes back to the company’s founding fathers. While managed from Melbourne, in reality, it is a dynamic global network, comprising hundreds of GHD’s own people – highly experienced practitioners and leaders in their fields who offer their expert guidance and technical know-how as internal trainers and mentors.

Powered by web-based technological and social media innovation, the Business School’s past achievements form the foundation for its future evolution. Gerard Noone, GHD Business School Leader since 2008, says as the global training environment changes, the Business School will remain at the cutting edge.

“In a few years our programs may look very different,” says Gerard. “We’ll see a major expansion of our ‘blended learning’ approach – fuelled by the application of online digital media, but combining web applications with traditional methods that benefit from the physical presence of teacher and students.

“We’re moving from an instructor-led approach, to one which involves using ever greater technological innovation to connect our people across the world, through social collaborative online training. It’s a really exciting prospect.

“At the heart of GHD are our clients, and the Business School continues to provide modules of learning and programs to help build a genuine client service culture. The way we win work and manage client relationships continues to change in a complex environment and the Business School helps our people adapt to this changing context.”
Since 2008, GHD has benefitted from the step-up development of the Business School involving a core stable team of experienced professionals comprising:

- David Beech Jones – General Manager – People
- Gerard Noone – Business School Leader and Chief Learning Officer
- Pamela Farrell – Leadership and Management Development
- Peter Sharp – Technical Development/Operational Support Programs
- Adam Champion – Learning Systems and Event Management
- Barbara Laurens – North America Business School Manager

With its successful record, who better to report on the impact and influence of the Business School than four of its students. Their testimonies paint a vivid picture of our potent capability in training, and our commitment to skills and knowledge sharing across our global network.
“When I started with GHD in the early 1990s, technical development and leadership training was reliant on the goodwill of motivated and passionate senior professionals and principals. The world has moved on since then, and with advanced technologies, the workforce of today functions in a highly collaborative environment, and that’s where the Business School comes in.

“My first experiences of it was relishing the opportunity to absorb training in a disciplined manner. One of the first leadership programs I attended was the Harvard Business School program ‘Leading Professional Services Firms’, delivered by Professor Ashish Nanda. It was a truly inspiring experience.

“I was like a sponge, and recall so many ‘light bulb‘ moments, when lectures organised by the Business School gave names and labels, and therefore validation, to my personal experiences.

“It has been instrumental, not only in building discipline into our training, but in refining how technical gatherings are organised. This not only means knowledge-sharing, but promotes the less tangible value of creating camaraderie – cementing connections across the global GHD network.

“The Business School is central to my continuing leadership development.”
Penny Honey, Graduate Town Planner, Melbourne, Australia

“In my very first week at GHD, the Business School helped me to feel comfortable and enabled me to meet my first new friends in the company. Over the course of the two-year graduate program, it provided a range of training courses focused on both personal and technical development.

“I looked forward to the sessions, to catch up with the other graduates, but also to better understand how things are done in the ‘real world’.

“One session I found particularly interesting was the Myer-Briggs Personality Type Indicator session. This gave us an insight into the characteristics of our own personalities, and the personalities of others. It helped me understand the different ways people communicate and how they prefer to do things. I also like to think it helped explain why my desk is not always as tidy and seemingly organised as the desks of some others around me!

“The Business School provided many types of sessions, including the notorious ‘presentation skills’ workshop, which a colleague had warned me about. Looking back, the session wasn’t really that daunting. We presented a topic of our choice to other graduates (whilst being filmed), received constructive feedback, and later were able to watch our presentations back. Watching myself present was a very odd experience, but I feel I’ve become much more aware of how I speak as a result. I now speak a lot more slowly.
“Since finishing the Graduate Program, the School has offered continual learning opportunities, through both formal and informal methods. It was incredibly reassuring to have such a structured and effective graduate program as a new graduate to the business. It made the transition from full-time student to consultant far more manageable.”

Jen Carney, Regional People Advisor, North America

“I was with Stearns & Wheler when it merged with GHD in February 2009. Joining GHD was a huge transformation for us, and with it came many new challenges and possibilities. There was tremendous excitement about joining a global network of people and resources, about developing connections with new technical capabilities and expertise, and about the additional opportunities that would come for us to develop our careers.

“The GHD Business School team from Australia reached out to provide immediate support as we navigated our way through the integration process of the Business School into the US operating centres.

“I was impressed how quickly they connected with me, and how eager they were to connect. Soon I was collaborating with others in the global Business School community, the global People team network and beyond. It was all so easy and welcoming.

“As time progressed, I was presented with an opportunity for a three-month short-term career development assignment, working directly with the team in Melbourne, to further develop in this new role.

“This was an invaluable experience. They helped me gain a better understanding of my role as a Business School representative in the US, and what the Business School can offer. I walked away with strong relationships with those who were doing the same type of role I was now doing, and I knew I had a connected network to reach out to in the future. I now felt confident to implement many of the Business School programs and approaches into North America.

“One of the many highlights when returning to my OC in North America was consulting with local leaders and being able to implement Job Manager, Project Director and Service Group Manager training courses regularly. All of a sudden our people across the global GHD were speaking a common language and this contributed to a consistent practice of managing jobs.”
Paul Murphy, Technology and Technical Applications Leader, Brisbane, Australia

“My GHD journey began in 2000 after the close of the Sydney Olympic Games. Still officially Gutteridge Haskins & Davey at that time, GHD was then a loosely connected network of offices. Cross-operating-centre collaboration was starting, but it was patchy.

“My first experience with learning and development at GHD was when I was invited to attend a Defence Project Management Service Line/Defence Demand Stream Technical Conference. ‘Demand streams’ was a term we used prior to the use of ‘market sectors’.

“Touted as an opportunity to receive an update on the latest technical developments and procurement methods, it was a one- and-a-half-day workshop characterised by limited preparation by most presenters. While the technical education value of these early GHD learning events may have been mixed, the value of the relationships formed was immense and transcended role, geographic location and technical discipline.
“As a young technical service line leader, I was tasked with conducting my own technical seminar for the security service line I managed. I was given a five-page briefing pack on how to run the seminar, a modest budget, and little else, and told to plan and conduct this technical seminar. All the seminars during this time seemed to operate on a similar basis.

“Things changed significantly when the Business School was launched. We were challenged to think differently. In part this was due to the standards and expectations around learning and development shifting to a higher quality of preparation and delivery. One example is the GHD Senior Leadership Program. Launched in 2009, it was a demanding behavioural program where about 20 senior leaders spent two days in a retreat environment. The bond formed between us in that 48 hours continues to this day.

“Some ten years after organising my first GHD Technical Seminar, I began the planning for a new format GHD Technical Conference – this time with the Business School’s support in terms of logistics, programming and coaching of presenters. The Business School helped me focus on program outcomes, and the bigger picture intent of the conferences: making connections between market, client, technical capabilities, and the actions needed.”
Phillip Bradley grew up in dairy country near Echuca in Victoria. The son of a bricklayer, life for the young Phillip in the small country town of Cohuna was about fishing, hunting, and sport – particularly cricket. And above all it was about hard yakka.

“If you worked hard things would work out,” says Phillip, reflecting on the values passed down through the Bradley generations. At the local high school with little exposure to a life beyond farming, notions of a career were hazy. A capable batsman at club level, he dreamt of playing cricket for Australia, but professional sport and a ‘baggy green’ wasn’t to be. Architecture appealed, but a presentation by an articulate accountant at a careers night created a spark – accountancy wasn’t about numbers, it was about how calculations are the bricks and mortar for a successful business.

Armed with a Bachelor of Business (Accounting) from La Trobe University in 1982, Phillip was taken on as a graduate recruit by Arthur Andersen before moving on to William Buck four years later. Phillip became involved in assessing corporate and operating structures in pursuit of best practice and became a partner in the highly-regarded business in 1989. This was a momentous year for the 29-year-old Phillip. The State Electricity Commission of Victoria (SECV) was outsourcing its geotechnical team and he jumped at the challenge to help it in this transformation.

“In 1989 and 1990, it was the worst recession in my lifetime. I was in the business of helping start-ups and no matter who rang in those days, the answer was ‘yes,’” says Phillip. “The SECV wanted an advisor to help the geotech group set up a commercial company as a new enterprise, and that team was headed by Peter Wood. And the team set up a company called Geo-Eng.” After spending 18 months helping Peter establish Geo-Eng, Phillip would work with the company over a decade to grow the team from 13 engineers and technical staff (whose experience was solely in the state public sector) to become a company of more than 100 people serving clients across Australia and overseas. From establishing equity structures, financial management and reporting systems, to realising the company’s strategies in WA and China, Phillip’s work with Geo-Eng led to his involvement in the engine room of the company’s merger with GHD in 2002.
In 2007, the GHD’s finance committee wanted a view from the outside, and Phillip, then negotiating the final stage of William Buck’s own merger with Grant Thornton, stepped up. Shortly after, the opportunity to jump ship emerged, and in early 2009, he was approached with an offer to join as GM Finance. In two minds to end his highly successful 20-year plus career as a senior partner with what was now Grant Thornton, it was his wife Lisa who made up his mind. “She said, ‘You love GHD,’ and she was right,” says Phillip. “I love what the company does, how it creates, how it transforms things. ”A key player in GHD’s many merger negotiations since his appointment, Phillip’s take on the challenges facing the company’s global growth, and the forces at work which are redefining GHD’s future, is profound and instructive.

“We've been incredibly successful in the Australian marketplace – the number one brand in the infrastructure space, and the opportunity to expand in North America is phenomenal, but the playing field has changed, and will change more,” says Phillip.

“What we’re seeing now is the ability of economies to sustain lifestyle but being able to deliver transformational infrastructure projects in communities is getting harder. Many western governments are essentially overgeared and may never recover, so there needs to be a transformation of who pays for infrastructure, and who owns it. Where the community and stakeholders fit in to that equation is still in an evolutionary phase. And that’s right across the world.” Despite the uncertainty around that evolution, what makes GHD perfectly placed to carry on succeeding, is its leadership, says Phillip, but not in a traditional ‘top down’ sense.

“We’re all out to make a difference and it’s that egalitarian streak that flows through GHD that binds the whole thing together. The reality is, leadership in GHD is across hundreds of people, in our web of highly-qualified decision-makers, committed to doing the right thing. That’s the heart of our success and always will be.”
Chapter 31.

A dominant, overarching factor in the success or failure of a merger revolves around the people involved. The value to GHD lies in the people who join, their skills and their relationships.
31. Mergers and Acquisitions

Peter Wood / Rob Knott

One plus one equals three

Whilst the term ‘M&A’ (merger and acquisition) is commonly used, the businesses referred to in this chapter have in fact been acquired by GHD, but the people have merged into the GHD fold. The word ‘merger’ conveys the real sense of what took place and will mostly be used throughout the chapter.

Over the past 25 years, GHD’s merger activity has evolved from the occasional opportunistic transaction to a core part of the company’s growth and diversification strategy. This is illustrated by the number of mergers in recent years compared to those in earlier years. Ten mergers took place in the 1990s compared with 48 the following decade. GHD’s strategic focus is demonstrated by the range of companies that have joined, their geographic locations, their market presence, and the people and skills they have brought.

The past quarter of a century has seen GHD move from an Australian business to a global company. Permanent offices are currently established in 11 countries and offices have been located in at least six other territories for varying periods. Most of these new frontiers either began with the acquisition of a locally based firm, or became fully established via a merger, shortly after a few intrepid individuals had established a beachhead. These mergers enabled GHD to quickly understand the local culture, and they provided instant skills and clients on which a business could be built.

GHD has acquired around 80 firms in total since the mid-1980s. All of them have impacted the business in significant ways, but two have been on a scale that truly changed the nature of GHD. These were Egis Consulting in Australia in 2002 and Conestoga Rovers and Associates (CRA) in North America in 2014.
The impact of a particular merger however is not only defined by its size. It can be measured by the quality and range of skills acquired, the strength of new client relationships, and the added leadership capability adopted from the new business. In new locations, there are other intangibles such as the collective learning about local business cultures that come with an established business.

Many of the mergers are described in the various chapters in this book which discuss individual operating centres. To avoid duplication, the intent here is to focus more on the processes that led to the mergers, their impact on GHD, and some of the M&A experiences.

**Government outsourcing**

During the 1990s, there was a shift in policy among a number of government bodies in Australia. The recession in the first years of that decade led state governments to privatise assets and to sell their engineering design groups, a process referred to as ‘outsourcing’. Typically, the engineering teams would transfer to the acquiring company along with a contract to provide their services back to the original government department for a period. This model was highly attractive to most engineering consulting companies as it provided access to specialist skills, and in some cases, a secure workload in the first few years. GHD took part in the tender processes and had some very significant success. In 1995 a large part of the Western Australian Water Authority’s (WAWA) engineering design team joined GHD. That coincided with the start of a significant capital spending program in that state, and GHD’s water engineering team in Perth has remained the dominant consultant in WA for more than 20 years.
In 1997, the Australian Government’s Works Australia team joined GHD and this became the start of a property and buildings business that is now global. For the first time, GHD employed a team of architects and building engineers which were based in a number of east coast offices. In 2014, GHD further strengthened its architectural brand with the integration of the team from Australia-based Woodhead Architects, and in 2016 added the Creative Spaces business in New Zealand to its team.

The Geo-Eng team, which joined in 2002, was founded on the outsourcing of geotechnical, mining and dams expertise from the former Victorian Electricity Commission. Geo-Eng had also acquired the dam engineering group from WAWA and thus the Geo-Eng merger completed the total WAWA outsourcing for GHD.

There was little government outsourcing in Australia throughout the decade from 2000 to 2010, but some activity has now started anew. A team from Horizon Power in Western Australia joined GHD in 2014. Outsourcing processes varied from government to government. In all cases, there was strict adherence to government purchasing guidelines, but there was also a strong desire to choose an acquiring organisation that would look after the people, provide them with an appealing work environment and conditions, as well as ongoing career opportunities.

At the same time, the outsourcing department needed assurance that they could access the skills into the future, in a reliable and professional manner such that their assets could be well maintained or built, with minimal dispute and disruption. GHD’s success in these outourcings was testament to its reputation and ability to meet or exceed client expectations in these criteria.

Stepping stones to the world

Many of GHD’s international operating centres were built around one or more acquisitions. For example, the business in Chile started with the acquisition of Promina SA. Manukau Consultants in New Zealand brought a strong platform which was added to with Smith Wood and later City Design. The Malaysian business was mostly based around the acquisition of Angkasa Jurutera Perunding (AJP) in Kuala Lumpur, whilst Meinhardt Middle East, acquired in 2001, became the platform for a rapidly growing buildings and infrastructure business over the following decade in Qatar and the UAE.

In 2003, GHD made its first steps into the USA via an asset management contract in Southern California. A small team from Australia and New Zealand established a toe-hold and a reputation in the water sector, but it was difficult to achieve enough critical mass to sustain a permanent presence and to continue attracting new local talent. However, within a few years GHD appointed a local manager in Don Graf and he, along with the Mike Polin, then general manager responsible for the growth of GHD’s business outside Australia, began to court a number of engineering consultancies on both the east and west coasts.
In quick succession, GHD acquired RoseWater Engineering in Seattle, CSA in Arizona, along with the Arizona Engineering Company, and could finally claim to have a substantial business on the West Coast of the US. The addition of Stearns & Wheler some 12 months later meant that the US operation was starting to rival the larger operating centres in Australia for size and revenue.

Following the success of the Stearns & Wheler merger in the northeast of the United States, GHD developed a plan to diversify its presence across the US and Canada, with its core reputation in water engineering to underpin the focus and strategy.

The next major opportunity arose with Winzler & Kelly on the West Coast. An earlier approach had been made to this firm in 2006 but the timing didn’t suit. In 2010, a new approach was led by Fraser Watt, in his then role of Operating Centre Manager — Philippines, and Peter Wood as General Manager Asia. Winzler & Kelly had an office in Guam, and Fraser saw potential in teaming with them for infrastructure projects tied to the US military presence there.

The timing of this encounter was fortuitous. Winzler & Kelly had just completed a strategic review and formed a view that a merger with a larger firm would benefit their people and their clients. Their CEO, Iver Skavdal, led the negotiations with support from his management team, including Steve Cox. A deal was struck and the two companies merged 12 months later. GHD was now equally spread between the east and west coasts of the US and had a fledgling business in Toronto, Canada, led by Colin James.
Around this time, GHD employed Rich Wankmuller, initially in a strategic role to expand the company’s global business. Rich, however, had a wealth of experience in North America and had only just relocated to Australia. He was soon persuaded to return to the US as General Manager Americas, and focus on GHD’s growth plans for the region.

The Sernas Group in Toronto became the next merger opportunity. Led by their President, Reg Webster, the Sernas Group had built a strong reputation with a number of clients in the Greater Toronto Area, particularly in urban development. As a rapidly growing city, Toronto provided an excellent base for GHD in Canada and created opportunities to leverage other infrastructure-related services off the back of their established business.

Over the space of a few years GHD staff numbers in North America grew to more than 1000, mostly thanks to the mergers with Stearns & Wheler, Winzler & Kelly, and the Sernas Group. This success was widely noticed in the industry and led to many approaches to GHD from smaller firms that were seeking an acquirer.

An interesting precursor to the Egis merger was the acquisition of Geo-Eng in early 2002, which was instrumental in establishing the company in China. This group of around 100 people had been founded ten years earlier through the management buy-out of the geotechnical group within the Victorian Government-owned power utility. Geo-Eng added significant skills in geotechnical engineering to complement those obtained some five years earlier with the acquisition of Longmac in NSW. Importantly, Geo-Eng added new skills in mining and greatly helped GHD to become Australia’s leading dam consultant with the addition of a large team of dam engineers in Perth.

Geo-Eng also owned 50 percent of two consulting joint ventures in China, located in Beijing and Wuhan. Thus the acquisition of Geo-Eng effectively established GHD in China for the first time. Managing Director of Geo-Eng, Peter Wood, joined the GHD Board in late-2002 and was Deputy Chairman from 2008 to 2011. He became General Manager of China and Asia, and later led GHD’s M&A activity. Geo-Eng member Jin Zhang Zou became General Manager China, while Fouad Abo became GHD’s technical leader for the global environmental business. Local acquisitions played an important part in the evolution of GHD in China and this is discussed in more detail in Chapter 19.

An evolving M&A process

Up to the early 2000s, most acquisitions could be described as opportunistic. Potential targets would become known to GHD managers via their local networks and, if it was felt that the target company could strengthen the local business in some way, then an approach to merge would follow. Until MWSI joined GHD in the Philippines in 1999, all mergers had taken place within Australia.
The implementation of GHD’s strategic plan Strategy 2000 (2000 - 2005) started to change that model. This ambitious plan had an emphasis on growing an international business, coupled with an aggressive growth target overall, and this led managers responsible for strategy implementation to actively seek suitable merger companies. Criteria were developed to identify and shortlist partners, and direct approaches were made to companies that may not have been considering a merger but were viewed as highly complementary by GHD.

Merger activity accelerated within Australia, leading quickly to the acquisition of Geo-Eng and Egis. At the same time, a focused effort was beginning in selected offshore markets. Director Mike Polin was appointed as General Manager International and, working closely with CFO, Richard Holliday, a number of proposals were put to the board in locations as diverse as the USA, UK, China, Malaysia and the Middle East.

By the mid-2000s, M&A success in these regions meant that GHD was rapidly becoming an international company. Successive strategic plans reinforced the desire to expand our global footprint and nearly 50 separate companies joined GHD in the decade 2000 to 2010, 20 of those being outside Australia.

Success built on itself. GHD was noted within the industry as an exciting, fast-growing consulting firm with an attractive employee ownership model. Hence, the directors of many companies saw GHD as an ideal acquirer that would provide their people with enormous opportunities to grow their careers and potentially their wealth. The “one plus one equals three” catch phrase resonated widely.

Then the GFC of 2008–09 put a halt to growth in consulting firms around the globe. Some of GHD’s newly entered markets slowed. A few became unviable. GHD found itself divesting some of the operations, particularly in developing countries which were not able to support international cost structures. Merger activity likewise slowed. However, once the initial crisis passed, it was recognised that companies with a clear strategy to adjust their business and then target growth would not only survive but could actually achieve greater success through strategic acquisitions.

In late-2010 GHD appointed its first full-time M&A leader – Peter Wood. Around this time the company established an internal M&A advisory group, chaired by Rob Knott. The group developed a comprehensive process for identifying, selecting, and managing a company acquisition. It supported business leaders in approach, due diligence, sale and purchase agreements and integration. A continuous leaning process, capturing the lessons learned from each merger was developed to consistently improve the success of each integration. Criteria for seeking merger targets were directly aligned with the company’s strategic plan.

In the period after 2010, much of the focus was on North America, both the USA and Canada. However other regions were not ignored and discussions took place with firms in the UK, China, the Philippines, Chile, Australia and New Zealand.
John Dutton, then Operating Centre Manager in the UK, cultivated a relationship with GHA Livigunn which lead to the merger in 2015, more than doubling the size of our UK operations.

In China, there was a concerted effort to find an established business with Class A municipal design licences. At that time, the China Operating Centre was planning to grow its domestic client base as well as pursue outbound investors. Negotiations continued for more than a year with a municipal design institute in the country’s northeast. A commercial deal was not concluded, but GHD learned much about the business culture of the Chinese domestic market.

In Australia, the focus was on building the transportation, mining and energy and environmental businesses, with opportunistic attention on water, and property and buildings. Meanwhile in Chile the search was on for businesses that would strengthen our hand in the mining and energy sectors.

Game changers

Prior to the merger in 2002, Egis was a hot competitor of GHD, especially in the water sector. At the time there was concern that this market might not be big enough for the merged business, and that ‘one plus one’ may indeed equal less than two. The reverse proved to be the case. Major investment in water infrastructure occurred in Australia in the years following the merger, driven in part by a prolonged drought. The Egis-empowered GHD established a dominant position in the water market throughout much of Australia. In fact, the strength of GHD in water engineering after the merger grew to eventually position GHD in the ‘Top 10’ water companies worldwide.

The Egis merger delivered a number of skills and clients beyond water. Egis was a major provider of environmental services to many sectors and it also had a substantial consulting arm servicing the oil and gas sector, especially from Brisbane.

At the time, GHD only had fledgling businesses in those sectors. As a result of the merger, GHD staff numbers grew in all Australian east coast offices but none more than Brisbane and Melbourne. In total some 500 people joined GHD at the merger – a 30 percent increase in the total workforce overnight. Egis also owned a subsidiary company in Jakarta, Indonesia. This firm focused on the international aid sector as well as local projects, particularly in water. Post 2000, GHD’s corporate strategy was to expand internationally and thus the Egis merger created a new offshore business within one of Australia’s closest neighbours.

Importantly, a merger of this size added strength to the leadership and management of GHD as a whole. Egis director, Pat O’Dwyer, took on the Operating Centre Manager role in South Queensland and this was to shortly become the largest operating centre in the company, holding that position for many years.
Pat and his Egis colleague in Melbourne, David Ryan, later joined GHD’s Board where they made substantial contributions to the wider business. David went on to manage GHD in the Middle East and Europe. Egis member, Steve Trainor, spent many years as leader of GHD’s global environmental business, and numerous people from Egis took on challenging senior roles throughout the merged company.

The integration of Egis is widely viewed as one of the most successful in GHD’s experience. The two company cultures were similar and, for the most part, major clients saw the benefits arising from the combined skill base. It also took place at the start of the most rapid growth phase in the company’s history which drove all people to work on common objectives.

The Conestoga Rovers and Associates (CRA) merger is the biggest game-changer in our history. In July 2014, some 3000 people joined GHD in the USA and Canada, and for the first time since GHD was founded in 1928, more people were employed, and revenue generated in North America than in Australia. This integration is on a scale unprecedented in GHD and will be a work in progress for some years to come. It is the culmination of a deliberate and detailed strategy adopted by the company to continue its international expansion, to diversify its skill and client base, and in doing so, diversify its exposure to market cycles.

CRA itself had grown rapidly in the preceding decade through a number of local acquisitions as well as organic growth. A leading provider of environmental services to the oil and gas industry, it had growing businesses in municipal engineering, geotechnical engineering, landfills, construction and some specialist emergency response skills.
From the CRA team, the merger was led by its CFO, Tony Ying and CEO, Ed Roberts. Tony immediately joined the GHD Executive Management Group while Ed, and his colleague Diane Lundquist, joined the Board shortly thereafter.

The sheer scale of this merger led to different approaches to managing change in both organisations while maintaining performance. For example, a ‘merger charter’ was developed very early in the negotiations. This outlined seven high-level principles that both parties agreed must be followed through the completion of the transaction and the integration. It was also agreed that both companies would largely operate unchanged for 12 months while the future business model evolved, but that full integration would take place at the end of that period.

In early 2015, GHD held its annual Executive Forum in Pasadena, California, in recognition of the status of the North American business within GHD. For many senior people this provided the first opportunity to get to know their new colleagues. The benefits to the overall business are already clear, with growth in revenue continuing. Benefits to clients who operate globally are also clear with GHD now able to provide much greater support.

Looking to the future

M&A has been a fascinating journey for GHD over the past 25 years. Around the middle of this period there was a shift from opportunistic acquisitions to a more strategic approach, although it is inevitable that new, unplanned opportunities will continue to appear and add value to the business.

The company has learnt a lot from the process of acquisition as well as from the acquired firms themselves. A dominant, overarching factor in the success or failure of a merger revolves around the people involved. The value to GHD lies in the people who join, their skills and their relationships. Hence it has been crucial to manage each merger with the intent of motivating the new team to embrace their new family and to continue to grow with us.

GHD’s employee ownership model has proven to be a true differentiator in the industry and has helped GHD attract firms that might otherwise have looked elsewhere. In a less tangible way, our company culture has also been appealing to newcomers. While it is a large company by most measures, GHD is often described as having a smaller company culture; GHD people feel close to their colleagues, close to their leaders, and able to enjoy the camaraderie that is associated with small firms. The ‘no head office’ philosophy, with a dispersed management team, adds greatly to this view.

The importance of mergers in GHD’s future growth plans will no doubt vary with market and strategic cycles. Over the past quarter century however, the ‘one plus one equals three’ catchphrase held true on multiple occasions. No doubt it will continue to do so.
A Director of GHD from 2002 to 2011, until his retirement in 2013, Peter Wood's story tells a vital chapter in GHD's growth over the past 25 years. Born in 1951, Peter grew up on his parents' subsistence farm near Apollo Bay, Victoria. The coastal landscape of his youth nurtured an early interest in working with nature. Forestry was one possible direction, before the science of the natural world’s primordial essence – geology, took a grip.

After gaining his BSc (Hons) in Geology and Geophysics at the University of Melbourne in 1972, Peter was first employed by the then State Rivers and Water Supply Commission of Victoria. After a stint in Fiji (investigating potential hydro-electric schemes), he joined the State Electricity Commission of Victoria (SECV) in 1981. Over the next decade he worked on a host of projects in the power, water and mining sectors and became the manager of the SECV’s geotechnical group.

By the early 1990s, with the impending privatisation of SECV on the horizon, Peter and 12 colleagues from the geotechnical group became pioneers in the brave new world of privatised energy utilities. After negotiating a management buyout, he established Geo-Eng in 1992. From a small office in Morwell and utilising its exclusive contract with Latrobe Valley Open Pit Coal Mines, Geo-Eng became one of the fastest growing private companies in Australia. Within a decade, it had acquired WA Water Corporation’s Dam Engineering team, established offices in WA and New South Wales, and through joint ventures in China, had extended its water management prowess to East Asia. As the new millennium dawned, the synergies between Geo-Eng and GHD were impossible to ignore.

“We were trying to spread our wings but we didn't have the capital and experience to make big inroads,” says Peter. “We went round every large engineering firm in Australia and whittled it down to a shortlist of one pretty quick. Based on its culture and vision, no other company could meet the bar set by GHD.”
In 2002 GHD acquired Geo-Eng, and with it, new areas of practice in mining and geology emerged, along with much enhanced capability in dams, geotechnical, water resources and hydrogeology. Nine months after the merger Peter became a Director of GHD, and in 2003 became Operating Centre Manager in Victoria.

In late 2006, Peter took on the newly established role of General Manager China, overseeing operations in Beijing, Changsha, Hong Kong, and Wuhan. Based in Beijing from 2007 until 2010, Peter has some salutary advice for any western business wanting to make an impact there.

“Know why you’re doing business in the country, and don’t fall into the trap of assuming they desperately need you,” he said. “Think through how you want to be legally structured, partnerships in China survive on personal trust, not on legal constructions. Finally, be sure to employ the right people. Your best business manager in Australia may not be your best manager in China”.

With pressures on the Chinese economy and GHD’s strategy for the country changing, Peter returned to Australia in 2010 and led the company’s merger and acquisition activity including GHD’s thrust in North America.

A key player in the negotiation with CRA, he says successful acquisitions are beyond technical synchronicity. “You need to look into the eyes of the leaders of the company you’re negotiating with, and get a feel for their attitude and intentions.

“The last thing you need is a business where leaders just want to sell out and sail a yacht. The leadership of the company that’s joining you is the key to successful integration. Their people follow their leaders’ attitudes.”

Retirement sees Peter still involved in counselling innovative Australian businesses offering water management solutions to the world. Reflecting on his eleven years with GHD, helping write one of the most successful chapters in the company’s history, he’s hugely proud of what was achieved.

He says, “It was an exciting period; we were firing at a rapid rate. GHD was doing all the things that it had set out to do and more in that decade, and I feel very privileged to have played a part in that journey.”
Appendix A.
Appendix A.
20+ years

The following people have served 20 years or more at GHD, including time at companies acquired by GHD. (Note that records are not complete where people departed prior to 2000.)

ADCOCK, Henry
AGENSKY, Nathan
AHILADELLIS, Arthur
AHMAD, Abdul Rahaman
AHMAD, Mohd Shahudin
AHRENS, Charles
AINSWORTH, H Ross
AKSLEN, Stephanie
ALBERGO, Nicholas
ALLEN, Jane
ANDERSON, Bradley
ANDERSON, Denise
ANDERSON, Grant
ANDERSON, Jane
ANDERSON, Roger
ANDRASKO, Deborah
APOSTOLIDIS, Nick
ARKLESS, Michael
ARMSTRONG, Robert
ARNETT, Charles A
ARNOT, Peter
ATHERFOLD, Christine
AUDICHO, Samir
AYERKOFF, Ailsa
AYALA, Michele
BAGSHAW, Chris
BAHILLO, Crispina
BAIR, Linda
BAIRD, John
BAKER, Alison
BAKER, Phil
BALL, Stephen D
BALZER, Gerard
BANDEROB, Roger
BARBEAU, Yvon
BARLAG, Kim
BARNKLAU, Caterina
BARRON, Carol F
BARTELL, Joanne
BARTHOLOMY, Jeffrey
BATCHELDER, Bob
BAUMAN, Wayne
BEATTIE, Michele
BEAUCHESNE, Alain
BEGIN, Yves
BENGER, Leigh
BENAEDICT, Alma
BENSON, Michael
BEREZNITSKY, Larisa
BERGNER, Mitchell
BERGSTROM, Nancy
BERRY, Helen
BERUBE, Guido
BÉRUBÉ, Gaston
BEST, Ken
BIRSS, Pim
BISHOP, Barry
BLACK, Lyndon
BLACKWOOD, Joan
BLAIN, Allen
BLANCHARD, Daniel
BOARD, Russell
BOCOLA, Anthony
BOEVERS, Brian
BOHAN, John
BOLAND, Des
DAVIS, Scott
DAWSON, Ian
DAY, Steven
DE AMBROSIO, Laurie
DEAL, Alan
DEIGHTON, June
DELGADO SR., Artemio
DE LISLE, Albert
DELNICKI, William
DENLAY, Sharon
DERUYSCHER, Timothy
DESCENES, Firmin
DESJARDINS, Yoland
DESSO, Sharon
DEVER, Stuart
DEVINE, Thomas
DEZURIK, Margaret
DI MARCO, Angelo
DICK, Graeme
DIETRICH, Colleen
DILLON, Michael
DIONNE, Guy
DODSON, Ray
DOERR, Michael
DOVE, Ted
DRAINVILLE, Marc
DRAZSO, Frank
DRYDEN, Chuck
DRIYDEN, Marilyn
DUBUC, Michel
DUCKWORTH, Lanea
DUFEL, Gary
DUNBAR, Dennis
DUNCAN, Josie
DUTHIE, Phil
DUWAL, Kenneth
DWYER, Kevin
EADE, Graeme
EASTLAKE, Peter
EASTON, Glen
EATON, Greg
ECKERMANN, Timothy
EDWARDS, Greg
EDWARDS, Ron
ELKIN, Boris
ELLIOTT, Colin
ELLIOTT, Michael
ELWARD, Steven
EMENHISER, Thomas
EMERSON, Douglas
EMERY, Eric
ERWIN, Frank
EWERS, John
EWING, Philip
EYLES, Allen
FALLON, Francois
FARQUHAR, Eric
FEDY, Diana
FERENCZY, Jack
FERGUSON, John
FERKO, Mary Ann
FERLOW, Donald
FERRARO, Gregory
FIELD, Robert
FIKUS, Stefania
FINK, Ben
FINTAK, Phillip J
FISHER, Luke
FISHER, Paul
FITTERER, Richard
FITZE, Bev
FITZMORRIS, Angela
FITZPATRICK, Nicholas
FORBES, Brian
FORDE, Cliff
FOREMAN, Ian Charles
FORURIA, Jose
FOULK, Bryan
FOULKE, Kathryn
FOWLER, Larry
FREEMAN, Diane
FREHNER, Ronald
FRENCH, Ivan
FRENCH, Peter
FRICK, Tom
FRIEBEL, Eric
FRIEDRICH, Erik A
FRIEND, Henry
FRYAR, Ross
FUENTES, Macarena
FULLER, James
FUSINATO, Ted
FYEN, Sylvie
GAARDER, Jeffrey
GALLAGHER, Susan B
GALLOWAY, Peter
GANDA, Narendra
GATES, Mel
GAUDET, Marc
GAY, Craig
GEBHARDT, Craig
GEDDES, Andrew
GEIDANS, Erik
GERMAN, Michelle
GERSEKOWSKI, John
GIANNOPoulos, Jim
GIESE, David
GILBERTSON, Barry
GILL, Cameron
GILL, Deb
GILLANDERS, Cameron
GIOGIO, Tracy
GIROUX, Michel
GOAKES, Bob
John
VAN ECK, Jack
VAN HULST, Peter
VAN NORMAN, Alan
VAN OORSCHOT, Robbert
VAN VEEEN, Walter
VANDER MEULEN, Kenneth
VANDERLINDEN, Joseph
VERES-ECERI, Julie
VERHELLEN, Stefan
VILLAPIANA, Evi
VINCENT, Don
VIVIAN, Barry
VOSS, Steven
VU THE, Danh
VUKOVIC, George
WAGHORNE, Ted
WALKER, Ian
WALLER, Roger
WALLIS, Richard
WALMSLEY, Terry
WALSH, Susan
WALTERS, Judith
WAMPLER, Barry
WANNER, Steven
WARK, Bob
WARNICA, Peter
WARR, Helen
WATT, Fraser
WATTS, Neville
WEARNE, Lester
WEATHERILL, Teresa
WEAVER, Ian
WEBB, Eva
WEBER, Janet
WEEKS, Nathan
WEEKS, Clive
WEILAND, Joseph
WEILER, Philip
WELDON, Ross
WELLING, Clive
WELLINGTON, Neil
WENDLE, Jeffrey
WESOLOWSKI, Andrew
WHALEN, Mark
WHARRY, Mark
WHILLIER, Stephen
WHITE, Colin
WHITE, John
WHITE, Ken
WHITTLE, Alton
WHITTLE, Thomas
WHYBIRD, Des
WIDRIG, David
WIJETUNGA, Maria
WILFROM, Judith
WILLIAMS, Deborah
WILLIAMS, Jim
WILLIAMS, Jon
WILLIAMS, Lisa L
WINSTANLEY, Janine
WINTER, James
WINTERINK, Jeroen
WINZLER, John
WOLFRAM, Hans
WONG, Irene
WONG, Poh Choong
WOO, Hin Wai
WOOD, Gavin
WOOD, Grace
WOOD, Jim
WOOD, Peter
WOODS, Micheal
WORRALL, Julian
WURCKER, John
WYLES, Neil
YARDLEY, James
YING, Anthony
YOUNG, Mark
YOUNG, Steve
YOUNG, Thor
YOUSSEF, Safwat
YPELAAN, Bill
ZAMBESI, Greg
ZICARI, Bonnie
ZOU, Jin
Appendix B.
## Appendix B.
### GHD Senior Executive Roles
(1988 to present)

<table>
<thead>
<tr>
<th>Name</th>
<th>From</th>
<th>To</th>
<th>Role</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ABELIUK, Roberto</strong></td>
<td>2005</td>
<td>2012</td>
<td>Operating Centre Manager - Chile</td>
</tr>
<tr>
<td><strong>ABO, Fouad</strong></td>
<td>2011</td>
<td>2014</td>
<td>Global Technical Leader - Environment</td>
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<tr>
<td><strong>ADAMS, Sonia</strong></td>
<td>2009</td>
<td>2011</td>
<td>Corporate Manager - Marketing &amp; Communications</td>
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<tr>
<td></td>
<td>2011</td>
<td>2013</td>
<td>Chief Marketing Officer</td>
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<td>2016</td>
<td>Current</td>
<td>Market Development Leader - Australia</td>
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<tr>
<td><strong>ADCOCK, Henry</strong></td>
<td>1986</td>
<td>1993</td>
<td>Managing Director</td>
</tr>
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<td>Chairman</td>
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<td>1978</td>
<td>1999</td>
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<tr>
<td><strong>ANDERSON, Denise</strong></td>
<td>2016</td>
<td>Current</td>
<td>Regional Principal - Mid-Continent</td>
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<td><strong>APOSTOLIDIS, Nick</strong></td>
<td>2001</td>
<td>2005</td>
<td>Demand Stream Leader - Water</td>
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<tr>
<td></td>
<td>2005</td>
<td>2009</td>
<td>Business Stream Leader - Water</td>
</tr>
<tr>
<td></td>
<td>2009</td>
<td>2010</td>
<td>General Manager - Client Development</td>
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<tr>
<td>Name</td>
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<td>To</td>
<td>Position/Role</td>
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<tr>
<td>APOSTOLIDIS, Nick</td>
<td>2011</td>
<td>2013</td>
<td>Global Development Leader</td>
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<tr>
<td>(cont')</td>
<td>2002</td>
<td>2012</td>
<td>Director</td>
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<tr>
<td>ARMSTRONG, Marc</td>
<td>2015</td>
<td>Current</td>
<td>Deputy Chief Financial Officer</td>
</tr>
<tr>
<td>BABIAK, Jan</td>
<td>2016</td>
<td>Current</td>
<td>Non executive Director</td>
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<tr>
<td>BAIRD, John</td>
<td>2006</td>
<td>2010</td>
<td>Operating Centre Manager - South Queensland</td>
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<td>General Manager - Europe &amp; Middle East</td>
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<td>General Manager - Services</td>
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<td>General Manager - Australia &amp; New Zealand</td>
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<td>Leader - Mergers &amp; Acquisitions</td>
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<td>BEECH JONES, David</td>
<td>2003</td>
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<td>Corporate Manager - People</td>
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<td>General Manager - People</td>
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<td>BIGGS, Phillip</td>
<td>2000</td>
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<td>Operating Centre Manager - South Australia</td>
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<td>2008</td>
<td>2009</td>
<td>Operations Manager - Sydney</td>
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<td>BLAKE, Jeremy</td>
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<td>2011</td>
<td>Operating Centre Manager - United Kingdom</td>
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<td>BOARD, Russell</td>
<td>1990</td>
<td>1995</td>
<td>Manager - Northern Territory</td>
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<td>1995</td>
<td>2002</td>
<td>Manager - North Queensland &amp; Northern Territory</td>
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<td></td>
<td>2002</td>
<td>2004</td>
<td>Manager - New Zealand</td>
</tr>
<tr>
<td></td>
<td>2004</td>
<td>2008</td>
<td>General Manager - South East Asia/Pacific &amp; South America (including IDA)</td>
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<td>2008</td>
<td>2011</td>
<td>General Manager - Australia &amp; New Zealand</td>
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<tr>
<td></td>
<td>2011</td>
<td>2017</td>
<td>Chairman</td>
</tr>
<tr>
<td></td>
<td>1999</td>
<td>2017</td>
<td>Director</td>
</tr>
<tr>
<td>Name</td>
<td>Title</td>
<td>Years</td>
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<tr>
<td>Bradley, Phillip</td>
<td>General Manager - Finance</td>
<td>2008 - Current</td>
<td>Group Chief Financial Officer</td>
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<td>Corporate Manager - Information</td>
<td>2006 - 2009</td>
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KNOTT, Robert  
- 2013 2014 Organic Growth - Leader  
- 2014 2017 General Manager - Asia Pacific  
- 2003 2012 Operating Centre Manager - Canberra  
- 2009 Current Director  
- 2017 Current Chairman  

KOENIG, Ray  
- 2005 2013 Business Stream Leader - Mining & Resources  

KRAHE, Sheldon  
- 2016 Current Operating Centre Manager - Western Australia  

LAU, John  
- 2007 2012 Chief Financial Officer  

LAVERS, Anne  
- 2001 2005 Office Manager - Wellington, New Zealand  
- 2005 2010 Office Manager - Townsville, Australia  
- 2012 2015 Operating Centre Manager - Philippines  
- 2016 2016 Market Leader - Asia  

LEE, Greg  
- 2002 2008 Operating Centre Manager - Indonesia  

LECUYER, Steve  
- 2016 Current Regional Principal - Quebec/Maritimes  

LINDBERG, Alan  
- 1993 1998 Office Manager - Mackay  
- 2004 2008 Office Manager - Abu Dhabi  

LOCKETT, Graham  
- 2002 2004 Operating Centre Manager - North Queensland  

LONGSTAFF, Alan  
- 1978 1990 Director  

LOWTHER, Robert  
- 2010 Current Operating Centre Manager - Tasmania  

LUNDQUIST, Diane  
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</tr>
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<td></td>
<td>2009-2010</td>
<td>Global Market Leader - Property &amp; Buildings</td>
</tr>
<tr>
<td></td>
<td>2010-2012</td>
<td>General Manager - Asia</td>
</tr>
<tr>
<td></td>
<td>2012-2014</td>
<td>Operating Centre Manager - New Zealand</td>
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<tr>
<td><strong>POVEY, Robin</strong></td>
<td>1989-2001</td>
<td>Manager - Overseas Projects</td>
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<tr>
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<td>2001-2006</td>
<td>Operating Centre Manager - International Development Assistance</td>
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<tr>
<td></td>
<td>2006-2011</td>
<td>Business Stream Leader - International Development Assistance</td>
</tr>
<tr>
<td><strong>QUIGLEY, Stephen</strong></td>
<td>2015</td>
<td>Current General Manager - North America</td>
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<tr>
<td><strong>RATCLIFFE, Michael</strong></td>
<td>2005-2009</td>
<td>Business Stream Leader - Urban Development</td>
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<td><strong>READ, Mark</strong></td>
<td>2013-2016</td>
<td>Leader - Mergers &amp; Acquisitions</td>
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<td>Global Market Leader - Energy &amp; Resources</td>
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<td>2014-2016</td>
<td>Market Development Leader - Australia</td>
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<tr>
<td>Name</td>
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<tr>
<td>ROBAINA, Ric</td>
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<td>Current Operating Centre Manager - Chile</td>
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<td>ROBERTS, Dave</td>
<td>2005-2008</td>
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<td>ROWLANDS, Neil</td>
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<td>1999-2002</td>
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<td>General Manager - Services &amp; Sustainability</td>
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<td>General Manager - Middle East</td>
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<td>2009-2010</td>
<td>General Manager - Middle East &amp; Europe</td>
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<td>Director</td>
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<td>SELEEM, Sherif</td>
<td>2005</td>
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<td>SHEPHERD, Ryan</td>
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<td>General Manager - Strategy &amp; Clients</td>
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<td><strong>VEJAR, Carlos</strong></td>
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<td><strong>WALKEMEYER, Craig</strong></td>
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<td>Name</td>
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<td>Director</td>
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<tr>
<td>Name</td>
<td>From Year</td>
<td>To Year</td>
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<td><strong>ZOU, Jin Zhang</strong></td>
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Appendix C.
### Appendix C.
#### GHD Timeline

<table>
<thead>
<tr>
<th>Year</th>
<th>Event</th>
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</thead>
<tbody>
<tr>
<td>1928</td>
<td>Gordon Gutteridge established a private consulting engineering practice in Melbourne</td>
</tr>
<tr>
<td>1935</td>
<td>Gerald Haskins and Geoffrey Davey commenced partnership as consulting engineers in Sydney</td>
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<tr>
<td>1937</td>
<td>Joint venture of two practices formed in Brisbane</td>
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<tr>
<td></td>
<td>Gordon Gutteridge established Hobart office</td>
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<tr>
<td>1939</td>
<td>The two separate practices merged to become the partnership of Gutteridge Haskins &amp; Davey, Consulting Engineers</td>
</tr>
<tr>
<td></td>
<td>GHD people enlist for military service</td>
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<tr>
<td>1942</td>
<td>Death of Gordon Gutteridge and retirement of Gerald Haskins, leaving Geoffrey Davey as sole partner</td>
</tr>
<tr>
<td>1945</td>
<td>Return of people from War Service</td>
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<tr>
<td>1946</td>
<td>Death of Gerald Haskins</td>
</tr>
<tr>
<td>1948</td>
<td>Establishment of offices in Cairns and Launceston, and first job in Darwin</td>
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<tr>
<td>1952</td>
<td>GHD people numbers increased to 100</td>
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<tr>
<td>1956</td>
<td>Darwin office opened</td>
</tr>
<tr>
<td>Year</td>
<td>Event</td>
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<td>------</td>
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</tr>
<tr>
<td>1958</td>
<td>GHD people numbers increased to 200</td>
</tr>
<tr>
<td>1962</td>
<td>GHD people numbers increased to 300</td>
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<tr>
<td>1964</td>
<td>Retirement of Geoffrey Davey from the firm</td>
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<tr>
<td>1966</td>
<td>GHD people numbers increased to 400</td>
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<td></td>
<td>New office opened in Canberra</td>
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<tr>
<td>1967</td>
<td>Photogrammetric team established in Melbourne office with installation of first-order stereo-plotter</td>
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<tr>
<td></td>
<td>Gold Coast office opened</td>
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<tr>
<td>1970</td>
<td>GHD people numbers increased to 500</td>
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<tr>
<td>1971</td>
<td>The practice was incorporated as Gutteridge Haskins &amp; Davey Pty Ltd Consulting Engineers</td>
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<tr>
<td>1972</td>
<td>Townsville office opened</td>
</tr>
<tr>
<td>1974</td>
<td>Formation of GHD-Parsons Brikerhoff Pty Ltd</td>
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<tr>
<td></td>
<td>GHD people numbers increased to 660</td>
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<tr>
<td>1975</td>
<td>Death of Rev. Father Geoffrey Davey</td>
</tr>
<tr>
<td></td>
<td>Office opened in Albury/Wodonga and Perth</td>
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<tr>
<td>1976</td>
<td>Offices opened in Adelaide, Bundaberg, Mackay and the Sunshine Coast</td>
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<tr>
<td>1978</td>
<td>Formation of Malaysian firm Angkasa-GHD Engineers Sdn Bhd</td>
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<tr>
<td>1979</td>
<td>GHD and DJ Dwyer &amp; Associates merge</td>
</tr>
<tr>
<td>1980</td>
<td>Bunbury and Newcastle offices opened</td>
</tr>
</tbody>
</table>
1981   Gladstone office opened

Merger: Planner West Pty Ltd

Joint venture of GHD-Black & Veatch formally established

GHD-Wood Geotechnical Pty Ltd established

GHD people numbers increased to 740

1982   GHD people numbers increased to 820

1983   Offices opened in Katherine, Port Hedland and Rockhampton

1984   Offices opened in Alice Springs and Wollongong

1985   GHD-Wright joint venture

1986   New office: Geraldton

1987   Merger: Rowe & Ennis

1988   Coffs Harbour office opened

Merger: Lockett & Mongomerie

1992   New office: Hunter Valley

1993   GHD earned ISO 9001:1987 accreditation

New office opened in Traralgon

1995   Merger: Water Corporation of Western Australia’s water engineering group (WAWA) (100 People); CH2M Hill

GHD people numbers increased to 791

1996   Merger: TW Crowe & Associates (10 People)

1996   GHD people numbers increased to 875
**1997**  
Merger: WORKS Australia; Longmac Group (32 People)

New office opened in Adelaide

GHD people numbers increased to 884

**1998**  
Merger: Looton Engineers (Kalgoorlie); Works Australia (120 people); Corcoran Sheherd (8 people)

New office in Kalgoorlie

GHD people numbers increased to 1,086

**1999**  
Merger: Manukau Consultants Ltd (New Zealand), Flack & Kurtz (12 people), GB Hill (35 people), MWSI Philippines and Smith Sale & Burbury (10 people)

New office in Manila

GHD people numbers increased to 1,124

**2000**  
Merger: Goh & Begg (2 people); Graham & Tasker (6 people); Integrated Pipeline Supplies (7 people); Manukau Consultants (126 people)

New offices in Gladstone; Manukau; Orewa and Tauranga

GHD people numbers increased to 1,304

**2001**  
Merger: Smith & Wood Consultants (Wellington) (11 people); BRAP; MME (Doha, Dubai and Abu Dhabi); Meinhardt Middle East (44 people);

New offices in Santiago; Palmerston North; Wellington; Doha and Abu Dhabi

GHD people numbers increased to 1,386
2002  
Merger: Geo-Eng / Geo-Eng International (82 people) Group; Taywood Australia and Dubai (35 people); Promina SA (28 people); RL Newman (Canberra) (8 people); Martin & Co (Gladstone) (6 people); Lindquist & Johnson (Canberra) (8 people); Egis Australia and Egis Consulting Indonesia (470 people); Integration of Egis Consulting

New offices in Bentley; Shepparton; Jakarta; Kuala Lumpur; Taikohe; Marton; Dubai and Ho Chi Minh City

GHD People numbers increase to 2,300

2003  
GHD celebrates its 75th year of operations with clients and people

New offices in Artarmon; Ballina; Christchurch and Kaitaia

Merger: Ian Round & Associates - Victoria

2004  
Merger: Allied Consulting Engineers - Cairo (47 people); Baker Saran - Orange (12 people); Changsha Design Office - Changsha (30 people); City Design Limited - Auckland (91 people); Drew Architects - Adelaide (3 people); Resource Developments - Adelaide (15 people)

New offices in Geelong; Karratha; Orange; Parramatta; Beijing; Changsha; Taumarunui and Irvine

2005  
Merger: Angkasa Jurutera Perunding (AJP) - Kuala Lumpur (90 people); Thompson Brett (11 people); Metis Associates - Canberra; Qest Consulting (47 people)

New offices in Mildura; Toowoomba; Auckland; Lower Hutt; Bendigo; Ipoh; Kuantan and Orange Laboratory

GHD people numbers increased to 2,887
2006
Merger: Archispace - Beijing (80 people); Rankine & Hill - Hong Kong (35 people)

New offices in Nowra; Wagga Wagga; Wollongong; Mt Gambier; York; Hong Kong; Sharjah; Ipswich and Queenstown

2007
Merger: Devecon - Queensland (5 people); Harben Design - South Australia (4 people); Leddy Sergiacomi & Associates - Queensland (60 people); Muir Architects - Western Australia (3 people); Pacam Consulting - Hobart (30 people); PCT Engineers - Western Australia (62 people); ProAND - X (10 people); RJ Hall - Timaru (8 people)

New offices in Bundaberg; Hervey Bay; Gympie; Roxby Downs; Charlotte; Alor Setar; Kuala Terengganu; Caloundra; Bristol; Dublin; Dunedin; Portland; Timaru and Hanoi

2008
Merger: Hassall & Associates - Canberra (75 people); Johnson Design Services - Burnie (9 people); Cameron Chisholm & Nicol - Sydney (10 people); TEQman; RoseWater Engineering - Seattle (30 people)

New offices in Dubbo; Markham; Hamilton; Al Ain; Central Coast; London; Burnie; Seattle; Kuching; Bairnsdale and Leongatha

2009
Merger: Meyrick & Associates - New South Wales (26 people); Wuhan Jiangwei Architectural Design Co (Wuhan) (23 people); CSA Engineering (Arizona) (13 people); Arizona Engineering Company (Arizona) (31 people); Stearns & Wheler (East Coast) (230 people)

New offices in Hyderabad; Port Moresby; Port Macquarie; Bowie; Cazenovia; Hyannis; Phoenix; Amherst; Middletown; Raleigh; Roanoke; Suffern; Trumbull; Andover; White Plains; Akron; Flagstaff; Vancouver; Liverpool and Bowen

Office closure: Ireland and Egypt
GHD people increased to 5,562

**2010**
Merger: China Water International Engineering Consulting Co - Beijing (43 people); SMG Consulting (20 people)

New offices in Hastings; Wanganui and Tamworth

**2011**
Merger: Robson Woese Inc - New York state (33 people); Collinson Dutton Limited, UK (41 people); Winzler & Kelley Inc - West Coast USA (254 people); MGF Consultants - Queensland (16 people); Commonwealth Engineering Technology Inc (East Coast USA) (86 people)

New offices in Saipan; Eureka; Portland; Sacramento; San Diego; San Francisco; San Jose; Santa Rosa; Santa Ana; Bloomsburg; Doylestown; Harrisburg; Huntingdon; Syracuse and London

Office closure: Malaysia and Indonesia

**2012**
Merger: Hill Michael & Associates Pty Ltd - Queensland (37 people); Hydro Environmental - Victoria (5 people); Water Sciences Group - East Coast Australia (35 people)

Office closure: Vietnam and Hong Kong

New offices in Phillip; Yeerongpilly; Mississauga; Whitby; Richmond Hill; Madison; Rochester; Charlestown and Kitchener

GHD people numbers decreased to 5,795

**2013**
Merger: ProMet Engineers - Western Australia (6 people)

New offices in Abbotsford; Atlanta; Dutton Park and Cranberry Township

Office closure: Hyderabad, India
2014  Merger: Woodhead Pty Ltd - Australia (46 people); The Protection Engineering Group - Chantilly, Baltimore, Atlanta, MD (37 people); Conestoga-Rovers & Associates (CRA) (3,000 people); Horizon Power - Western Australia (38 people); Carlton Engineering - Chantilly, Baltimore, Atlanta, MD (10 People)

New offices in Roma; Atlanta; Emerald; Mount Isa; Cameron Park; Alma; Brossard; Calgary; Fort McMurray; Fredericton; Gatineau; Halifax; Kingston; Laval; Levis; Matane;Mississauga; Montreal; Mont-Tremblant; Newmarket; Ottawa; Pembroke; Peterborough; Quebec City; Rimouski; Saguenay; Saint-Félicien; Sault Ste. Marie; Sept-Îles; Shawinigan; St John’s; St. Catharines; St. Thomas; Thetford Mines; Toronto; Trois-Rivières; Vancouver; Waterloo; Whitby; Windsor; Grenville; Canberra IDA Sonoma; Mobile; Bozeman; Wichita; West Palm Beach; Tulsa; Tucson; Soda Springs; St. Louis; Springfield; St. Paul; Tacoma; Tampa; Topeka; Shreveport; Seattle; Savannah; Hilton Head; Houston; Indianapolis; Lake Charles; Little Rock; Kingsville; Midland; North Platte; Niagara Falls; Omaha; Oklahoma City; Orlando; Overland Park; Pensacola; Philadelphia; Pittsburgh; Plainwell; Rancho Cordova; Rochester; Sandusky; Detroit; Edison; Emeryville; Fort Myers; Franklin; Fresno; Golden; Green Bay; Hartford; Charlotte; New Richmond; Rivièr du-Loup; Nottingham; Birmingham; Liverpool; Austin; Albuquerque; Birmingham; Bloomfield; Boston; Buffalo; Chantilly; Charleston; Chicago; Cincinnati; Concord; Corpus Christi; Cuero; Dallas; Baltimore; Baltimore; Bakersfield; Baton Rouge; Baltimore; Bakersfield and Calvert City

GHD people numbers increased to 7,798
2015  Merger: GHA Livigunn - UK (160 people)

New offices in Albany; Bega; Edmonton; Manila Internal; Anchorage; Des Moines; Richmond VA; Cheadle; Leeds; Fordsham; St. Albans and Sutton Weaver

2016  Merger: VR Space - Brisbane (6 people), Creative Spaces - New Zealand (25 people)

New offices in Alice Springs; Cebu; Glasgow; Newcastle Upon Tyne; Miami; Santiago; Chester; Jacksonville and Borger

GHD people numbers increased to 7,844

2017  Merger: Omni-Means Ltd.

New offices in Redding; Roseville; San Luis Obispo; Visalia; Walnut Creek; North Wales and Rockhampton

GHD people numbers increased to 8,150