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GHD LAUNCHES GHD ADVISORY AND THEN GHD DIGITAL TO PROVIDE A 'DIGITAL EDGE' TO ITS EXISTING SERVICES

Celebrating 90 years in 2018, GHD operates across five continents - Asia, Australia, Europe, North and South America - and the Pacific region. The company has a presence across nearly all US states and Canadian provinces, with more than 130 offices with 4000 employees in North America, out of a total workforce of 10,000 people around the world. Revenues for the 2018 financial year grew to \$1.5 billion, an increase of 12 percent on the prior year. GHD clients include a variety of private industries, crossing multiple business sectors, as well as public sector organizations. Both, GHD Digital and GHD Advisory businesses have expanded into North America to meet the needs of clients who value GHD's technical strengths and ability to plan for the future. Responses to the Q&A are:

Iver Skavdal, North American General Manager – USA, is a civil engineer with more than 35 years of experience. Based in Santa Rosa, CA, he is responsible for GHD's operations in the USA. He is also a member of GHD's global Board.

Kristen Todtz, Associate and Senior Environmental Scientist, leads GHD's award-winning Visualization Services team in North America. Based in Waterloo, Ontario, Canada, she has more than 20 years of experience in quantitative 3D hydrogeologic site evaluation and characterization, data management and litigation support.

EBJ: GHD has had tremendous growth over the last four years. What has been your strategy and how have you been able to achieve such a great result?

Skavdal: Our focus on organic growth with selective acquisitions has more than doubled revenues over the past four years. Thanks to successful diversification, even though our company was established in Australia, today we generate 57 percent of revenues from other regions: North America, Asia Pacific, and Europe and Middle East.

Our goal is to be an industry leader in client service. This means we are always listening and evolving our services in response to the rapidly changing needs of our clients.

GHD is fully employee-owned, with more than 25 percent of people being material owners of the business. This culture of employee ownership helps us attract and retain outstanding professionals who are highly motivated to serve our clients,

deliver projects, and pursue new opportunities.

EBJ: GHD has received various awards related to workplace equality. What has been your main focus? What are the changes that you have made to the company's culture over the past five years that have had a great impact?

Skavdal: Diversity is a powerful driver of innovation and will be more important than ever if we are to be adaptive to the unpredictable consequences of disruption. Clients are looking for people who challenge the norm and who can apply new tools to solve problems across a variety of market sectors. This is why we want our teams to have diversity of thought, background and experience.

While our approach has been tailored to each region where we operate, our focus areas have included: enhancing gender equality, cultural diversity, LGBTI inclusion and flexible working.

Three of our eight global Board Direc-

tors are women, reflecting growing numbers of women in senior leadership positions overall.

We are particularly proud of the progress we have made with flexible working, empowering our people to have an open conversation with their manager about work arrangements, provided they are still meeting the needs of our business and our clients.

EBJ: How is technology changing the way that GHD operates?

Skavdal: Technology changes mean we need to constantly update our skillsets, workflows and delivery models to create more value for our clients.

New technologies will progressively automate some processes and tasks that people currently perform, while enabling our employees to focus on more complex or strategic tasks that add more value.

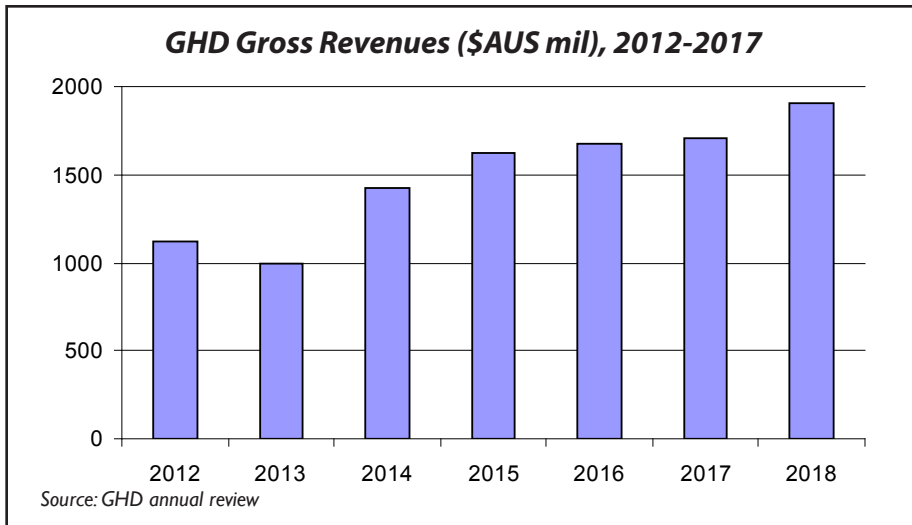
We are transitioning from a way of doing business which is defined by process and familiarity to one defined by change and new opportunities. Helping our people to develop new skills that will allow them to stay relevant and in demand is a very high priority for our leaders.

EBJ: GHD has a Digital team with over 500 technology professionals. Can you tell us more about it?

Skavdal: Launched in February 2018, GHD Digital is a distinct brand extension and service, recognizing the importance of digital technologies in consulting.

In addition to providing a 'digital edge' to our existing services – such as data analytics, interactive maps and dashboards or immersive augmented reality experiences – we are also advising our clients on how they can change their business in response to digital disruption.

GHD Digital services also include cybersecurity and risk, digital strategy and transformation, smart technology and in-



novation. GHD Digital teams are located globally.

EBJ: What are some of the new or most innovative environmental technology solutions that GHD provides?

Todtz: How we deliver and engage with our clients is rapidly changing in this age of disruption. GHD provides in-house cutting-edge technologies and services to our clients, who are eagerly seeking out innovative digital technologies to help streamline and transform their business.

Some of our technology solutions include:

• **3D/4D interactive data-driven visualization models**

Integrate geologic modeling with geo-statistical analysis, 3D features and visualization tools to develop 3D Conceptual Site Models (CSMs) that provide new insights into contaminated site conditions.

• **Mixed Reality (via Hololens)/Augmented Reality/Virtual Reality**

Creating immersive experiences for clients and stakeholders, so they can explore a contaminated site or train, for a chemical spill.

• **Camera Tracking UAV Technology**

Camera tracking is new cutting-edge digital solution which merges UAV with 3D data-driven visualization modeling. We are able to combine UAV footage with other data to give clients unprecedented insights into their assets.

• **Custom Interactive Model (Gaming) Development**

State-of-the-art 3D modelling creation with a custom interface platform, which provides our client with an interactive game-like experience of their current site conditions or proposed redevelopment plan. This is an innovative digital solution for decision makers when they can visualize a finished project before investment is approved.

• **GHDs AR PopUp App**

Available in the Apple App Store, our AR PopUp is a new innovative digital platform to help engage and communicate 3D models with our clients. The AR PopUp provides endless possibilities for delivering, training and learning opportunities.

EBJ: GHD operates in various regions of the world. Do you use technology differently in different regions? What is the reason behind it? Can you provide

some examples?

Skavdal: We aim to operate as a truly connected global network. Wherever possible, we try to apply experience or capabilities we have developed in one region to all markets in which we operate. For example, we have developed a standardized approach to decommissioning large industrial assets in the USA, which we are now applying to projects in Australia and the UK. Each year we host a number of Technical Conferences in cities around the world, which bring together our people from different offices and disciplines – this is a unique approach to sharing knowledge and experience.

EBJ: What are some outstanding projects in which GHD has used these technologies? (please provide a description of each project and how technology facilitated its execution)

• **Industrial Site**

GHD’s client requested help for their industrial facility. Even though more than USD30 million had already been spent on investigation and remediation, the regulator was asking for millions of dollars in additional environmental investigation ac-

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GHD Reports 12% Growth in 2018; Launches GHD Digital

GHD reported 12% growth in for the financial year ending June 2018 to \$1.9 billion Australian or about \$1.5 billion, driven by of strong demand for infrastructure investment in the Australian market and the Asia Pacific region. Geographic diversification was also highlighted as a driver in the firm's annual report, with 57% of revenue generated outside of Australia in North America (46%), the Asia Pacific (7%), Europe and the Middle East (4%).

In March 2018 GHD launched GHD Advisory in North America, including services that "go beyond traditional engineering" including: asset management; infrastructure investment and economics; and risk, assurance and regulation. Roop Lutchman, who leads the business in North America, said: "Our North American clients are looking for someone who sees the big picture, not only across the whole life cycle of an asset, but across all their portfolios of assets.... We are extending our services across the entire life cycle of our clients' projects; from the beginning of the asset's life cycle, when a project is planned, designed and constructed, through its operations and maintenance, and ultimately to decommissioning, closure and capital recycling."

In February 2018 GHD launched GHD Digital to: plan and develop digital strategy; execute the delivery of digital transformation; and monitor, benchmark and evaluate the health of digital investments for its clients. Global Digital Leader, Kumar Parakala, said GHD is "helping our clients with their digital business transformation priorities. Everywhere, people's lives are changed by digital technologies combined with new business models, zero cost of computing and internet; and everyday there are exciting new opportunities for organisations to redefine their survival and growth strategies with new developments in water, energy and resources, property and buildings and many services industries.... GHD Digital is progressively launching in key geographies across the globe and establishing key partnerships to provide holistic digital transformation solutions to clients... the Digital team has expanded to more than 100 people locally in 12 months, with more growth to come."

CEO Ashley Wright said the two new groups have already had an impact on GHD performance: "GHD Advisory and our new digital business have exceeded expectations as we transform the ways that we work and create value for our clients."

Fully employee-owned, GHD has completed 24 acquisitions in Australia and an equivalent amount elsewhere. North American acquisitions include: Conestoga-Rovers and Associates in 2014, Stearns & Wheler, Winzler & Kelly, Omni-Means, Commonwealth Engineering & Technology, RobsonWoese, Rosewater Engineering, Arizona Engineering Company, CSA Engineering, Protection Engineering Group, Mississauga and Kitchener, Carlton Engineering and The Sernas Group.

EBJ: How does GHD differentiate from competitors from the technology standpoint?

Skavdal: Individual technologies are changing at a rapid pace. What's more important to us is the underlying culture we are creating, where we empower our people to question, innovate and engage with clients at a high level to help them achieve success. It's this mindset that enables us to compete effectively and in turn develop multiple new technologies.

EBJ: In which areas of the world do you see that there is more environmental technology advancement?

Skavdal: While different countries may have different regulatory or client needs, the environmental industry is global. New technologies or solutions can emerge from anywhere, and can be localized for the specific requirements of particular clients or regulators.

EBJ: Are new regulations arising due to this technological? How are these regulations different in various regions of the world?

Todtz: One trend we are seeing in USA and Canada is the EPA and other regulating agencies are now requesting innovative digital technologies to be used in the development of a site's Conceptual Site Model (CSM) to aid with communication, project decision making and strategic planning for remedial activities. The use of data-driven visualization models in CSMs has proven invaluable in addressing the key site questions and communicating the answers, as well as providing insights into site conditions that are often not obvious using less rigorous techniques. GHD has advanced in-house digital capabilities which means we don't need to sub-contract this work out.

EBJ: What technology companies have you acquired recently and what are the technologies that these companies have brought to GHD?

Skavdal: The VR Space transaction occurred in 2016 and the team is now fully part of GHD Digital. There are no other recent technology acquisitions. ■

tivities, as they were unable to understand key chemical sources and transport characteristics at the site due to its subsurface complexity.

To help the regulator and all stakeholders gain a better understanding of the complex hydrogeologic conditions and contaminant distribution at the site, we developed a 3D digital technology solution, incorporating conceptual illustration & animations, 3D/4D data-driven interactive models, camera tracking UAV technology, and mixed reality (Hololens). This helped the client demonstrate to the regulator that the site was adequately char-

acterized, saving millions in additional investigation activities.

• Emergency Response

GHD helped a client develop a 'virtual classroom' for emergency response using Augmented Reality (AR) for mock scenario HazMat training programs and AR PopUp app (iOS devices). This innovative program allows HazMat officers to educate first responders how to safely respond to train derailments and spills with hazardous goods reducing training costs and enabling the training to be done in a safe and secure environment.