

2016  
17

SUSTAINABLE  
DEVELOPMENT  
REPORT

EYE ON THE HORIZON



GOLDER



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# LEADERSHIP

## Message from the Global President & CEO

Engineers and scientists are generally wired to be dedicated problem-solvers. Those of us who pursue this field of study and profession do so specifically because we believe there is always a better way to do things, and in the process, constantly challenge ourselves and conventional wisdom. Because of this, our industry is well-placed to contribute to society's most pressing sustainability challenges.

In fact, our industry can lay claim to a devotion to sustainability before there was a name for it. If we look back on our historical achievements, we repeatedly find that we delivered projects that satisfied social, economic and environmental agendas. We partner with our clients to develop and deliver on increasingly challenging sustainable development goals. Often the best answers come from inclusivity – engaging communities in which our clients operate and working together to find solutions that work for all. This is no longer an altruistic idea, but a business strategy—a marriage between self-interest and the greater good.

Every day, we witness the hard progression of our carbon-constrained economy. The most traditional providers of fuels and power are actively seeking and embracing alternatives. Changing demographics including aging populations and migrations into urban settings are all challenging public and private organizations to shift to better serve communities and stakeholders. We are working each day to attack these challenges to resources, infrastructure, and environments.

At Golder, caring is one of our core corporate values. Our employee-owners are committed to sustainability – from both the perspective of delivering more sustainable projects that meet the needs of our clients and communities, to “walking the talk” in our business operations. We have embedded sustainability principles into our long-term strategy and included specific goals for both internal processes and solutions for our clients and communities. We further demonstrate our commitment in our corporate social responsibility program that is focused on creating more sustainable communities

where we live and work. Our investments range from projects sponsored by the Golder Trust for Orphans, which supports sustainable programs dedicated to a better life quality for AIDS-ravaged African communities, to activities closer to home for many of our colleagues where we support extensive community and volunteer efforts.

In 2016, I signed, on behalf of Golder, a corporate commitment to the UN Global Compact and have dedicated our firm to transparency in our efforts to promote sustainable development in accordance with the 17 components of the UN Sustainable Development Goals and in regular reporting under GRI guidelines.

It is my pleasure to introduce Golder's 2016-2017 Sustainable Development Report. I hope this report gives you insight into our company and our commitment to sustainability.

**Hisham Mahmoud, PhD, PE**

*Principal  
Global President & CEO*

## Sustainable Development Goals

17 GOALS TO TRANSFORM OUR WORLD





*Golder is a highly specialized global consulting, design, and construction firm, owned by its employees. Our technical expertise as engineers and scientists is sought by clients from a broad range of sectors including infrastructure, power, manufacturing, mining, and oil and gas.*

*Boreal Caribou are a species at risk in Canada. Golder is currently involved in assisting the recovery through habitat restoration and a rearing facility.*

## ABOUT US

Our Sustainable Development Report covers a two-year period, 2016 and 2017, and has been prepared with reference to Global Reporting Initiative (GRI) reporting requirements. It provides both internal and external perspectives. Internally, the report addresses Golder's operations and people, while the external view focuses on the work we undertake for our clients as it relates to sustainable development.

There have been no significant changes to the organization's size, structure, or ownership since the previous (2015) report was compiled.

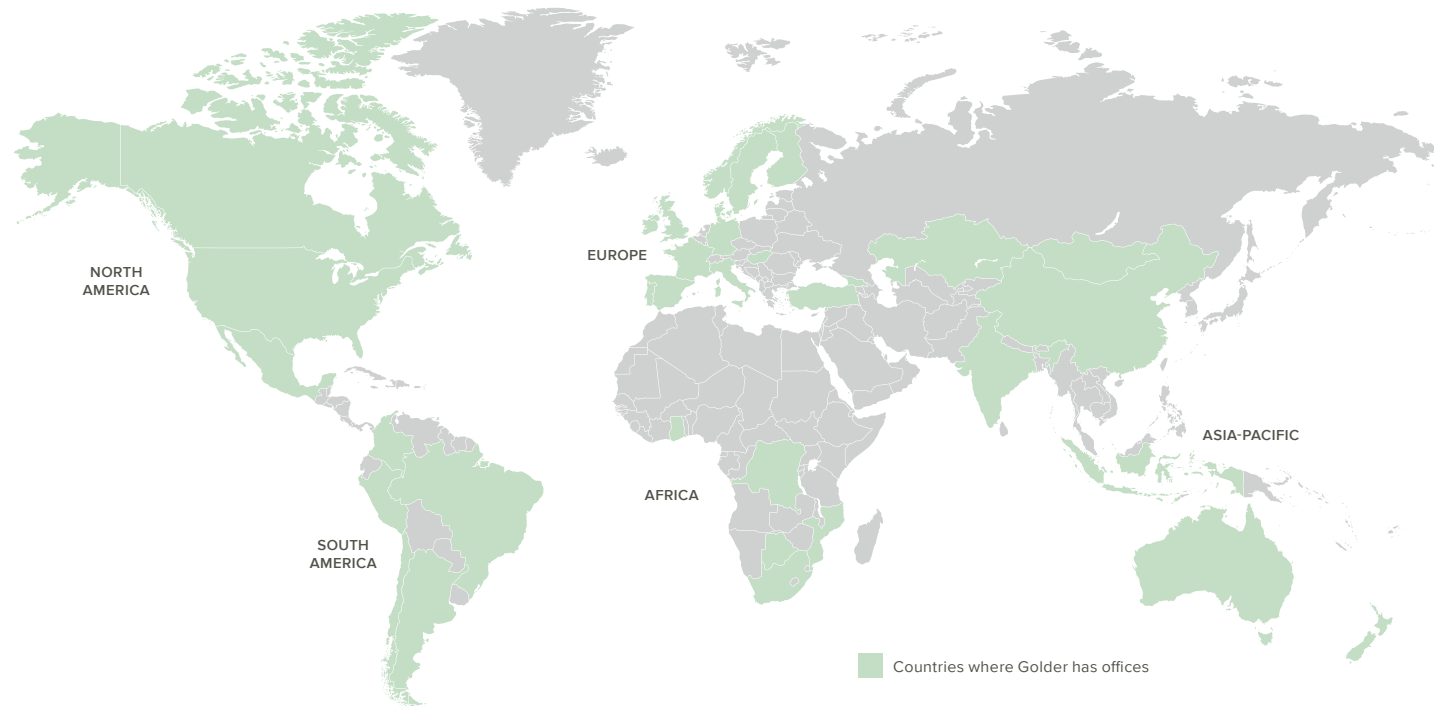
Golder's 2017 annual revenues were in excess of US\$1B, earned by delivering services to clients whose projects span the globe. This is achieved through the work of more than 6,200 Golder colleagues located in 36 countries.

Golder's people remain at the center of our enterprise and are the source of our success and that of our clients.



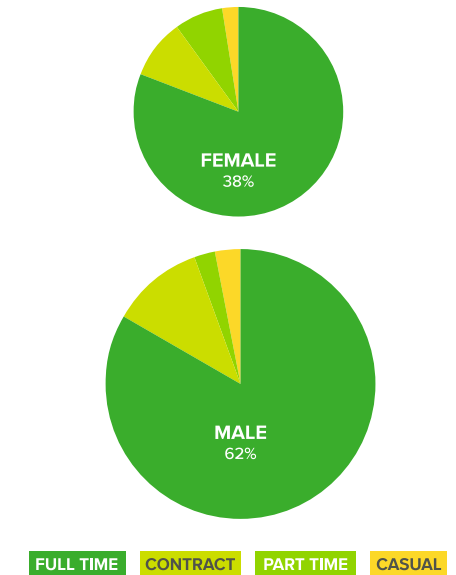
## ABOUT US | AT A GLANCE

### Our Global Footprint



### Who We Are

TOTAL NUMBER OF EMPLOYEES BY EMPLOYMENT CONTRACT & BY GENDER



### By the Numbers

**50+** Years  
Founded in 1960 as H.Q. Golder & Associates by 3 industry-leading experts

**6,200+** Employees  
**\$1B** Annual Gross Revenue of \$1B USD

**165+** Offices  
**150+** Countries  
We have conducted projects in over 150 countries

### Industries We Serve



### Services We Provide



### Governance

#### Message from the EHL Board

Sustainability has been core to Golder's mission since the company was formed nearly 60 years ago, although we may not have described it in this way. Before the term sustainability became a part of the modern lexicon, Golder was focused on the social, environmental and economic interdependencies to our business. For example, our ownership model was designed at the outset with a vision of inter-generational transfer, attending to the social and financial benefits of our people and their communities. In addition, some of our earliest technical work involved assisting clients seeking to provide renewable power or mitigate environmental impacts. That mission continues today.

Whether you use the word "sustainability", the phrase "corporate citizenship", or some other term, it all remains the same within Golder. We are aware of the larger world around us, recognize the positive impact our expertise can provide, and foster the passion of our people to make the world a better place, through our work and our giving.

#### **Richard Beddoes**

*Lead Director – Board of Enterra Holdings Ltd*

#### The Board of Directors

The Board of Directors of Enterra Holdings Ltd, the holding company for Golder's businesses, is the highest governance body within the organization. The Board is comprised of the President/Chief Executive Officer, seven Directors, one of whom is nominated Lead Director, selected by the employee shareholders of the company from among the senior staff, and three external directors. Except for the external directors, board members are all Principals or Associates of the company.

Every year each director is required to formally declare and record any actual or potential conflicts of interest to the Lead Director, who maintains a record accessible to all directors. Directors selected by shareholders hold a four year term with the ability to seek an extension of two years. The term limits are reviewed regularly and are defined in advance of director selection, while director transition is structured to promote stability and continuity. External directors have similar term limits but are reappointed annually.

The Board revised its committee structure in 2016 to focus more effectively on the strategic priorities of the company as defined within the 2020 Global Strategic Plan. The chosen structure reduced the number of Committees to three:

- Ownership and People Committee
- Governance Committee
- Finance and Audit Committee



**2017 EHL Board** – Pictured from left to right: Yezdi Parvi, Emma Griffin, Luis Melges, Jan Hermanson, Neil Benson, Hisham Mahmoud, Rens Verberg, Richard Beddoes, Marcelo Bastos, Lisa Coyne, Amy Langhorne. Marcel Bastos & Lisa Coyne both joined the Board in 2017. Not pictured: Stephen Finn completed his service in 2017 & Diana Severs-Ferguson completed her service in 2016.

In 2017, our Board of Directors clarified and refreshed Golder's commitment to four key elements of sustainability which are central to our strategy and brand:

1. Our work can positively impact the world around us and we will support and promote awareness of the UN Sustainable Development Goals to continually increase our focus on designing and delivering projects that achieve better outcomes for our clients, communities and the environment.
2. Our own activities impact the environment and we are committed to reducing these impacts. Commuting, travel and office space requirements can be lessened by effective digital business applications and we are transforming towards a virtual business environment where consultants can work effectively from almost anywhere in the world.
3. In 2017, we also updated our philanthropic program, as our shareholders committed a portion of our profits to charitable works. Our charitable focus is built upon our historical commitment to creating sustainable communities, with over fifteen years of philanthropy in the AIDS-ravaged continent of Africa. We are taking our corporate social responsibility program to a more global level, expanding it to more locations in need – locations where we live and work. Elements of environmental conservation, education, alleviation of poverty, and disaster relief can all be seen and addressed through this lens.
4. Finally, we remain committed to employee ownership and passing on the benefits of a successful business to the people who commit themselves every day to its success. Our business strategy is predicated on providing a rewarding and sustainable ownership opportunity to present and future employees as a key part of their career development. Ensuring that the ownership model is designed to endure for the next generation is one of the Board's most important tasks.

## ABOUT US | GOVERNANCE

### Executive Committee & Global Operating Group

The Golder Executive Committee, with appropriate delegation to the Global Operating Group, is responsible for implementing the company strategy. The Executive Committee comprises the CEO, COO, regional Presidents, covering Canada, US, Asia Pacific, Europe, Latin America and Mining, and executives with responsibilities for core business functions, including legal, finance, communications, risk, and human resources. The Executive Committee's key responsibilities are to lead and manage Golder to ensure its long-term sustainability and value, and thereby look after the best interests of shareholders.

### Principals & Associates – Leadership by Owners

Golder's Principals and Associates are responsible for achieving the desired outcomes set out in our strategy, through leadership within their own individual areas of practice and responsibility. Our Principals and Associates provide technical leadership, direct and manage projects, interface with clients, conduct business development, and mentor other employees. The Principals and Associates community forms the core of our employee ownership model and its inter-generational sustainability.

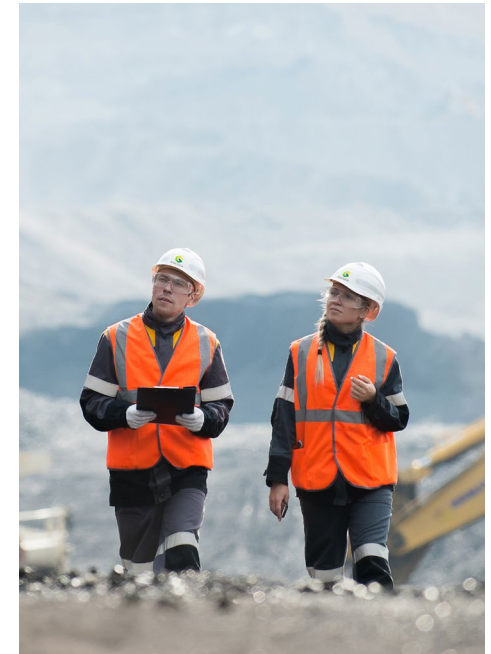
### Anti-Bribery Anti-Corruption

Golder's values guide the behaviors of all employees. Golder's global Anti-Bribery Anti-Corruption (ABC) Policy sets out the requirements for our business to comply with the anti-bribery and corruption laws in the countries in which we do business, or intend to do business, and prohibits corrupt payments or other improper conduct.

Communication to all Golder staff about the requirements in this area is comprehensive and continuous. All employees are required to participate in annual training concerning anti-bribery and anti-corruption and confirm their understanding of the provisions of the policy and the results of non-compliance. Non-compliance is monitored through Golder's Ethics and Compliance Hotline, Region Legal Counsel and self-awareness. Golder maintains a list of restricted countries where bribery and corruption are deemed a risk, and undertakes the necessary assessments and third-party screening in line with our policy.

In 2017, a revision to the global procedure dealing with sub-contractors was undertaken. The updated requirement, effective in 2018, requires Golder to provide copies of relevant global policies, including the Anti-Bribery Anti-Corruption Policy, to all sub-contractors. A comprehensive review of each Golder operation was undertaken in 2017 to assess risks related to corruption. While no significant risks were identified, some improvements and opportunities were noted and are being progressively addressed.

*All governance body members have undertaken ABC training including the EHL Board, the Executive Committee and the Regional Operations Group.*



**2017 Executive Committee** – Pictured from left to right: Lee Anne Lackey, Kevin Stubblebine, Wendy Stoveland, Mark Brightman, Caroline Tavares, Charlie Voss, Hisham Mahmoud, Tom Logan, Hannah Hamling, Greg Herasymuik, Ma Eugenia Parot, Anna-Lena Oberg-Hogsta.

## Internal Perspective – Our Organization & Our People

*Our people, our clients and our communities are seeking true partnership in addressing the challenges of working, operating and living sustainably. At Golder, we pay attention to the varying perspectives of each stakeholder group when considering the issues that substantively influence their assessments and decisions. In addition, Golder has its own set of sustainability objectives that we aim to improve on each year. In combination, this typically results in the development of a set of shared perspectives that form the basis for our approach to delivering sustainable solutions.*

**“ Sustainability will be measured in much the same way clients regard HSSE today. Therefore it is critical that it becomes part of our operations, the way we do business, and is integrated into our service delivery through objectives, metrics, and process. ”**

– Golder employee, Materiality Survey 2017

Golder regularly surveys its people to gain a greater insight into how our colleagues understand, prioritize, and act on issues related to sustainability. Each time we have offered the survey, the engagement has increased, with the most recent survey (2017) generating the largest number of responses yet. In 2017, more than 1,100 people replied to the survey, representing a 40% increase in participation. To make participation more accessible, the survey was available in three languages – English, French, and Spanish for the first time. It is our goal to continue to increase participation in this survey year over year, gathering feedback and opinions from our people and demonstrating our commitment to using this information to shape, implement and improve our sustainability program.

A typical cross-section of the Golder workforce was represented in terms of geographic spread (by operational group) and experience and seniority (from members of the Executive Committee and Principals and Associates, through to entry-level staff).

Overwhelmingly, employees believe that it is important for Golder to operate as an environmentally-sustainable and socially-responsible organization, with 88% of respondents indicating that this is either extremely important or quite important. This view is further confirmed with 86% of respondents asserting the importance of waste minimization, and 77% of respondents indicating the importance of Golder minimizing its carbon emissions, in all aspects of its operations.

Over 96% of respondents stated that it was extremely important or quite important that Golder champions human rights as an employer, including through our supply chain.

Respondents raised concerns about inconsistent internal and external approaches to sustainability, revealing an opportunity to align what we do internally with the services delivered to our clients.

A number of suggestions were made by employees to minimize carbon emissions. These include reducing air travel, substituting train travel where possible, selecting office locations that are more readily accessible by public transport, and developing greater reliance on virtual meeting technology. There are always continuous improvement opportunities for us in this area through education, action, and measurement.

We consider the following UN Sustainable Development Goals to be most relevant to our operations.



**Ensure healthy lives and promote well-being for all at all ages.**

This speaks to our internal HSSE commitments and the programs and initiatives designed to continually improve HSSE outcomes.



**Ensure inclusive and equitable quality education and promote lifelong learning opportunities for all.**

This links to our ongoing support for professional development and in-house learning opportunities, and our support for education through the Golder Trust for Orphans.



**Achieve gender equality and empower all women and girls.**

This connects to the diverse profile of our organization and our recognition of its inherent value.



**Promote sustained, inclusive and sustainable economic growth, full and productive employment and decent work for all.**

As an independent employee-owned company the future sustainability of Golder is an internal business imperative and is reflected in the attention of our Board.



**Ensure sustainable consumption and production patterns.**

Here our commitment to reduction of waste and carbon emissions is demonstrated by our actions.



**Peaceful and inclusive societies for sustainable development, provide access to justice for all and build effective and accountable and inclusive institutions at all levels.**

This relates to our focus on anti-bribery and anti-corruption, and the effort made to educate our people about these issues and their prevention.

## 2016/2017 Employee Materiality Survey Analysis

The 2016/2017 employee materiality survey was open to all employees for the first time and generated the largest number of responses yet. Overwhelmingly, employees believe that it is important for Golder to operate as an environmentally sustainable and socially responsible organization.

### 2016/2017 Materiality Survey Stats

**1,101**  
Participants

**3**  
Languages

**40%**  
Increased engagement



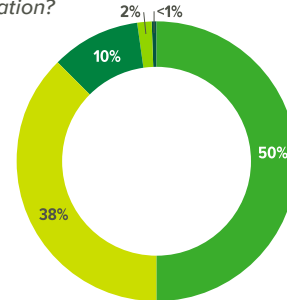
Q1. Which of these groups do you belong to?



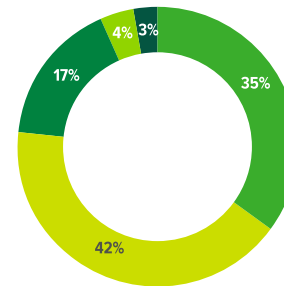
Q2. Which operating group are you part of?



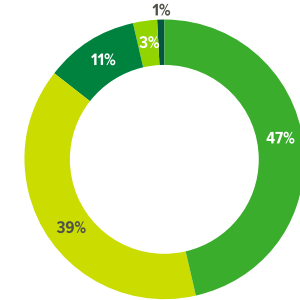
Q3. As an employee, how important is it to you that Golder operates as an environmentally sustainable and socially responsible organization?



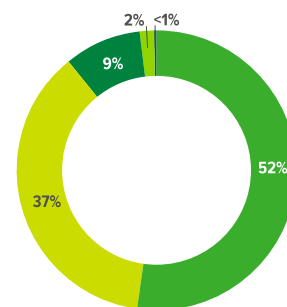
Q4. How important is it to you that Golder minimizes its carbon emissions in all aspects of its operations?



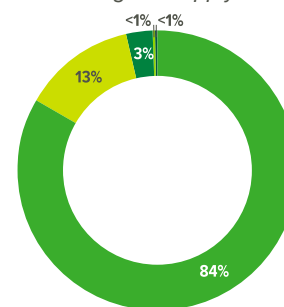
Q5. How important is it to you that Golder minimizes waste (energy, water and physical resources) in all aspects of its operations?



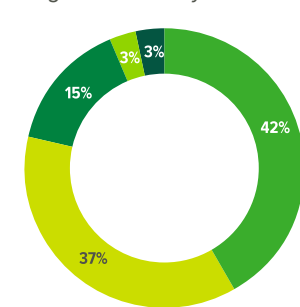
Q6. How important is it to you that Golder is recognised as a provider of sustainable solutions to clients in select markets?



Q7. How important is it to you that Golder does not condone the abuse of human rights as an employer and through its supply chain?



Q8. How important is it to you that Golder is affiliated to a global entity that promotes a sustainable global economy?



EXTREMELY IMPORTANT

QUITE IMPORTANT

SOMEWHAT IMPORTANT

SLIGHTLY IMPORTANT

NOT AT ALL IMPORTANT



Founded in 2003, Golder Trust for Orphans has been helping thousands of children orphaned or displaced by the HIV AIDS pandemic.

*The strong sentiments that our people have about the way Golder conducts its business transfer to the work that Golder does.*

## Intersection – Internal to External

When clients in select markets were asked how important is it that 'Golder is recognized as a provider of sustainable solutions', 89% of them stated this is extremely important, or quite important.

Views about Golder's role in sustainable development are candid and cover both our people's understanding of Golder's current position as a provider of sustainable solutions and a future desired state.

We know that our greatest impact on the world is through the solutions we provide to our clients. Therefore, we are actively working to develop meaningful metrics that are linked to our clients' sustainable development goals and the long-term benefits they derive from operating in a sustainable manner.

We conduct regular surveys with our clients to check for alignment in our approach to sustainability. This survey takes place with a client selection that differs with each distribution, and serves as an additional source of information beyond that gained from our day-to-day interactions.

The most recent survey was sent to a targeted group of clients representing a range of geographies and market sectors, and achieved a 40% response rate. Survey data reveal these clients overwhelmingly believe that it is very important for Golder to operate as an environmentally-sustainable and socially-responsible organization. Similarly, these clients consider it important that Golder provides innovative and practical solutions that help them achieve their sustainability goals.

# 89%

of our clients surveyed stated that it is extremely important, or quite important that Golder is recognized as a provider of sustainable solutions



## External Perspective – Helping Our Clients to Meet their Sustainability Goals

At a global level, Golder works with thousands of clients across the mining, oil and gas, manufacturing, infrastructure, and power sectors who each have their own sustainable development goals. Through the skills and expertise we provide, we align with their priorities to improve the sustainability of their projects. We consider the following eight UN Sustainable Development Goals to be most relevant to our work for our clients.

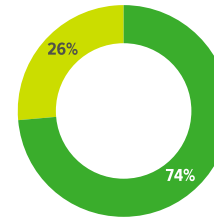
**“Our company fosters environmentally and socially sustainable financing, thus we highly appreciate that involved consultants reflect these values in their policies and day-to-day business.”**

– Golder client, 2017 Client Materiality Survey.

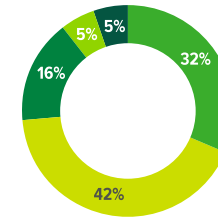
Q1. Which sector does your business belong to?



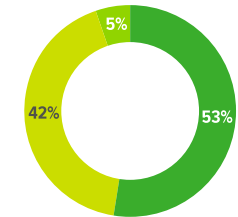
Q2. As a client, how important is it to you that Golder operates as an environmentally sustainable and socially responsible organization?



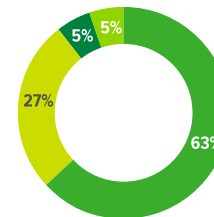
Q3. How important is it to you that Golder minimizes its carbon emissions in all aspects of its operations?



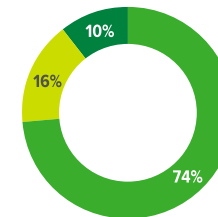
Q4. How important is it to you that Golder minimizes waste (energy, water and physical resources) in all aspects of its operations?



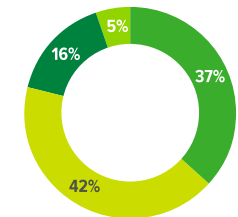
Q5. How important is it to you that Golder is recognised as a provider of sustainable solutions to your business?



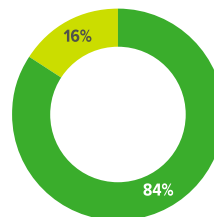
Q6. How important is it to you that Golder provides services and advice that helps your organization achieve its sustainability goals?



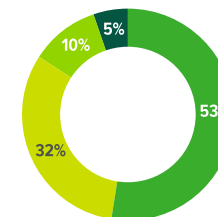
Q7. How important is it to you that the sustainable solutions Golder provides are innovative?



Q8. How important is it to you that Golder does not condone the abuse of human rights as an employer and through its supply chain?



Q9. How important is it to you that Golder is affiliated to a global entity that promotes a sustainable and global economy?



<b>6 CLEAN WATER AND SANITATION</b>  <b>Clean Water &amp; Sanitation</b> Ensure availability and sustainable management of water and sanitation for all.	<b>7 AFFORDABLE AND CLEAN ENERGY</b>  <b>Affordable &amp; Clean Energy</b> Ensure access to affordable, reliable, sustainable and modern energy for all.	<b>9 INDUSTRY INNOVATION AND INFRASTRUCTURE</b>  <b>Industry, Innovation &amp; Infrastructure</b> Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation.	<b>11 SUSTAINABLE CITIES AND COMMUNITIES</b>  <b>Sustainable Cities &amp; Communities</b> Make cities and human settlements inclusive, safe, resilient and sustainable.
<b>12 RESPONSIBLE CONSUMPTION AND PRODUCTION</b>  <b>Responsible Consumption &amp; Production</b> Ensure sustainable consumption and production patterns.	<b>13 CLIMATE ACTION</b>  <b>Climate Action</b> Take urgent action to combat climate change.	<b>14 LIFE BELOW WATER</b>  <b>Life Below Water</b> Conserve and sustainably use the oceans, seas and marine resources for sustainable development.	<b>15 LIFE ON LAND</b>  <b>Life on Land</b> Protect, restore and promote sustainable use of terrestrial ecosystems, sustainably manage forests, combat desertification, halt and reverse land degradation and halt biodiversity loss.

### Suggestions from the Employee Materiality Survey

#### The Energy & Materials We Use in Our Offices

Turn off lights, monitors, TVs, etc. when not in use – do not let them run 24/7.

Most offices reported the air conditioning was too cold in summer, requiring extra clothing in the office – setting a higher temperature to compensate for summer clothing would save significant costs in electricity and create a healthier environment.

Minimize the use of paper and other consumables, use recycled/fillable products where possible consistently across all offices.

Avoid coffee machines that use pods – use biodegradable ones or brew with freshly ground beans.

#### Recycling & Waste Management

Establish consistent recycling paper, plastics and organics programs (composting or bakashi bins) across the offices.

Send bathroom paper towels to recycling.

Single use plastic is one of the biggest waste problems in the world today. Disposable cups/plates/utensils are unnecessary, use the real thing and wash it for repeat use.

Disposable coffee cups are becoming a major source of waste, we can transition people to re-usable cups.

Use jugs of water and glasses in meetings, not individual throw away water bottles.

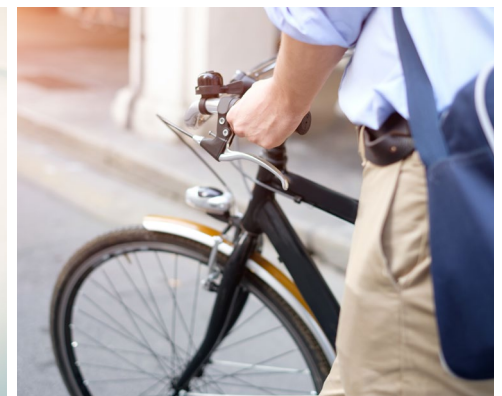
#### Travel

Reduce carbon footprint by minimizing travel – can staff meet on Skype, take a train instead of a plane (in some countries this is a feasible option), public transport instead of a taxi or private car.

Encourage the addition of cars rather than trucks, especially plug-in EV or hybrids for our fleet vehicles.

When the opportunity to relocate an office arises, consider public transport routes.

Encourage cycling to work.



# OUR OPERATIONS

*Our people share a common passion for technical excellence and innovation, which is at the core of our culture. To maximize the power of this passion, Golder provides our people with a supportive work environment, where they have the opportunity to reach their fullest potential, and where diversity and inclusion are valued, free from discrimination and harassment.*

*Golder is a place where collaboration and innovation are fostered, creating a unique culture where we build lifelong relationships that are strengthened with each passing day. We prioritize leading and engaging our people to help them make their best contribution. This is strengthened through global procedures, including our recently-launched High Performance and Contribution program.*

## Developing Our People

The basis of our business is the knowledge and expertise of our people; it is the application of that experience and passion to find the solution that provides value to our clients and revenue for our business. Delivery of quality solutions, with high calibre people leads to business growth, and this has been the underlying reason for Golder's success throughout the world. It is for that reason that people leadership strategies must be the highest priority. Through effective leadership we will continue to attract the best people, deliver on the client-focused aspects of our strategy, and be increasingly adaptive to markets and opportunities.

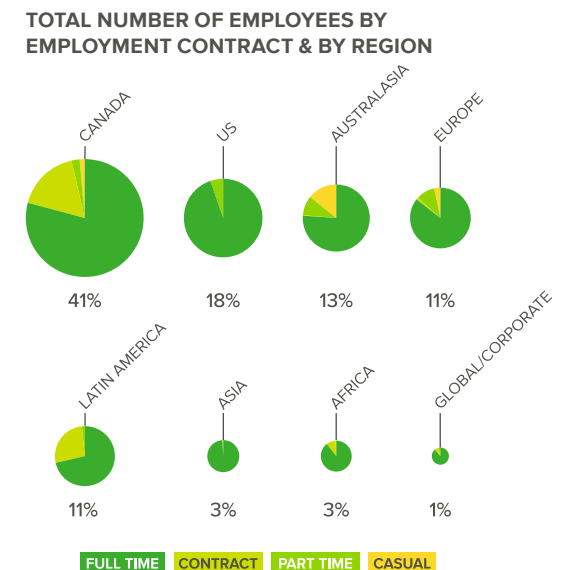
To that end, Golder has set out two important People objectives in our 2020 strategy: to establish career paths and a company-wide career development program for its people, and to create and implement a comprehensive training scheme.

The High Performance and Contribution program was introduced at the end of 2017 and delivers on a significant part of our People strategy, ensuring we have a thorough understanding of the critical roles, people, and skills necessary to sustain our business. In addition, it provides a consistent global approach in the way we lead and manage our people.



The program provides an opportunity for all employees to engage in performance review and career development activities. The comprehensive nature of this program brings together the key processes of engagement and retention by incorporating mentoring and career development discussions and identifying future leadership potential, underpinning our succession planning. As an integral part of the High Performance and Contribution process, the Career Development Program is designed to support our people in navigating long-term careers and to help Golder future-proof our business, supporting the sustainability of our talent and organization.

\*At the end of 2016 Golder had 6,016 employees.



## Our People

### Supporting Our Employees

Golder's employees enjoy a range of benefits relating to healthcare, retirement investment, and work-life balance opportunities. Parental leave is accommodated throughout Golder. Access and leave conditions vary between regions and comply with local legislation at a minimum.

At the time of writing this report, Golder is recruiting a global compensation and benefits executive. One of the goals of this position is to consider compensation and benefits from a global perspective to identify opportunities drawing on contemporary best practices and the views of our employees as guidance.

### Share Ownership

As a 100% employee-owned company, our people are truly invested in, committed to, and are the primary beneficiaries of Golder's success. This commitment sets us apart in every aspect of what we do. More than half of all full-time employees in Golder own shares and participate as owners. We believe that ownership strengthens employee engagement and is reflected in the quality and dedication of service provided to our clients.

Employee ownership affects Golder personally, corporately, commercially and financially.

**Personally** – Choosing to be an owner is a personal commitment. It reflects pride in an organization that is contributing to important and challenging projects and significant global issues, as well as a desire to be shared owners with a group of talented, highly-motivated people who seek to build a successful organization.

**Corporately** – As an employee-owned company, we control our future. Our model gives us the time and opportunity to be forward-thinking, without having to focus solely on the short-term performance requirements that are often imposed on public companies.

**Commercially** – Being employee-owned is an important differentiating feature from many competitors. It emphasizes, and reinforces, that each individual employee has a stake in the success of every project – Golder clients deal directly with the owners.

**Financially** – As an owner, our people receive a financial return balanced between cash, in the form of incentive compensation and dividends, and appreciation in the value of shares.

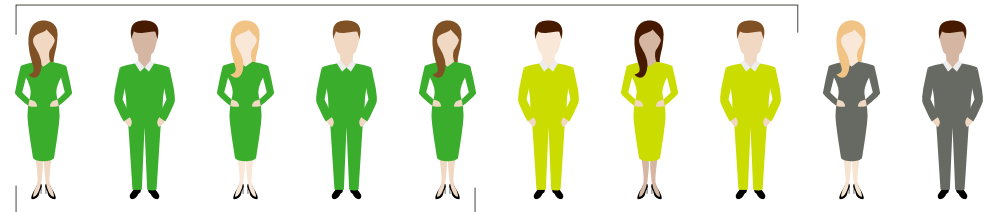
### Improved Data Collection

In August 2017, Golder launched the Oracle Human Capital Management (HCM) platform, a new and more robust method of collecting and collating employee data at a global level, replacing multiple collection points throughout the organization. The HCM will be operational in all locations by mid-2018. With this system in place, Golder will have ready access to data and analytics to inform decision-making related to human capital and workforce planning at a global level for the first time.

### SHAREHOLDER OWNERSHIP

83%

Of employees are full-time



48%

Of employees own shares

## Balance & Perspective in Gender Diversity

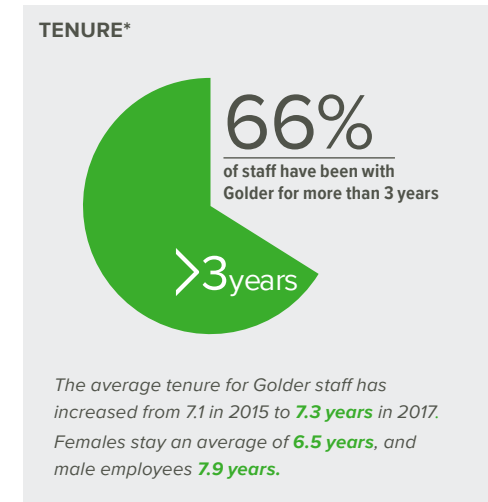
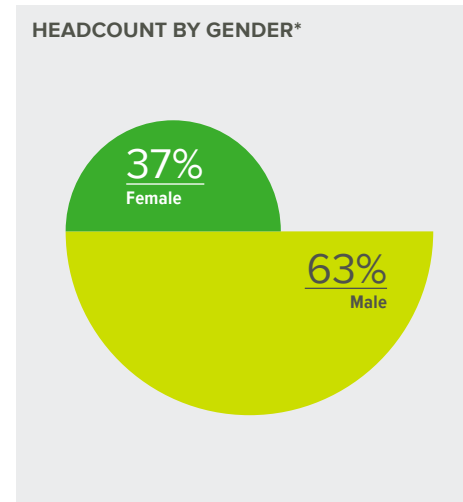
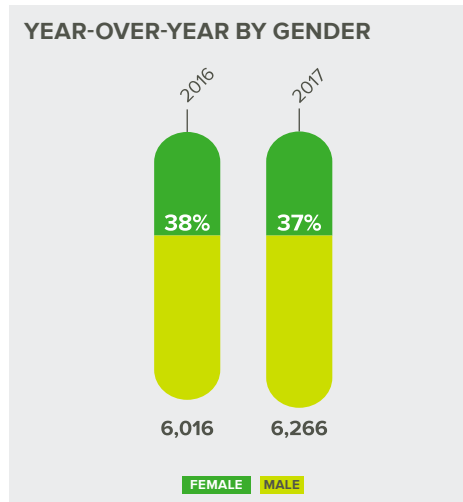
### Diversity

Golder recognizes the significant value of employee diversity and an inclusive workplace. Golder has a diverse operational footprint with an established local presence in multiple geographies, addressing the needs of our clients through local expertise with global support.

With the introduction of a more structured Global HCM system, Golder will gain a better understanding of the diversity profile of the organization and assess which issues are of particular relevance to our employees and achieve a measurable impact on our culture.

Golder will conduct a series of workshops as a pilot program starting in Q1 2018, and learnings from these sessions will be shared with the wider organization to support a global program for diversity and inclusion.

*\*As from August 2017 – see Improved Data Collection Article on page 12 for further information.*



## OUR OPERATIONS | INDIGENOUS RELATIONS

### Indigenous Relations

Golder has a long history of working with Indigenous communities. These relationships are guided by our corporate values of integrity, excellence, teamwork, caring and ownership. We are committed to working with Indigenous peoples in ways that are respectful, welcoming and culturally aware.

As a signatory to the UN Global Compact, Golder's work in this area supports the UNGC's focus on social and environmental sustainability.

Our **Indigenous Relations Policy** outlines our commitment to work with Indigenous communities and businesses to maximize their participation in our projects, and develop profitable partnerships that contribute to capacity development and foster community success. In doing this, we support our clients in fulfilling their commitments to Indigenous peoples.



Kluane National Park, Yukon, Canada

#### Case Studies

Golder has established numerous formal partnerships with Indigenous businesses and communities across Canada, our largest operation, allowing us to build and maintain relationships with communities based on trust, respect, and meaningful collaboration.

Some of our current partnerships include:

**Haneshe LP** – provides environmental services for the oil and gas, mining and infrastructure sectors. Based in Cold Lake First Nations, Alberta, Haneshe is majority Indigenous-owned, with Golder as a minority shareholder.

**IMG-Golder Corporation** – provides environmental and engineering consulting services in the Inuvialuit Settlement Region of the Northwest Territories of Canada. IMG-Golder is majority Indigenous-owned, with Golder as a minority shareholder.

**Kēyeh Nejéh Golder Corporation** – provides engineering and environmental consulting services, focusing on projects in the traditional territory of the Kaska Nation within the Yukon Territory. Kēyeh Nejéh Golder is majority owned by Liard First Nation, with Golder as a minority shareholder.

#### MAXIMIZING ECONOMIC BENEFITS TO INDIGENOUS COMMUNITIES

Golder has developed an **Indigenous Participation Model** to assist our clients in achieving their Indigenous engagement, procurement, and training goals. Our model consists of a seven-phase process as below.



“ *There are opportunities to involve Indigenous people in business ventures as owners, suppliers, contractors and employees. This can contribute to the long-term success of projects and help embed business in the local community.* ”

– UNGC, Social Sustainability, Indigenous Peoples

## OUR OPERATIONS | INDIGENOUS RELATIONS

### Project Collaboration with Indigenous Communities

*Golder is working collaboratively with Indigenous communities to develop training, employment and subcontracting opportunities for local community members as part of our projects.*

#### **Environmental Monitoring for a Pipeline Construction Project, Western Canada**

Golder is undertaking an environmental monitoring program for a major pipeline construction project, including archaeology, wildlife and fisheries/aquatic site services. Our work includes a comprehensive Indigenous participation plan to train and hire Indigenous Environmental Monitors from five First Nations communities along the pipeline route. The project team is working with each community to develop a comprehensive training program for the monitors, to prepare them for working on this project and future opportunities in the environmental services field. Indigenous participation on this project ranges from 30 to 75%, depending on the technical discipline (as a percentage of field staff).

#### **Borrow Source Assessment for a Pipeline Construction Project, Western Canada**

Golder is providing borrow site investigation and design services as part of the project's construction preparation phase. Golder worked closely with the client and local First Nations to develop an Indigenous Participation Plan that includes the procurement of services from local Indigenous groups and businesses. These services comprise elder community member engagement, wildlife monitoring, site security, labor, drilling, mobile ambulance, site access, snow clearing, water hauling, and test pitting. More than 22 Indigenous groups along the pipeline route are represented in the plan, comprising 30% of the project's subcontracted services.

#### **Site Monitoring Program for a Confidential Client, Nunavut**

Golder is working on a four-year Site Monitoring Program in Canada's Arctic, hiring Inuit people from the communities of Qikiqtarjuaq and Hall Beach as environmental assistants, polar bear monitors, and expeditors. Environmental assistants participate in job orientation and health and safety training programs provided by Golder, and receive on-site training in sampling, decontamination and note-taking procedures. To date, Inuit people have made up 27% of the project workforce. Nearly half of the project's subcontracted services have been provided by local Inuit businesses, including charter air services, freight shipping, accommodations, local staff recruitment, payroll, taxes, and all-terrain vehicle rentals.



#### **Growing Our Indigenous Relationships**

We share our future goals with our clients as we recognize the important role building indigenous capacity plays for our collective future benefit. Our plans include continued growth of our existing Indigenous businesses, expanding our network of Indigenous relationships across the globe to support our strategy and increasing our capacity through training partnerships with industry.

## OUR OPERATIONS | TRAINING

*Ensuring that employees have sufficient skills, knowledge and experience to perform their role is a critical goal for Golder, and is driving the development and roll-out of a comprehensive training scheme.*

### Training

At Golder, we capture three types of learning and development: experience, exposure and education. By going beyond structured, single event-based training, this approach has greater impact, enhanced retention of knowledge and skills, and brings a focus on outcomes and performance, enabling Golder to better invest in its people. This integrated approach to learning is bolstered by the High Performance and Contribution process mentioned previously, which sets out development goals for employees and promotes lifelong learning opportunities aligned with long-term career goals.

Our culture of learning and development begins immediately upon joining Golder. Onboarding is the mechanism through which employees are acclimated to the organization, or a new role, and includes the necessary training, skills and behaviors to initially perform their role. It is designed to support the employees to accelerate their engagement, promote their integration into the Golder culture and processes, and maximize their effectiveness and productivity.

Golder is currently trialing some pre-onboarding initiatives in some of our major locations, where future employees have access to a number of resources prior their first day at work, whether their assignment will be office or field-based. We encourage new employees to complete all paperwork and administrative onboarding activities prior to day one so that we can focus on welcoming new employees as soon as they start.

For training that is more structured education or compliance based, the Learning Management System (LMS) is the current delivery platform and includes an active suite of courses that are offered online, or have elements that are completed online. The system includes a diverse array of subject matter, and employees have the ability to participate in the training courses as and when needed. In 2018, the LMS will migrate to the Oracle HCM platform to integrate learning with employee records. Golder will benefit from the improved analytics and interface to guide future training and development decision making.

During 2017, the Manager Success Workshop Series was launched. This has been introduced to our leadership group to provide them with the knowledge and tools to effectively lead teams. The course addresses key managerial topics, demonstrating the attributes of successful leaders and provides support needed to apply best practices in the workplace.

We are excited to develop a sustainable development awareness training module in 2018. The focus and intention of this module will be to expose our people to the many opportunities that Golder has to support our clients and their sustainable development goals, and encourage them to incorporate sustainable approaches and decision-making in every project we undertake as well as their daily lives.

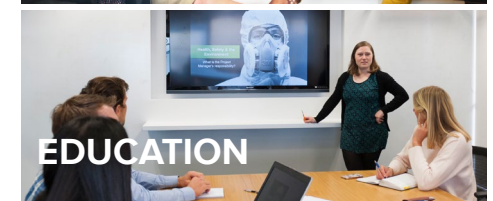
# 23,356

Courses completed in 2016

# 25,873

Courses completed in 2017

#### WE CAPTURE THREE TYPES OF LEARNING & DEVELOPMENT



## OUR OPERATIONS | HEALTH, SAFETY, SECURITY & ENVIRONMENT

### Health, Safety, Security & Environment Overview

At Golder, the commitment to our people begins when we enter into an employment agreement and extends across their career journey.

To fulfil this commitment, Golder is creating a culture of interdependence, built on trust, teamwork and shared ownership of Health, Safety, Security and Environment (HSSE). We are encouraging mutual caring for the safety and wellbeing of others, organizational pride, and world-class safety performance. Golder maintains a progressive discipline program as a positive reinforcement of desired behaviors.

Golder is committed to effectively managing risk and continual improvement. We embed attention to HSSE in all that we do. We identify and plan appropriate control strategies before we issue proposals, deliver services, and throughout each work day. We expect the same of our subcontractors and clients. In addition, through our “Work Safe, Home Safe” program, we encourage safe behavior during off-hours as well.

Recognizing that measurement is a culture driver, we have identified a number of leading and lagging indicators that can best track our performance against our goals. In 2017, our global total recordable case rate was 0.42, below industry average and holding steady now for three years. Our reporting focus is on those common elements across all of our operating regions, but we also track and report as prescribed by health and safety and environmental legislation within each jurisdiction where we operate.

A global Health and Safety Culture Survey was conducted in 2016. This was the fourth survey of its kind, setting a new baseline for Golder's health and safety culture. The 2016 survey had the highest participation rate globally, with 67% of our employees participating. Golder scored at or above our benchmark of 80% in the focus areas of ‘Leadership & Empowerment’, ‘Competence & Training’, ‘Systems, Compliance & Procedures’ and ‘Communication’. Recognizing that stress has become an increasing concern for health and wellness in the workplace, we introduced a focus area of ‘Psychologically Healthy Workplace’ to initiate a benchmark score. We were pleased to see that while, as expected, stress was indicated as an area for more focused attention, this was mitigated by the presence of strong scoring on perceived supervisory support, fairness and respect, which indicates a healthy culture of leadership in this area.



#### OVERVIEW OF HSSE STATS FOR 2017

2,456

Visible felt  
leadership events

5,113

International trips  
supporting our needs

17,572

Total number of  
reported learnings

2,144

Total number of senior  
leadership site visits

## OUR OPERATIONS | HEALTH, SAFETY, SECURITY & ENVIRONMENT

*Our Global HSSE framework sets out procedures, programs, controls and tools to address mandatory measures and controls made effective under our Global HSSE Policy. Our people are required to report any HSSE-related concern to their supervisor, including any conditions or situations with potential for significant harm to the environment.*

### COMMITTEES OPERATING THROUGHOUT GOLDER



### Direction

Supervisors, where they cannot resolve a concern or where they need additional resources, take concerns to their managers, and up the line for assistance in decision making, and where deemed appropriate, the allocation of additional resources.

All employees have the right to refuse unsafe work and are empowered to take appropriate action to intervene where there are uncontrolled hazards that are likely to result in imminent harm to a person and/or to the environment. Every Golder employee is represented by a formal HSSE committee.

The provision of services to clients and the receipt of services from subcontractors are established as part of contracts and service agreements prior to any work planning and/or performance. They follow mutually agreed-upon terms and conditions, and include provisions for compliance with HSSE standards. This requirement is established whether the workforce of the subcontractor is part of a trade union, and likewise for clients with organized labor work forces.

### Compliance

Compliance with HSSE requirements is monitored on a daily basis by supervisors and project leadership, while senior leaders and Golder Integrated Management System (IMS) auditors monitor compliance on a monthly, quarterly and annual basis.

Proactive leading indicators have been identified for employees at every level, including reporting of HSSE learnings, completion of site visits, and demonstration of VFL. These measurements are tied to employee compensation and recognition.

### Reporting

Golder records occupational injury and illness according to the US OSHA criteria. Where hazardous conditions are identified, gender is taken into consideration (for example in relation to potential chemical exposures and reproductive hazards, anthropometric measurements and ergonomics issues) in reporting and mitigating exposure.

Since 2015 Golder's HSSE performance in our leading indicators has improved.

Our employees completed over 5,113 international trips in 2017 and 6,300 in 2016. Working with International SOS (ISOS), we assess each trip for health, safety and security risks prior to approving travel. This process also provides information and support to prepare our people before, during and after travel. Since 2014 we have had zero travel-related security or medical evacuations.

### R U OK? Day

In response to work started in 2015 on psychologically-healthy workplaces, the first Global R U OK? Day was held on September 8, 2016. Timed to coincide with World Suicide Prevention Day, Golder offices around the globe paused to focus on health and wellbeing and extend caring to our colleagues by asking this simple question. On September 14, 2017, Golder employees around the globe came together again to ask "R U OK?" Employees are reminded and encouraged to check in with one another each day.



President & CEO Hisham Mahmoud with  
CFO Lee Anne Lackey

# OUR OPERATIONS | HEALTH, SAFETY, SECURITY & ENVIRONMENT

## Strategic Improvements

Golder identified HSSE-specific priorities within our 2020 Strategy that resulted in 2020 objectives and tactics for 2016 and 2017, including fatality prevention, visible felt leadership (VFL) and promotion of personal health and wellbeing. Various components of our strategic improvements related to HSSE are as follows.

### Global HSSE Manual

At the conclusion of 2017, Golder introduced the Global HSSE Manual under the Golder IMS umbrella, providing information enabling Golder employees and stakeholders to understand and successfully fulfil their HSSE roles and responsibilities. This manual is based on the ISO 14000/OHSAS 18001 management system framework. 85 Golder offices are certified to ISO14001, ISO 9000 and/or OHSAS18000.

### New Best Practice Guidelines

In 2017, the review of the Golder Environmental Issues Register identified two high risk environmental issues related to project delivery; uncontrolled releases and waste management. In response, Golder developed two best practice guides in 2017, Project Waste Management and Prevention of Uncontrolled Releases, providing control strategies and practical measures for Golder projects where these risks are present.

### Learnings

The learnings database provides a platform and system for the reporting of hazardous conditions, near misses, incidents including workplace injuries and illnesses, as well as commendations for demonstrating excellence, leadership, caring and teamwork in HSSE. The commendation is copied to the employee's supervisor and recognizes the employee formally for his or her behavior and contributions.

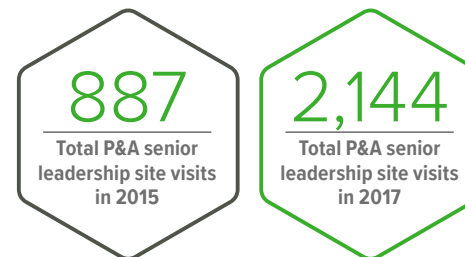
The Learnings Database was modified to facilitate a reporting system of events likely to result in either significant incident or fatality. Where such an event has occurred, a global alert is prepared and circulated in the timeliest manner by our Chief Operations Officer to all Golder employees to raise awareness of the event and to prevent recurrence.

### Visible Felt Leadership

Golder has set out the objective that, by 2020, every Golder employee will demonstrate proactive visible felt leadership (VFL) in HSSE. In 2016, Golder defined VFL to be "observable behavior that demonstrates genuine care for personal wellbeing and for the environment". In 2017, senior leadership throughout Golder was assigned targets to demonstrate VFL and held accountable through the recording and tracking of VFL via their personal scorecards and an eForm style reporting system. We strongly believe that the presence of our senior leaders in the field helps Golder achieve its strong HSSE performance.

### Introduction of Fatal Risk Controls

Based on the review of our loss history and experience, Golder implemented an approach to the prevention of materially unwanted events, such as workplace fatalities, through the application of Critical Control Management, a model set out by the ICMM (the International Council of Mining and Metals). Golder studied and applied this model to sharpen our focus on events with potential to cause serious incident or fatality. Six fatal risks were identified.



### GOLDER FATAL RISK CONTROLS



### Case Study – Outstanding Results in Annual Third-Party Audit

Golder's UK operation scored outstanding results in their annual Achilles UVDB Verify audit for Health, Safety, Environment and Quality. Achilles is an external organization that hosts a supplier database, which some of our clients use to procure goods and services. To serve such clients, our participation and prequalification is mandatory. As a general

rule, service providers such as Golder are considered appropriate if the score from the audit is >85%. Our proficiency in these areas resulted in overall scores that exceeded this requirement, as follows:

- 99% for management systems
- 100% for the site visit

## OUR OPERATIONS | HEALTH & SAFETY AWARDS

### EHL Board HSSE Awards, 2016

The EHL Health & Safety Awards recognize best practices that advance Golder's health and safety culture. Awards are given in three categories: *Proactive Measures*, *Reactive Measures*, and *Care for our Future*. In 2015, a total of 24 outstanding nominations were received and four winners selected by the EHL Board; two awards were presented in the Proactive Measures category.

With Golder's focus on visible felt leadership in HSSE, the individual and team recipients represented powerful examples of this type of leadership. The winners in each of the award categories were announced and the awards were presented at the 2016 Global Principals' Meeting held in the United States. The winning individuals and teams received a personal call from Dr. Mahmoud, Global President and CEO, and members of the EHL Board to offer their congratulations.



#### **Proactive Measures – Andy Haynes**

*Vancouver, Canada*

This award recognized an outstanding contribution in the area of proactive measures to identify and mitigate risk, resulting in preservation of the health, safety and security of our people and others. The global emphasis placed on fatality prevention and six Fatal Risk Controls is a result of the passion and personal initiative of Andy Haynes. Andy's effort powerfully illustrates the contribution a single individual can make, and because of his inspirational leadership we have adopted a simple yet powerful approach to address our highest consequence risks.

#### **Reactive Measures – Christchurch Ground Improvement Team**

*New Zealand*

This award recognized exemplary actions taken in response to unforeseen events that endangered the health, safety and security of our staff and others. The specific circumstances around this award involved a medical emergency on site experienced by a subcontractor, leading to a loss of consciousness, falling from height and significant injuries. Golder's field personnel responded immediately as a team. Their actions were recognized by the attending physician as limiting the health consequences for the injured worker, and by the subcontractor's management who noted "the professional response by the Golder team was exactly what we would hope for from an associated party in such circumstances". The subcontractor recognized this response by making a contribution to the Golder Trust for Orphans. The Golder team followed up both by checking on the status of the subcontractor employee, and by introducing new work practices, adopted by Golder and the subcontractor, to limit the consequences of any future emergency of this nature.

#### **Care for our Future – Heather Di Lauro**

*Leeds, United Kingdom*

This award recognized an individual who demonstrated intentional investment in mentoring, coaching and instruction in health, safety and security, on a day-to-day basis, and was won by Heather Di Lauro from the Leeds, United Kingdom, office. Heather, a compelling role model for both junior and senior staff, demonstrated exemplary health and safety performance, and developed a group of staff who routinely implemented best practices in the area of health, safety, security and the environment.

#### **Proactive Measures – The Sydney Metro City & Southwest Geotechnical Investigation Team**

*Australia*

This award recognized a comprehensive program of proactive measures by a project team. The Sydney Metro City and Southwest Geotechnical Investigation team delivered a large, technically complex investigation, with an extremely high public profile, including significant political and media attention, through exemplary planning and rigorous execution. A number of best practices for projects of this nature were implemented, including hazard identification workshops, sub-contractor on-boarding and Permit to Work processes. The result in this case was project delivery with zero injuries and a very satisfied client. Golder has since publicized these best practices and broadened their application throughout the company.

## OUR OPERATIONS | HEALTH & SAFETY AWARDS

### CEO HSSE Awards, 2017

In 2016 the EHL Board HSSE awards transitioned to become the CEO HSSE Awards. The intent of the Awards has not changed in that these awards recognize the best practice that advances Golder's health and safety culture; the change reflects the company's desire to create a more direct link between HSSE leadership and behaviors with the leadership role of the CEO. The EHL Board continues to play a significant role in the selection process and selected the 2017 winners from a field of 29 exceptional nominations.



*Samarco Renova Project Team (Mining – Brazil)*

#### Proactive Measures

*Brazil*

The winner in the Proactive Measure category was the **Samarco Renova Project Team (Brazil)**, recognizing their work to identify and mitigate risk, resulting in preservation of the health, safety and security of our people and others.

Two weeks after the collapse of the Fundão tailings dam, Brazilian mining company, Samarco, appointed Golder as the lead consultant for the development of the environmental plan to rehabilitate the 640km downstream area impacted by the release, which was the largest accident of this type in the global history of the mining industry. Since that time, Golder has been providing environmental and social assessment, engineering design and field supervision for the environmental rehabilitation of aquatic and land ecosystems. Several H&S procedures were introduced for the first time in Brazil at this project including:

- Use of a mobile app for instant communications among the team
- Upgraded vehicle safety kits for harsh road conditions
- Use of mapping software with continuous hazard updates
- Identification and regular checking of hospitals with anti-venin capability

To combat the significant stress associated with the project, the team regularly promoted recreational activities that favor mental health and quality of life. Almost 2,000 hours of over 30 different work safety training, lectures and campaigns, were promoted as well. A highlight of this project is the record of more than 240,000 worked hours without any serious HSSE incident, an impressive performance formally recognized by the client.

#### Responsive Measures

*Ankara, Turkey*

**Yasin Akçay**, from our Ankara office in Turkey, is the 2017 winner in the Responsive Measures category recognizing exemplary actions taken in response to unforeseen events that endangered the health, safety and security of our people and others.

Yasin is a Geological Engineer responsible for the supervision of the grading activities at a manufacturing site. During one of his night shifts, he observed another contractor working through a strong wind and thunderstorm in the vicinity of a high voltage (HV) pylon. A number of potential hazards including a lighting strike, strong wind, or any wind-blown debris could have potentially damaged the pylon or electric lines, resulting in high voltage wires coming down in the work area.

Although it was not Golder's responsibility to monitor this construction activity, Yasin called the contractor and explained his concerns about their work during the thunderstorm in the vicinity of the pylon and associated risks. After receiving some initial resistance to his concern Yasin elevated the matter and work ceased until the weather conditions were suitable. An incident report led to the development of a protocol to address these hazards. Yasin prevented a potentially serious accident due to his awareness and action. His initiative and persistence ensured the safety of everyone on site.



#### Care for our Future

*Brisbane, Australia*

**Bianca Vanzati** from the Brisbane, Australia office is the 2017 Care for our Future award winner recognizing the intentional investment she has made in mentoring, coaching and instruction in health, safety and security, on a day-to-day basis.

Bianca is a Field Geologist and spends a lot of her time on-site. She is well-known for helping others and making sure that anyone working with her or visiting is safe, paying particular attention to preparing for site conditions, clearly communicating with the onsite team and site visitors, and running engaging and effective prestart meetings.



*Bianca Vanzati being presented with the 2018 HSSE Award by Scott Fidler, Principal & Regional Leader*



*Golder spent 5 years monitoring mountain goats as part of design solutions to mitigate impact on wildlife in the Jasper National Park, Canada.*

## OUR OPERATIONS | HEALTH & SAFETY AWARDS

### CEO Commendations, 2017

In 2017, three CEO Commendations were awarded. This is the first time such awards have been given and stand apart from the existing award categories.

The judges were so impressed by the actions of three people they created special commendations to honor these examples of personal bravery and caring.

#### CEO Commendation – Greg Fleming

*Asia Pacific*

Whose quick actions in responding to a bicyclist hit by a truck was credited for saving the cyclist's leg and potentially her life.



#### CEO Commendation – Sandy Sharp

*Asia Pacific*

Whose sustained devotion and commitment to a colleague undergoing cancer treatment demonstrated our caring value.



#### CEO Commendation – Desmond Dean

*Americas*

For quick response in an automobile accident to help a fellow motorist and to secure his nuclear testing equipment.



## OUR OPERATIONS | AUDITING

### Auditing Golder Operations

Golder operations establish an annual internal audit program which complies with the global audit criteria set out in the Golder IMS. These criteria are reviewed annually and, adjusted as needed. Each Global Process is audited at least annually in each operating jurisdiction. The audit program focuses on Project Delivery, the key process for Golder's business. Supporting processes, such as Health, Safety, Security and Environment, Human Resources and others, are included in the internal audit program.

There are ten Global Procedures comprising the Golder IMS and providing the foundation for audit and external certification by Bureau Veritas. External certification is managed globally using a multi-site audit plan which covers Golder offices that have chosen to achieve certification in international standards for quality, health and safety, and environment. A representative selection of offices is audited externally each year, and the external certification is re-certified every three years. Both internal and external audits occur over a

three-year cycle and are programmed to ensure that all operations are audited annually and all offices at least once in a three-year cycle. Issues that are identified as part of the internal and/or external audits are brought to the attention of the leadership teams and appropriate actions, such as control measures, are identified, discussed and implemented. A root cause analysis is conducted by the operation within which the issue occurred. A follow-up review of the implementation of control measures occurs to assess their effectiveness. Improvement opportunities revealed through the audit process and targets relevant to global, local, and regional strategies are included in business plans.

The Golder IMS team has identified some improvement opportunities for 2018 relating to consistency in internal auditing and the root cause analysis process.

### Supply Chain

In 2017, Golder appointed a Head of Global Procurement to develop consistency in global procurement policies, procedures and systems that are needed to support improved supply chain performance. To support this objective, each Golder region has been assigned a Strategic Sourcing Specialist to conduct an initial analysis of overhead spend. This analysis will lead to strategic sourcing plans at a regional level. At the same time, Procurement is conducting a global assessment of existing processes and systems that support our project supply chain. Particular emphasis is being given to identifying and managing supplier risk. The outcome of these two investigations will inform the design of a future global procurement program that will bring together the requirements of Golder's Procurement, Legal, HSSE, Quality, and HR functions as well as our goals for sustainable practices.

### IT Hardware Change Reduces Energy Consumption

Golder application workloads hosted in our Seattle data center co-location facility consume approximately 200,000 kW hours of electricity per year.

We anticipate an approximately 50% reduction in energy consumption through the migration of these workloads from our data center co-location facilities to the Microsoft Azure platform. The Azure platform is able to deliver these power savings via increased efficiency due to hardware that is both newer, and refreshed more often than our hardware, and via economies of scale allowing them to utilize their hardware at a higher average rate than we can achieve.

In addition, we will benefit from Microsoft's environmental sustainability practices. Microsoft has committed to using 50% wind, solar, and hydro power electricity in their data centers and campus by the end of 2018, to meet 60% early in the next decade, and to continue growing that percentage moving forward.



## OUR OPERATIONS | CARBON FOOTPRINT

### What We Consume

Across our operations, we are committed to the responsible use of energy and energy resources. We are also committed to the continual improvement of our facilities to optimize energy consumption. In each of our geographic regions, Golder tracks energy use in our workplaces and this is reported into our carbon data collection database.

Golder operations and work activities are dependent upon the use of energy and fuels for travel by air, rail, road and ship, and office, laboratory and warehouse utilities.

At the conclusion of 2016, our staff facilities occupied 160 offices and laboratories in 39 countries. Our staff facilities occupied approximately 200,000m<sup>2</sup> around the world. Our 2016 electricity usage increased by 17% over the previous year, while our total energy usage, which includes natural gas, heat and steam, and electricity, remained the same. In 2016, our total energy usage intensity had a small reduction to 20.6 GJ/person; however, the occupied workspace intensity decreased by 8% to 0.62 GJ/m<sup>2</sup>.

During 2016, we travelled approximately 92 million km to support and deliver services to our clients. This compares to 80 million km in 2015 and represents a 16% increase in total business travel (i.e., air, road and rail travel). Our business travel emissions intensity was approximately 1.6 tons CO<sub>2</sub>e km/person, with an overall business travel reduction of 15%.

Golder maintains a fleet of vehicles in order to facilitate business travel and to improve the safety, maintenance and environmental sustainability of vehicle travel. Carbon emissions associated with the fleet operations represented 4% of our total emissions.

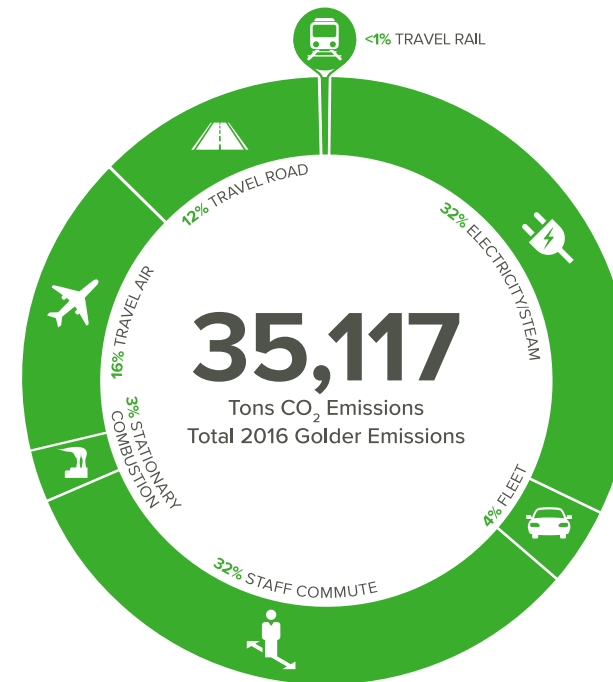
While 28% of our 2016 emissions were associated with employee business travel in airplanes, vehicles, and trains, an additional 32% of emissions resulted from employee commuting. The estimated commuting emissions intensity was 1.9 tons CO<sub>2</sub>e/person.

Golder supports the more widespread application of practices for reducing carbon emissions such as the following:

- LEED offices (including water conservation, renewable energy, etc.)
- Office locations with reduced footprints (including swing spaces with available services, etc.)
- Travel alternatives
- Continued improvement in use of virtual meetings
- Work-from-home agreements
- Waste recycling
- Offset use

Golder is targeting a 15% reduction by 2020 over the 2015 base year based on per-person calculations. In 2017, Golder purchased 700 tons of carbon credits as an offset to the 2016 emissions of 35,117 tons.

*Emissions data for 2017 will be presented in the 2018 report.*



Golder achieved a **5% decrease** in emissions compared with 36,923 tons in 2015.

A carbon offset purchase against 2016 emissions reduced the total to 34,417 tons, representing a **7% decrease** over 2015.

### Carbon Tracking Tool

*Golder has developed a simple carbon tracking tool to support the Ontario Government's greenhouse gas reduction program*

Ontario (Canada) introduced its Cap and Trade Program in 2016, aimed at reducing greenhouse gas emissions province-wide and placing a price on carbon emissions. Golder developed the Carbon Pricing Compliance Tracking Tool to understand, estimate and track the financial impact of the Program for participating enterprises. The Tool captures the compliance tracking in an easy to use graphical dashboard format of key performance indicators which display the results for individual and multiple facilities connected to a parent company. The tool is a secure hosted application that allows clients to login, review history, and run scenarios.

### Carbon Pricing Compliance Tracking Tool

Track your compliance needs today and strategize for tomorrow

LOG IN





*“Golder will  
always look for  
the sustainable  
solution.”*

## Message from the Global Sustainable Development Leader

Each year our organization advances in its goal to provide innovative sustainable solutions for our clients' projects, while at the same time reducing carbon consumption and contributing to the preservation of natural capital. Before delving into our projects, let's consider the current state of the planet.

The latest CO<sub>2</sub> atmospheric measurements from NASA show levels over 400ppm (in comparison, the 1950 values were around 300ppm). The annual increase in global surface temperatures is 0.99°C (2016 was the warmest year on record). Sea levels measured in late 2017 show rises of about 8cm since 1993. This rise is attributable to global warming, resulting in water added from melting ice sheets and glaciers (which has accelerated since 2009), and other factors such as land subsidence.

The effects of these shifts in the global climate are being felt by some of the world's poorest countries. In the Solomon Islands and Palau, entire populations are losing land mass, leaving families homeless. The Maldives are predicted to disappear by the year 2020 if CO<sub>2</sub> emissions continue to rise. Bangladesh is already severely impacted by flooding and rising sea levels, and it is anticipated that flooding and rising sea levels will create 20 million climate refugees in the coming decades. First-world countries are not exempt: a 2°C rise in global temperatures will displace 18 million people in Japan. Increased flood events in low-lying areas are impacting the UK, Ireland, Netherlands and parts of the United

States. The cost to governments of adapting to climate change is in the billions. The City of Miami Beach, for example, is investing at least \$400M in raising street heights and installing water pumps in the most flood-prone areas.

The mitigations required to address this issue are of concern to us all. In early 2017 I met with the Canadian High Commissioner to New Zealand. Through his work in the region, he had deep knowledge and understanding of what many small countries in the South Pacific are facing with rising sea levels. We had the opportunity to speak about Canada's aid program in the Pacific Islands related to climate change and how Golder skills and expertise were well-placed to play a critical role in addressing this pressing issue in the Pacific and around the world.

When I first read the 1987 Brundtland Report (*Our Common Future*) and became acquainted with the words “sustainable development”, the problems facing the planet were in the distant future. I now realize that the far-off future is the present. As scientists and engineers, we can provide solutions to prevent runaway climate change and help create a sustainable presence for our planet.

We see our clients moving towards developing renewable energy and creating resilient infrastructure. On the following pages, we showcase how we have supported our clients in achieving their sustainability goals and adapting to the changing climate.

# OUR WORK

The Award-winning Jasper National Park (UNESCO World Heritage Site) project shows how Golder has worked to protect mountain goats and bighorn sheep. The Vancouver water supply project is another example where Golder worked to future-proof the water supply while protecting habitat for rare bird species. A great story is included on the WestConnex tunnel in Sydney and the award winning Zhuhai-Macau Bridge in Hong Kong where we suggested an alternate and innovative design, delivered significant cost and resource saving, and met regulatory requirements.

Collaboration with stakeholders and use of GoldSET (a proprietary decision analysis tool developed by Golder) at the Smoky Range Boreal Caribou Rearing Facility allowed a rigorous assessment of options to protect the endangered boreal caribou. The Hot Sands Beach project in Canada demonstrates the advantages of taking an alternative approach to shore restoration, reducing costs and energy (50% of the original budget), while increasing habitat for wildlife. I trust you will be inspired by the dedication of our people and the expansive range of sustainable solutions Golder provides.

### **Hannah Hamling**

*President Asia Pacific, Principal  
Global Sustainable Development Leader*

## OUR WORK

*The work we do for our clients not only gives us an important perspective on the challenges of sustainable development, but also presents a world of opportunity for our people to leverage their expertise and fulfil their purpose as trusted advisors and partners to our clients.*

*Working with our clients, we create opportunities for more sustainable solutions which always add value and invariably save costs. We recognize that our success, and the success of our clients, is increasingly dependent on embedding sustainable development principles in our projects and activities.*

Collectively, we act as the trusted advisor to a huge portfolio of projects that have the potential to bring incremental and sometimes disruptive changes to our world. We believe sustainability can be incorporated into every task we undertake. The tools Golder has developed help us identify how to innovate, and remind us to keep the broader picture in mind.

### Innovation

Innovation is an important aspect of technical excellence, a quality Golder is well-known for. With Golder's newly-established Innovation Program, we seek to harness the benefits of innovation through increased investment and by sharing information about our successes more widely.

Golder's Innovation Program, updated in 2017, is aimed at supporting innovation in all its forms, from breakthrough technologies to incremental improvements to existing services we provide. The innovation grant is administered by Golder's Technical Communities, global discipline-based groups of practitioners, with preferential selection for projects with a sustainability element.

Golder is a signatory to the UNGC, which aims to unite the global community to act in a sustainable manner. Material topics related to the work we do for our clients are set out in the Materiality section. Our projects are the greatest proof of our attention to sustainability.

### Case Study – GoldSET

As our projects become more complex, the need to include many different and apparent conflicting requirements from stakeholders increases. The ability to understand and assess the environmental, social, economic and technical risks as well as opportunities during project planning and design – in a transparent fashion – is fast becoming essential to the success of a project, and forms the basis for UNGC Sustainable Development Goal No. 17, which aims to foster collaboration and partnerships between government, the private sector and civil society. The spatial and dynamic simulation tools of GoldSET – created and owned by Golder – allow an integrated approach, which is consensus-based and covers multiple options.

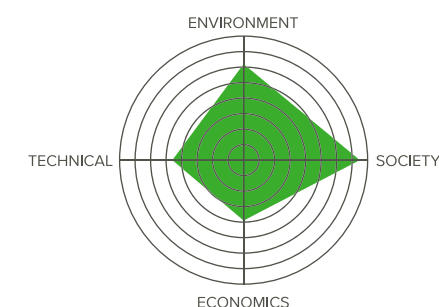
GoldSET is a rigorous multi-criteria analytical tool. It helps to visualize the strengths and weaknesses of the options, weighting the themes and indicators which are important to the project, and grouping them in broad categories of environmental, social, technical and economic. GoldSET supports the decision process, not forcing the selection of an option, but allowing evaluation and comparison to help choose the design that is the most sustainable. GoldSET can highlight the trade-offs involved in the selection of the preferred option.

GoldSET is balanced, impartial and comprehensive, yet simple to use. It provides a convincing demonstration to stakeholders and regulators, helping to visualize the available options and fostering proactive engagement.

### GOLDSET – SIMPLE VISUAL COMPARISON

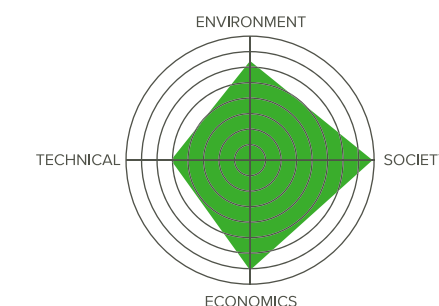
#### Option A

ENVIRONMENT	62%
SOCIETY	75%
ECONOMICS	39%
TECHNICAL	46%



#### Option B

ENVIRONMENT	64%
SOCIETY	79%
ECONOMICS	71%
TECHNICAL	51%



## Project Profiles

### Residue Storage Design Delivers Environmental & Economic Benefits

*Golder has completed a detailed design for a bauxite residue storage facility for Emirates Global Aluminium's new Al Taweelah alumina refinery.*

An initial feasibility design prepared by another consultant, included a compacted clay liner and large earth fill perimeter embankments, requiring a large quantity of imported materials – clay and water – for construction.

The design proposed by Golder substantially reduced construction costs (by many millions of dollars), and greenhouse gas emissions associated with material transport, with no additional environmental impact. The Golder design utilised the geotechnical properties of the bauxite residue to create a stack on a lined base rather than a dam, and avoided the need to construct a perimeter embankment to contain the waste. This significantly reduced the volume of earthworks required to construct the facility and resulted in a much more efficient design. The optimised baseliner design was sympathetic to existing topography limiting the cut and fill required in construction. Materials found on site were used in the works, including dune sand as a drainage layer, rather than importing materials such as crushed rock.

A geosynthetic clay liner was incorporated in the design to avoid importing more than half a million cubic metres of clay, which would need to be hauled a significant distance (and possibly

from another country), should a compacted clay liner been constructed. Specialist accelerated durability testing was conducted on the proposed liner materials to ensure the liner system would perform satisfactorily under the anticipated exposure conditions, including a highly alkaline environment.

The stack has been designed to facilitate progressive rehabilitation, using site won materials excavated to construct the baseliner of the facility. This has limited the exposed area of residue, and the associated risk of dust generation in the hot and dry environment. The design was prepared to enable waste liquid from the refinery to be used as a dust suppressant, reducing requirements to import fresh water during operations (an extremely precious resource in the local environment) and eliminates the need to dispose of this liquid elsewhere. The storage facility is currently being constructed in accordance with the design proposed by Golder.

*Darren Webb (Melbourne, Australia), a Senior Civil Engineer in the Design team, was lead Designer and Project Manager for the project. Fred Gassner was Project Director, Paul Baker the Lead Design Drafter. Riccardo Fanni was responsible for undertaking the specialist laboratory testing (including wind tunnel work) and Mike Gowan provided technical support.*



*Initial stages of baseliner construction at Al Taweelah alumina refinery.*

## OUR WORK | PROJECT PROFILES

### Extending the Life of a Solid Waste Landfill

*In Ontario, Canada, the effective capacity of the City of Barrie's municipal landfill has been increased to over 1 million cubic metres, estimated to last an additional 18 years from the original estimated closure date of 2017, the result of an award winning project for Golder.*

In 2008, the City's municipal solid waste landfill had a licensed volume of 3,900,000m<sup>3</sup> and was slated for closure in 2017. The landfill covers an area of 18.6 hectares and extends to a peak thickness of 30m. Originally designed as a natural attenuation facility, leachate seepage to the groundwater, and impacts to an adjacent stream resulted in environmental risk and compliance issues for our client.

The aim of the project was to address environmental compliance issues, reduce the period and collection rate of the groundwater control systems, and recover air space, thus extending the operational life of the landfill. Golder proposed re-engineering the landfill design to allow the reclamation, or "mining", of waste in the landfill, and to incorporate two new elements; a liner and leachate collection system, and a landfill gas collection system and flare.

Between 2009 and 2015, nearly 1,630,000m<sup>3</sup> of waste was excavated and mined, representing 44% of the total licensed landfill volume. Of this, approximately 742,200m<sup>3</sup> of fines were processed through screening which can be re-used as daily cover for waste reclamation, incoming waste, as well as interim and final cover. This avoids the need to import cover

material, and saves both costs and carbon emissions identified with haulage.

Groundwater control systems consisting of a drain and purge wells have been constructed to intercept the leachate, which is then discharged to the City's wastewater treatment plant, reducing the impacts to the underlying groundwater flow. Once the existing plume in the aquifer under the landfill has been captured by the purge well system, and subsequently shut down, the flows to the wastewater treatment system will be reduced. Furthermore, the cost of operating the active purge well system will end, and the leachate collection will be limited to gravity drainage of the leachate control system.

Landfill gas collectors have been installed in the waste to remove new methane generated in the newer parts of the landfill, which are flared to reduce the effects of greenhouse gas emissions. This system is currently collecting and flaring approximately 340m<sup>3</sup>/hr of landfill gas, and it is predicted that a maximum collection rate of up to approximately 500m<sup>3</sup>/hour may be achieved. On this basis, and considering current approaches to funding of LFG power generation projects, installation of a 500 to 850kW generator is considered feasible and the City will assess this as a business case.

In 2009, prior to reclamation, the remaining airspace was approximately 815,000m<sup>3</sup>; the remaining airspace at the end of reclamation in 2015 was 1,144,550m<sup>3</sup>. Based on the current annual waste disposal rates and population



growth predictions, the total lifespan of the landfill is calculated to extend to 2035, or an 18-year gain. Had this work not been undertaken, the landfill would have closed in 2017 and the City would have had to export the waste elsewhere.

*Golder was honoured with an Award of Excellence for the City of Barrie Landfill project in the 2017 Canadian Consulting Engineering Awards, recognized as the industry's highest honours, offered only to the most remarkable engineering feats featured in projects by Canadian firms and a great credit to the project team. Paul Dewaele, Principal and Senior Geo-Environmental Engineer, was the Project Director and overall*

*manager for integration of design measures and construction, Frank Barone, Principal and Senior Geo-Environmental, led the landfill design, Colin Wong, Principal and managed the landfill gas component, and Doug Kerr, Associate and Senior Civil Engineer, took the lead on stormwater. The project involved a number of disciplines and staff working out of five offices across Golder, demonstrating our ability to conduct a complex project in an integrated approach.*



## OUR WORK | PROJECT PROFILES

### Building a Beach in British Columbia

*The Hot Sands Beach is a popular attraction at a waterfront park in central Kelowna, an urban community of around 200,000 people in British Columbia, Canada. Erosion was limiting the community's recreational use of the beach and the City of Kelowna had originally considered a concrete block wall design as a possible solution which would have resulted in the loss of the sandy beach as a public amenity, an outcome that would disadvantage the community.*

Golder was co-opted into this project while working on another assignment for the City and asked if we could come up with a better solution. We did. Golder's solution was notable from a financial, public use, visual esthetics, ecological and sustainability perspective, maintaining the amenity of the beach for the community, and at a lower cost.

By evaluating rates of erosion and longshore transport of sand such that the correct volume of sand could be estimated to allow a beach nourishment approach, Golder's Coastal and Marine Team, from Victoria and Vancouver, designed and implemented a restored shoreline design for erosion protection. This is a maintenance approach instead of capital works and enables the recreational, ecological and visual values of the beach to be maintained as well as the public amenity. Golder's design cost half the price of the proposed wall, and importantly provided a sustainable shoreline.

The project, begun in 2013 is the first of its kind in inland waters in British Columbia. Golder had designed and installed similar systems in the marine environment in British Columbia, but not for a lake shore. It involves redistributing sand from south to north on a segment of shoreline that has been isolated from its natural northerly littoral supply of sediment. Historically, sediment was transported to the beach from rivers and shorelines further south. The work involves redistributing 3,400m<sup>3</sup> of sand and adding 400m<sup>3</sup> to provide erosion protection over an estimated 10-year life cycle. This is the first restored lake shoreline in British Columbia and broke with the 30-year conventional and regulatory guideline approach which had promoted hardening (concreting) of the shoreline and subsequent loss of habitat for various species of trout and salmon.

Golder will continue to work with the City of Kelowna to monitor the beach and prepare for the next restoration works in 10 years' time.

*Rowland Atkins, Principal and Senior Geomorphologist, from the Victoria (Canada) office, was the Project Manager for this project. Morgan Tidd, Project Geoscientist and Bruce Dean the Project Director.*



### Property Development & Ecological Conversation – A Fine Balance

*In Edmonton, Canada, Golder has helped the local municipal authority, The City of Edmonton to better understand the impact of two large-scale residential property developments on the Big Lake watershed – a nationally-recognized ecosystem – and recommended the mitigation measures that could balance preservation of the natural area with development of the proposed neighbourhoods.*

Like many cities, pursuing economic and population growth while conserving the natural environment is a finely tuned arrangement. In this case, the area at risk includes wetlands with abundant biodiversity, a wide range of ecosystems and ecological processes, including hosting rare avian and aquatic species.

The City of Edmonton sought Golder's expertise to conduct an integrated surface water and groundwater assessment, and consider the ecological sustainability of this natural environment against the potential adverse impacts of a residential development.

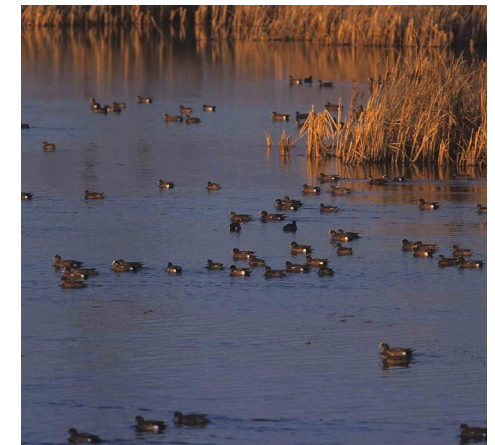
Golder completed a first-of-a-kind detailed ecohydrological study of stormwater-influenced wetlands for the City of Edmonton, including the evaluation of engineering implications for storm pond design to manage run-off in more sustainable ways.

Based on the technical and quantifiable outcomes of this study, and Golder's conceptual mitigation designs, the City has directed the developers to take specific actions to bring

the proposed neighbourhoods and natural area into harmony.

The study proposed 'leaky' stormwater ponds in conjunction with adaptive wetlands monitoring to conserve wetlands. If implemented, this will be a paradigm shift to stormwater pond design and wetlands assessment in Edmonton and Alberta.

*John Wozniwicz, a Principal from the Hydrogeology group in our Calgary (Canada) office was the Project Director, with Rudy Maji, Associate and Senior Groundwater Scientist and Groundwater Lead, Surface Water Lead - Julien Lacrampe, Senior Water Resources Engineer, Lead Modeller - Rob McLaren, Senior Groundwater Specialist, Water Quality Lead - Matt Neuner, Groundwater Scientist, and Senior Reviewer, Nathan Schmidt.*



## OUR WORK | PROJECT PROFILES

### Transport Infrastructure for Resilient Cities

Cities throughout the world are developing transport solutions designed to serve the current and future needs of the urban populations. Improved connectivity, economic development, and population growth are all drivers of the investment governments and private institutions are making in transport infrastructure projects worldwide. Golder's skills and expertise are playing an important role in delivering these large projects. While these projects appear to be unremarkable in the nature of the services Golder provides, Golder's engineers and scientists viewing the design and managing of such works is through a sustainable development lens, working to minimize the energy and materials within the works.



*WestConnex Stage 2 in development  
Arncliffe, Sydney Australia*

### WestConnex Stage 2 – Sydney, Australia

The WestConnex Stage 2 mega transport project will see the duplication of the M5 East Motorway between Kingsgrove and Arncliffe in suburban Sydney, and an extension north to a proposed major new road interchange. It features twin tunnels, each up to 10km long, with two-to-four lane wide excavations, and six-lane wide transition caverns, which when completed, will be the largest motorway caverns in Australia.

Golder is providing specialist geotechnical, contamination, hydrogeological, and landfill management and design advice.

The project has inbuilt sustainable development goals set out by the end client, the Sydney Motorway Corporation. Minimizing haulage related to excavated materials and the reduction of contaminated and unsuitable materials is an important project principle. Material from site (clean tunnel spoil and excavated waste material) is being used elsewhere on site for pre-load embankments, temporary works platforms and general earthworks. Existing contaminated material on site is also being housed within the site containment cell and barrier wall which Golder designed, so that this material is not transferred off-site.

### Moorebank Intermodal Facility

Intermodal freight transport involves the transportation of freight in an intermodal container or vehicle, using multiple modes of transportation (e.g., rail, ship, and truck), without any handling of the freight itself when changing modes. The method reduces cargo handling, and so improves security, reduces damage and loss, and allows freight to be transported faster.

A 240 hectare Logistics Park is being constructed at Moorebank, a suburb south west of Sydney, which includes an intermodal terminal to help Sydney manage the expected growth in freight moving through the city, and take trucks off the road network and onto a freight line providing access to Port Botany.

Golder has been involved in the overall Project, which is being developed by QUBE Holdings Ltd, a diversified logistics and infrastructure company since 2013. In 2017 construction of the first stage of the project commenced, comprising the Moorebank Precinct East (MPE) Stage 1 IMEX Terminal Facility project. This involves construction of civil engineering works for container storage and handling, within part of the overall site, which is approximately one kilometre long and 200m wide.

The major contributions towards sustainable development that Golder has made to the broader terminal development include offering combined and consolidated advice on contamination and geotechnical issues and to develop practical, pragmatic and cost effective solutions to address contamination and geotechnical risks, taking into account the development of the overall precinct area.

This combined approach allowed for use of in-situ ground improvement in place of the previously proposed excavation and replacement of 0.5m of fill, which avoided some 10,000 truck movements, reduced the need to handle contaminated existing fill materials and maintains space in landfill sites for other waste. Initial advice was provided on the use of fill from Sydney tunnelling projects, which were identified as a good potential source of high quality fill in sufficient quantities for the size of the site. Sandstone has been imported from WestConnex to form a new fill platform as part of the Stage 1 IMEX Construction works.

Our scope on the project has developed to include production of earthwork specifications, completion of ground improvement trials and acting as the geotechnical representative for Tactical (our direct client) during construction. We have supervised construction works on site and provided advice to our client on how best to manage earthwork materials on site in an on-going role that currently will extend until mid-2019. This highlights the sustainability benefits that we can provide our clients with when we work as a combined multidisciplinary team.



## OUR WORK | PROJECT PROFILES

### Species Recovery in Canada

Boreal caribou (*Rangifer tarandus tarandus*) are a *Species At Risk* in Canada. They are a forest dwelling species and mainly live in peatland and old growth forest habitats within the boreal forest. Their distribution once covered a large area of boreal forest in Canada, stretching from the Northwest Territories through to Labrador. The species is highly sensitive to natural disturbance (such as forest fires) and their habitat has been eroded and fragmented by human activity over the past 40 years. A government-led species recovery strategy is underway and Golder's Wildlife and Habitat Restoration Specialists Team from the Edmonton, Calgary and Fort St. John offices have been supporting boreal caribou research and monitoring in Western Canada since 2003. In North East British Columbia, this has included work on habitat condition, natural revegetation recovery (conventional linear footprints, low impact seismic) and woodland caribou habitat restoration. Golder is presently involved with two projects that are assisting the recovery of boreal caribou through habitat restoration and a population rearing facility.

### Little Smoky Caribou Range Rearing Facility

Golder was contracted to inform the Government of Alberta about the considerations for implementing a pilot caribou rearing facility as a population recovery tool. The Little Smoky population is well recognized as the most impacted population of boreal caribou in Canada due to more than 96% of its habitat impacted by ongoing anthropogenic disturbance, primarily from the forestry and oil and gas activity in the region. Habitat change has led to increased predation pressures which are the proximate cause of population decline. Since 2008, predation pressures have been addressed by the Province through an intensive wolf control program to maintain caribou on the landscape.

Golder assembled a project team of subject matter experts from Western Canada to work collaboratively with personnel (biologists, planners) from the Government of Alberta in a series of workshops to evaluate the risks, the potential population outcomes, and operational considerations of the rearing facility. This team included the Aseniwuche Winewak Nation, an Indigenous Community actively involved in finding solutions to caribou recovery, providing local knowledge of the area, and input considerations to achieve success of a rearing facility. Subject matter experts also included oil and gas industry representatives, a wildlife veterinarian, caribou biologists, and academic advisors.

Golder's project team consisted of biologists from both Alberta and British Columbia offices, indigenous contracting specialists, as well as planners and GIS support from Western Canada and Italy.

The early involvement of the local Indigenous community and other stakeholders will enable the future engagement required if the province goes ahead with the project. Golder's suite of GoldSET optimization tools and processes were used to identify the areas of highest suitability for the location of the potential rearing facility which balanced environment, social and economic considerations. With this approach, a project that once seemed unfeasible, became a feasible option.

Golder's feasibility study was presented to the Deputy Minister of Alberta Environment and Parks in the fall of 2017 and has been included as part of the Alberta draft range plan for caribou recovery. This plan is currently under public and stakeholder review prior to finalization in 2018.

*The project team was led by Paula Bentham, Principal and Senior Wildlife Ecologist and included Kevin Seel, Business Analyst, Brittney Sammons, Project Coordinator, Corey De La Mare, Principal and Senior Biologist from the Calgary and Edmonton (Canada) offices. Support for GoldSET support came from Massimo Dragan and Michele Ferneti from our Torino (Italy) office and GIS support from Moise Coulombe-Pontbriand and Sean Kurash from Calgary.*



## OUR WORK | PROJECT PROFILES

### Boreal Caribou Habitat Restoration on the Parker Range

Golder worked with a group of stakeholders to develop the Boreal Caribou Habitat Restoration Pilot Program on the Parker Range in northern British Columbia. Senior members of the British Columbia Oil and Gas Commission, Ministry of Forestry Lands and Natural Resource Operations, Ministry of Environment and the Canadian Association of Petroleum Producers (CAPP) have joined together in an effort to restore habitat within an entire boreal caribou range.

This is the first collaborative, landscape range restoration project of this scale in Canada, with Golder leading this group of stakeholders through the development of the project permitting, barriers to implementation, project planning, and an Indigenous Inclusion and Contracting Plan process. The plan has been designed to be implemented over a five year period, starting with a desktop disturbance and vegetation mapping exercise and implementation planning, through to applying restoration treatments and tactical implementation design. The project involves archaeology assessments, watercourse crossing assessments, local contractor procurement, tree planting, wildlife monitoring, and post-treatment monitoring.

Through Golder's influence, the overall Program Plan included an Indigenous Inclusion Plan focused on utilizing local Fort Nelson First Nation owned businesses. Environmental

field technicians and observers from local communities will help to build capacity within the community to support caribou habitat restoration efforts over the long-term in north-eastern British Columbia. During the Implementation Phase in 2017, over 36% of the Project spend went to Aboriginally-owned businesses and over 40% went to local businesses to support the Project. The process used by Golder to engage the local communities, and the success of the Indigenous Inclusion Plan was considered a great success by the Government of British Columbia, and as a result their caribou planning and project execution practices have been amended to involve indigenous communities at the start of all new caribou restoration projects in that province.

Outcomes of the habitat restoration implementation are projected to be immediate for predator and human movement and access control, and to take 20 to 30 years for ecological habitat restoration for caribou.

*The project team came from a number of locations across Canada and included Paula Bentham, Principal and Senior Wildlife Ecologist, Shauna Huculak, Senior Archaeologist, Caitlin Parker, Wildlife Biologist, Chris Shapka, Vegetation and Rare Plant Specialist, Jack Yurko, Environmental Specialist, Murdoch Taylor, Wildlife Biologist, Susanna Lin, Project Coordinator, and Medina Hansen, Associate and Project Manager.*



### Solutions for Freshwater Fish Species

Jaewoo Kim, Aquatic Biostatistician with our Calgary office, is investigating non-permanent barriers for invasive fish species. A series of laboratory trials which found strobe lights and vertical electric barriers may prove to be a useful deterrent in the field for managing both invasive and important native freshwater fish species was set out in the study "Effects of strobe lights on the behavior of freshwater fishes", which was published in the Environmental Biology of Fishes in August 2017, co-author by Nicholas E. Mandrak, Associate Professor with the University of Toronto Scarborough's Department of Biological Sciences.

New ways of curtailing aquatic invasive species are needed if we are to keep Asian Carp, Sea Lamprey, Northern Snakeheads, Round Goby, and Zebra/Quagga mussels out of our waterways and barrier technologies are a potentially viable option. A related study by the same authors, "Effects of vertical electric barrier on the behavior of common carp" published in June 2017, suggests that a relatively weak electric gradient can inhibit the movement of common carp.

For Golder clients, these findings may offer a variety of solutions for freshwater fish species management in the future.



## OUR WORK | PROJECT PROFILES

### From Brownfield to Bayside Waterfront Neighbourhood

*Golder completed the geotechnical and environmental work for the award winning Bayside Development in Toronto, a project changing an underutilized, environmentally impacted site into a vibrant mixed use development and waterfront destination.*



The Bayside site is situated on the former Queen Elizabeth Docks which were constructed in the late 1940s through infilling of Lake Ontario. Infill included materials such as foundry sands and ash that would not meet current environmental standards. Further development in the 1950's was intended to support anticipated increases in shipping traffic along the St Lawrence Seaway, but with a decline in the manufacturing sector, this use was not fully realised.

Environmental and geotechnical requirements, and sustainability objectives were integrated throughout the designated development lots and for public spaces. The project will target a LEED® rating. LEED (Leadership in Energy and Environmental Design) is a certification system developed by the US Green Building Council to encourage the construction of energy and resource-efficient buildings that are healthy to live in.

Characterization of the site beginning in the late 2000s confirmed that the environmental condition of the site needed to be addressed to allow development for other uses. Golder became involved in the project in 2011 undertaking additional investigation and risk assessment, and developing a risk management plan allowed for the minimization of soil disposal

to landfill. Disposal requirements were limited to materials that were required to be removed to accommodate site servicing and building foundations. Environmental barriers, including vapour barriers and capping layers, were incorporated into the design of the development sites and public spaces to limit the potential for contact between future site users with the fill materials that remain on site. For site servicing, these barriers were integrated with geotechnical supporting systems that were intended to compensate for the low bearing capacity of the fill materials.

When the development is eventually completed, Bayside will include 190,000m<sup>2</sup> of high-density mixed residential, employment, cultural and commercial uses on former brownfield land located 1.5km from downtown Toronto, a site that has been underutilized since the 1960s. The development will therefore make available land critically needed for housing and contribute toward making Toronto a more sustainable and livable city.

Bayside will promote public access to the Lake Ontario shoreline and includes pedestrian friendly connections to the broader waterfront communities. Aitken Place Park, a 0.75 acre multi-purpose public park will add recreational



amenity in the locale, and is designed to attract visitors to the precinct, all significant enhancements to the public space in this area of Toronto. Sustainability features incorporated into the park's design include easy access to public transportation and low energy lighting, as well as the use of drought-tolerant native plants that will be irrigated with harvested rainwater. The Bayside Project won the 2017 Canadian Urban Institute Brownie Award in the "Renew" category for community-scale development that transforms underutilized properties into productive residential and commercial projects in Canada.

Canada's Mississauga office undertook this project. Steven Desrocher (Associate and Senior Contaminant Hydrologist) was the Qualified Person for Environmental Site Assessment (a regulatory requirement in Ontario) and Project Director, Frank Barone (Principal and Geo Environmental Engineer) the Engineer of Record in developing the risk management plans, Stephen Cioccio (Environmental Risk Assessor) the lead risk assessor, Jessica Yong (Environmental Scientist) coordinated the investigation and reporting. The field team included Victoria Atencio (Environmental Health and Safety Technologist), Bruce McDaniel (Senior environmental Technologist), Amir Sodagar (Environmental Scientist) and Andrew Van Roon (Environmental Field Technician), Lead Geotechnical engineers Pierre Levasseur (Senior

### Golder's Expertise Informs Global Mining Guidelines

Golder made an important contribution to the International Council on Mining and Metals (ICMM) position statement on managing tailings storage facilities, published in 2016. The risks associated with mine tailings have long been recognized within the industry and more recent dam failures prompted ICMM to undertake a review of current practices and respond with a more robust framework around the safe management of tailings dams. Golder's experience in tailings management across geographies, climates, commodities and regulatory frameworks was sought as part of a review of the practices of ICMM's 23 member companies, representing the world's largest mining companies.

*This work was led by Francois Marais, Principal and Strategic Advisor Engineering, and Mike Abbott, Manager – Engineering Services, both from our Johannesburg, South Africa office.*

Geotechnical Engineer) and Lisa Coyne (Principal and Senior Geotechnical Engineer), and Viny Henderson (Pavement and Materials Engineer) and Ludomir Uzarowski (Principal and Pavement Engineer), pavement design.



## OUR WORK | PROJECT PROFILES

### Design Solution to Mitigate Impact on Wildlife in the Jasper National Park

*A five-year mountain goat monitoring study associated with Brewster's Glacier Skywalk in Jasper National Park clearly demonstrates that Golder's environmental assessment correctly identified potential impacts from the project and proposed mitigations that worked. The project is built and the mountain goats are present as star attractions.*

In 2010, Brewster Travel Canada proposed to redevelop the Sunwapta Canyon Viewpoint on the Icefields Parkway in Jasper National Park into a new interpretive attraction that would provide visitors of all abilities with a unique mountain experience. The development included the Glacier Skywalk, a 300m glass-floored walkway projecting almost 30m out over the Sunwapta Valley. Golder prepared the environmental assessment for this project, as required under the Canadian Environmental Assessment Act (CEAA).

Jasper National Park is part of the Rocky Mountain UNESCO World Heritage Site, and developing a project inside the park presented some unique challenges requiring innovative design and monitoring solutions to understand and mitigate the potential adverse effects from the Project, and to ultimately support project approval.

The Glacier Skywalk attracted a high level of public interest and was frequently featured in local, national and international news. A key area of public concern focused on the potential impacts of this project on local wildlife, particularly mountain goats (*Oreamnos americanus*) and bighorn sheep (*Ovis canadensis*). The difficult ecological questions surrounding the potential adverse effects of the Glacier Skywalk on local wildlife meant that there was considerable risk that the project may not be approved. To add to these challenges, there was a lack of site-specific data on mountain goats and bighorn sheep.



Drawing on their ecological expertise and decades of experience, Golder developed a unique approach to assess potential impacts from the Project. Using a combination of remote cameras and field observations, Golder was able to provide information about how mountain goats and bighorn sheep were using the site and interacting with people prior to developing the project. Based on the high-quality results obtained during the first year of the monitoring, Golder was able to confidently identify potential impacts from the Glacier Skywalk and implement changes to the project design and construction schedule that would minimize the impacts of the project on goats and sheep.

Golder's commitment to technical excellence helped Brewster to obtain approval to develop the Skywalk in early 2012, on the condition that a monitoring program was implemented for five years post-construction to further evaluate potential effects to mountain goats and bighorn sheep and provide opportunities for adaptive management. Golder monitored mountain goat

and bighorn sheep use of the area around the Glacier Skywalk during construction and for the first three years of operations. Results of this work supported the predictions made in Golder's environmental assessment and indicated that the Glacier Skywalk did not substantially affect bighorn sheep or mountain goat patterns of site visitation when compared to pre-construction 2011 data.

Golder was recognized with an Award of Merit for the Glacier Skywalk Environmental Assessment and monitoring project at the Consulting Engineers of Alberta Showcase Awards in February 2014.

*The project team was drawn from our Calgary office in Canada, principally Marcie Plishka, Project Manager, Martin Jalkotzy, Project Director, and Kyle Knopff, Environmental Lead with support from Talus Environmental for environmental monitoring services.*



***“ Congratulations to Golder for their innovative mountain goat and bighorn sheep monitoring program and technically excellent assessment of the potential impacts on goat and sheep of Brewster's Glacier Skywalk project. Their exceptional contributions were instrumental in Brewster's Glacier Skywalk receiving approval to proceed with construction of this attraction in the Canadian Rockies. ”***

*– Judges' Comment, CEA Showcase Awards, Award of Merit Alberta Innovators Magazine, Spring 2014*

## OUR WORK | PROJECT PROFILES



### Golder team produces the first Mine Water Atlas for South Africa

*Commissioned by the South African Water Research Commission, and launched by South Africa's Water and Sanitation Minister, Nomvula Mokonyane, at the 2017 UN Water Summit in Durban, Golder has produced the country's first Mine Water Atlas, designed to be a tool for those with an interest in water resources from all sectors to broaden understanding of water vulnerabilities and the challenges facing communities and mines, leading to better decision making.*

The Atlas gives a detailed description of mining and water resources, a ground water vulnerability model, surface water threat model, and a geo-environmental risk model. The project consolidated multiple existing but fragmented data points covering mineralogy,

water quality, flow, ecology, and hydrogeology, to provide a comprehensive national water resource overview.

Expected users include the mining sector, government departments, researchers, students, and even the banking sector as it assess water as a risk when determining investment potential.

*Tracy Skinner, Enterprise Geo-Information Analyst, from our Johannesburg (South Africa) office, was the GIS lead for the project and responsible for data analysis and creating the web map application and Massimo Dragon and Piero Santoro from Golder's Italian operation helped with the design and build of the web map application.*



### Future proofing a water supply for a growing community

*To meet the increasing water supply demands of the Lower Mainland and respond to significant population growth south of the Fraser River, Metro Vancouver undertook a significant upgrade to its water supply infrastructure. This included a new water supply tunnel across the Fraser River as well as new connecting water mains on the north and south sides of the river, all of which Golder has been working on since 2005.*

When commissioned, the Port Mann Main No. 2 North will comprise a 1.5-m-diameter, 2.1-km-long water main extending from the Cape Horn Pump Station and Reservoir to the north shaft of the Port Mann Water Supply Tunnel. This upgrade will ensure the continued supply of water to residents and businesses in the region and meet the demands of projected population and economic growth for the next 75 years.

During construction of the new northern water main savings on costs and carbon dioxide emissions were realized as a result of the re-use of excavated soil as backfill. Weak and compressible organic soils along portions of the route needed to be stabilised to prevent settling. Golder's recommended re-use of excavated spoil as backfill outside of the pipe-support zone, and through peaty sections of the route, offset the risks of large post-construction settlements in the organic soils and avoided 5,000 metres of imported fill and the associated trucking and compaction activity.

The pipeline route construction encountered sensitive bird nesting areas and the habitats of a number of rare species of invertebrates requiring rigorous environmental management planning to meet regulatory requirements and community expectations. An archaeological assessment was undertaken and a resultant management plan involved useful input from the local First Nation communities. During construction a collaborative effort between Golder and the First Nation communities ensured that excavated material was properly inspected for the presence of archaeological material.

This has been a five year project for Golder with commissioning expected in 2018.

*The project team was drawn from our British Columbia offices in Canada: Anthony Fuller, Project Manager and Geotechnical Engineer of Record, Trevor Fitzell, Project Director, Shawn Redden, Environmental Lead, Ben Hjermsstad and Andy Mason – Archaeological Leads, and Mark Adamson, Geo-Environmental Lead.*



### Awards & Achievements

#### Safety Award for Golder Chile

Golder received a safety award from Teck as part of the team working in a geotechnical field campaign, including borehole drilling, test pit excavations and surface geophysics carried out on the Quebrada Blanca project (Northern Chile).

Despite challenging conditions, including an altitude of over 4,000m and extreme temperatures, no incident with lost time had been reported for more than a year.



The Quebrada Blanca Field Team in Northern Chile.



Jason Cox, from Irvine, California

#### Victor Milligan Award

Named after Victor Milligan (1929 -2009), one of the founding fathers of Golder, the Victor Milligan Award is an internal award open to ground engineering practitioners in any Golder office worldwide, and goes to the best technical paper published by a Golder employee in a given year. Victor was recognized worldwide for his expertise in geotechnical engineering and served as president of Golder from the early 1960's until the early 1980's, after which he continued as Chairman of the Board. Read more about Victor's legacy.

#### 2016 Winner – Jason Cox

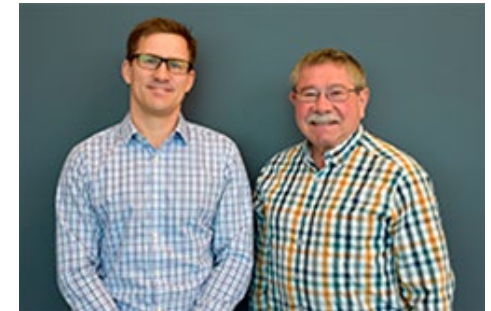
Jason Cox from Golder's Irvine, California, office was the 2016 Victor Milligan award winner. Jason's paper ***Implications of variable waste placement conditions for Municipal Solid Waste (MSW) landfills***, detailed a comprehensive field and laboratory-scale investigation that involved studying systematic moisture addition to MSW during compaction with the goal of improving placement efficiency, optimizing airspace, and increasing revenue potential.

#### 2017 Winners – Dennis Becker & Peter Thompson

Significant material saving on fit for purpose design: Peter Thomson and Dennis Becker, Principals and Senior Geotechnical Engineers from the Calgary, (Canada) office, are the Victor Milligan Award Winners for 2017 for the work they have done on a fit-for purpose design of driven steel pipe piles for a large oil and gas processing facility in the Fort McMurray area.

Their paper ***Reliability-Based Calibration of Geotechnical Resistance Factors for a Large Industrial Project***, with Gennaro Esposito and Jim Wright from Shell Canada Ltd was published in Geo-Vancouver 2016 as part of the annual Canadian Geotechnical Conference in Vancouver BC in October 2016. The collaborative and innovative method presented in their paper resulted in savings of millions of dollars while maintaining the integrity and safety of structures on the large industrial project.

Our client, Shell, held a view that an existing design of the proposed facility did not match the intended use of the structure, and that it was over-engineered in order to meet strict national building code guidelines. Dennis Becker, who has been a member of the National Building Code Canada working group for over 20 years, was the right person to turn to.



The building code has provision for building owners to develop project-specific values that could supersede the code. Dennis and Peter calculated the reliability values and associated geotechnical resistance factors for the facility that met the intent of the code, demonstrating that a lower reliability index was appropriate, a revision that will save the client millions of dollars in materials by reducing the steel pile requirement by 25-35% over the original design requirements.

## OUR WORK | AWARDS

### Canadian Consulting Engineering Awards

Golder was recognized for engineering excellence at the 2017 Canadian Consulting Engineering Awards, held in Ottawa, Canada. Golder received an Award of Excellence for the City of Barrie Landfill Reclamation and Re-Engineering Project. We were also recognized as part of the winning team, led by Ausenco Engineering, for Metro Vancouver's Port Mann Water Supply Tunnel project, which took home the top prize – the Schreyer Award, in addition to an Award of Excellence.

These awards represent the highest honors for excellence in consulting engineering. Now in their 49th year, the awards are a joint program between the Association of Consulting Engineering Companies – Canada (ACEC) and Canadian Consulting Engineer magazine. Winning projects are selected based on high-quality engineering, imagination and innovation, and showcase the important role that Canadian consulting engineers play in every aspect of our lives.



City of Barrie Landfill Project Team at the CCE Awards Gala Reception.  
Left to right: Awards Host, Frank Barone, Principal, Geo Environmental Engineer, Paul Dewaele, Principal, Senior Geo Environmental Engineer, Doug Kerr, Associate, Senior Civil Engineer and Awards Host.

### Australian Geomechanics Society Award for Nigel Ruxton

The Australian Geomechanics Society 2016 Don Douglas Youth Fellowship Award for the most outstanding Australian paper at the 11th Australia and New Zealand Young Geotechnical Professionals Conference was made to Nigel Ruxton, Design Group Leader in the Brisbane (Australia). Nigel's paper, Geotechnical Challenges of Brownfield Sites for Use as Landfill, detailed the Queensland Waste Management Team's work to develop a 3D model of underground mine workings and the detailed design for a challenging brownfield landfill in south-east Queensland.



Nigel Ruxton is presented with his award by Darren Paul, Golder Principal and Senior Engineering Geologist from our Melbourne office and past President of the Australian Geomechanics Society, and Charlie Price, Chair of the New Zealand Geotechnical Society.

### Mining Safety Award for Salt Lake City Team



Kevin Anderson (left) VP, Utah Mining Association & Kent Houghton (right), Director of the Office of Coal Mine Safety at the Utah Labor Commission present safety award to Golder's Dave Fadling at a ceremony in Salt Lake City on April 12, 2017.

Golder received a safety award at the 6th Annual Mining & Manufacturing Safety Conference in Salt Lake City, Utah. The award was in recognition of Golder's commitment to safety, and presented by the Utah Mining Association for "advancing a culture of safety in Utah".

## OUR WORK | AWARDS

### Catharine Shaw Honored by CIM with Inaugural Award

Catharine Shaw, Mining Client Program Manager from the Toronto (Canada) Office, was the first-ever recipient of the Diversity and Inclusion Award, given by the Canadian Institute of Mining, Metallurgy and Petroleum (CIM).

This award was created to recognize exceptional contributions towards improving diversity and inclusion in the mining industry in Canada. Founded in 1898, CIM has more than 11,000 members and is the leading not-for-profit technical society for professionals in the Canadian minerals, metals, materials and energy industries.



### Innovatio Award for Golder Canada's Legal Team

Golder's Canadian Legal Team was honored with the Risk Management, Small Department award in the 4th Annual Innovatio Awards. The team continued their internal "Making Legal Services Better" campaign with a focus on risk management as a key vehicle for the legal department to help improve Golder's risk management.



### BHP Awards Golder Team for Safety Campaign

A Golder project team working on BHP Billiton's Jansen project finished first in the Summer Safety Campaign conducted on site. Jansen is a \$14B potash mining operation, located approximately two hours east of Saskatoon. Golder has been an active partner in this project since 2014 and has been providing quality assurance/quality control material testing and surveying services for the construction of the mining shafts (shaft sinking) as well as various above-ground construction projects.

### Client Choice Awards in Australasia



The Client Choice awards are organized and governed by Beaton Research and Consulting, an independent benchmarking and customized research consulting group serving organizations that provide professional, financial and member services to clients worldwide. These awards are conducted in partnership with the Australian Financial Review.

Nominations are based on client feedback about Golder and assessed against other contenders in each category. Golder is the most decorated firm in the awards' 13-year history, with a total of 27 awards, reflecting Golder's ongoing commitment to technical and client service excellence.

In 2016 Golder won in the following categories:

Winning awards for:

- Best consulting engineering firm (revenue >\$200M)
- Best provider to Construction & Infrastructure
- Best VIC firm
- Best WA firm

In 2017 Golder won the **Construction & Infrastructure** award.

# OUR COMMUNITIES

*Our business and our projects span the globe and impact the world around us. We are committed to thoughtful balance as we plan, design and consume, with a view to the long term. We aim to improve the lives of communities we touch through our work and by our giving.*

## Advancing Corporate Philanthropy

During a global meeting of Golder Principals in 2016, a decision was made to pursue a corporate philanthropy program beyond the existing commitment to the Golder Trust for Orphans.

As a result, Golder will be focusing philanthropic efforts on Sustainable Communities. We will look to guidance from specific UN Sustainable Development Goals that we believe link to our core culture and capabilities and create opportunities for long-term advancement of the communities in which we live and work.



A sustainable community needs:

**Education** – Supporting existing frameworks for learning and sharing knowledge, contributing our expertise in science and engineering.



**Community Enhancement** – Improving communities in need, with a particular focus on communities where we live and work.



**Conservation** – Seeking to protect, preserve and restore our natural environment.



**Disaster Recovery** – Applying our expertise to restore environments after destructive events, bringing life and prosperity back to communities.



This program will launch in 2018 and build upon lessons we have learned from our 15-year experience with the Golder Trust for Orphans program on the African continent.



## OUR COMMUNITIES | GOLDER TRUST FOR ORPHANS

### Golder Trust for Orphans

*The Golder Trust for Orphans was established in South Africa by Golder employees in 2003, at a time when there were many children orphaned or displaced by the HIV AIDS pandemic.*

*With the realization of their ability to make a significant difference in the world, our people decided to act and not be bystanders to the devastation caused by this disease.*



Since then, the Trust has evolved from a small grassroots operation and today is an enterprise focused on developing sustainable solutions that empower the community and improve the lives of vulnerable children. To achieve this objective, the Trust supports and partners with organizations who share the same mission, and currently funds 15 projects in 8 African countries where over 4,000 children benefit from food security, healthy living environments, and education.

#### Operating Model

The operating model adopted by the Trust is to partner with existing non-governmental organizations (NGOs) that are already providing support consistent with our objectives.

There is a stringent assessment process for potential projects and in 2017, a new NGO located in the Molweni Valley in South Africa joined the Trust program. In partnership with Philangethemba, the Trust has built an Early Childhood Development Training Centre for teachers, parents, grandparents, and support group training. The Centre hosts homework clubs to support children with their homework tasks, and a toy library, allowing parents and children to borrow toys for use at home.

#### One-Time Grant Funding (20%)

The intent of this type of funding is to provide immediate assistance for short-term/emergency situations that our NGOs sometimes face. The NGO is required to demonstrate a genuine need and report how the funds will be used. This type of grant does not require a commitment from the Trust for further funding. In 2017, we provided grant funding for the survey and drilling of a new borehole for a project in Malawi. The community had no access to water at all, so having this vital water source has allowed them access to clean drinking water and is also used to irrigate crops they have planted for sustainable food supply during the dry season.

#### Enterprise Development / Investment Funding (40%)

This category involves equity funding to support capital expenditure for the establishment or expansion of income generating projects. The funding can be provided in a variety of ways:

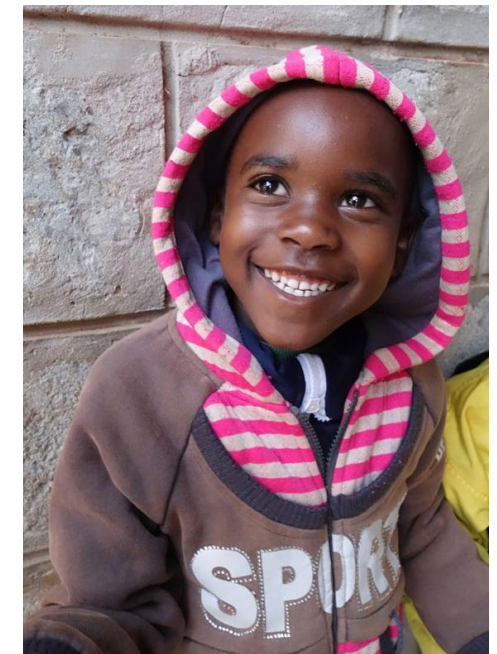
- Social capital: the expectation of income generation or in support of income generating ventures (such as dairies, bakeries, chicken layer operations, water bottling plants, etc.).
- Loans (Patient capital): expansion of existing income generation ventures in organizations already supported by the Trust (additional warehouse space, cooling facilities, packaging areas, general project equipment, etc.).

#### Skills Development & Education Funding (40%)

Funding for bursaries, schools and early learning centers, technical training and life experiences.

The Trust has three primary sources of funding:

- Golder staff worldwide, through monthly donation contributions and local fundraising activities
- Golder operating companies, some who match donations on a one-to-one basis
- External organizations and private donors.



## OUR COMMUNITIES | GOLDER TRUST FOR ORPHANS

### An Overview of GTO Projects for 2016 & 2017



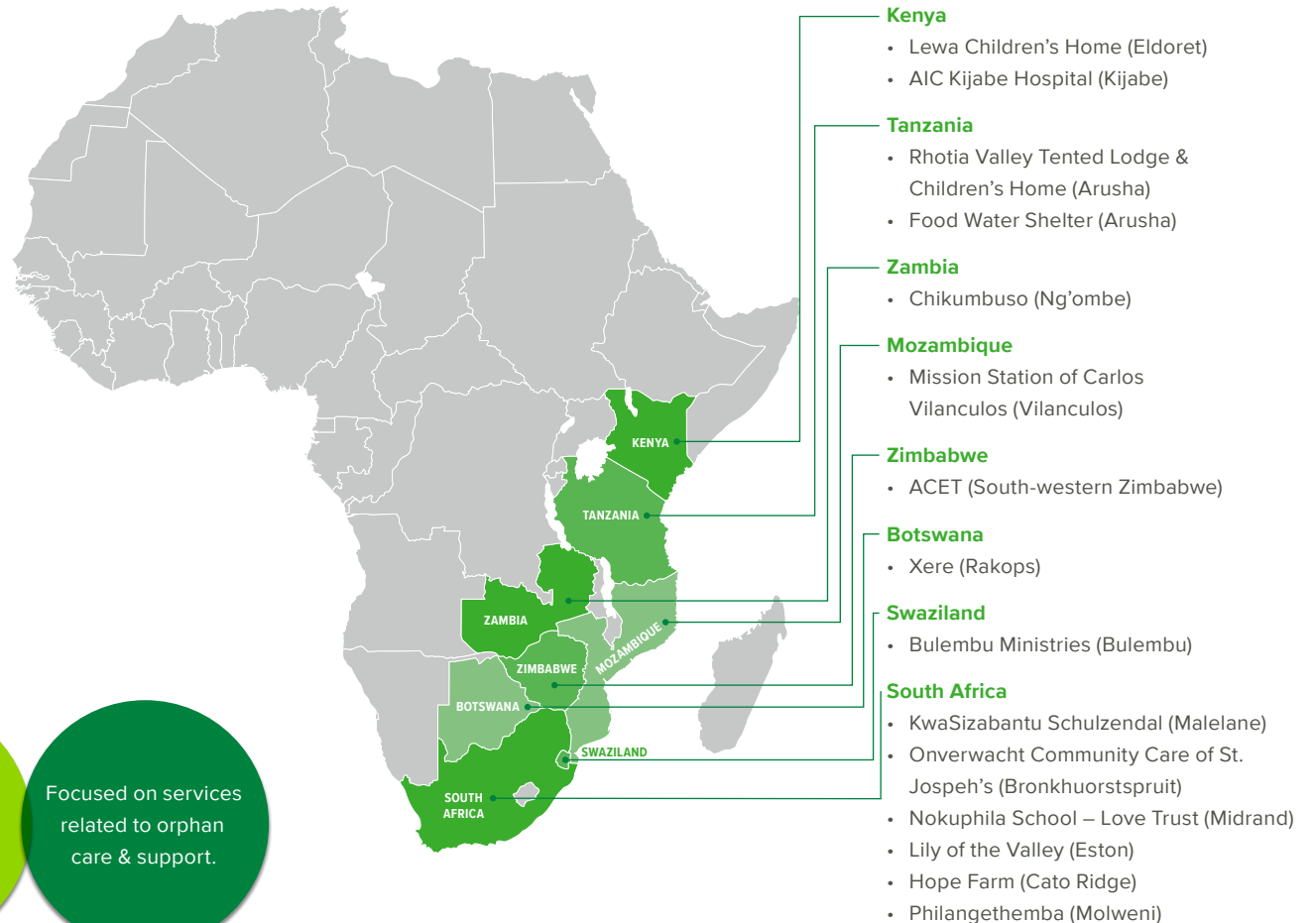
#### GOLDER TRUST PROJECTS MUST MEET THE FOLLOWING CRITERIA

Registered NGOs  
established for  
five or more years.

Community  
based, integrating  
orphaned children  
into the community.

Connected to  
an enterprise to  
generate income  
for the children.

Focused on services  
related to orphan  
care & support.



## OUR COMMUNITIES | GOLDER TRUST FOR ORPHANS

### Philangethemba

*Molweni, South Africa*

The Trust's 2016/2017 donation to Philangethemba was used to build the Early Childhood Development Training Centre.



### Mission Station of Carlos Vilanculos

*Vilanculos, Mozambique*

In 2016/2017, the Trust funded drought relief activity for this project, including the replacement of irrigation equipment, expansion of the vegetable garden and repairs to shade houses damaged by a storm.



## Employee Volunteer Visits to Trust Projects

### Employee Volunteer Visits to Trust projects Zimbabwe

In addition to financial support through a payroll deduction scheme, Golder employees contribute their knowledge and skills to the projects funded by the Trust. Annual volunteer visits to Trust projects give our people a first-hand experience of the impact of their contributions, becoming Trust Ambassadors in the process.

#### Employee Volunteer Visit, 2016

*ACET, Zimbabwe*

Eleven Golder volunteers from New Zealand, Chile, United States, Canada and the UK visited the ACET program in Zimbabwe. ACET is a community care program and since 2001 has cared for almost 3,500 orphaned children. There are currently 12,000 people in the ACET community, 45% are under the age of 15 and 5% of the local population is known to be HIV positive.

Volunteers spent six days building a 2,000-bird chicken coop, painted wall murals in the Early Childhood Development school classroom, and erected fences around the school.



*Employee Volunteer Visit, 2016*

#### Employee Volunteer Trip, 2017

*Bulembu, Swaziland*

Seven Golder volunteers from the US, UK, Canada and Australia travelled to Swaziland in March 2017 to support various projects at Bulembu.

The ongoing sustainability of the Bulembu community is dependent upon two complimentary strategies – Community Care and Community Enterprise.

A variety of Community Care programs are transforming the town by restoring basic social services to the community, including a health clinic, schools, churches, training centers, and other community organizations.



*Employee Volunteer Visit, 2017*

Utilizing the infrastructure already established, Bulembu leadership discovered many opportunities to build innovative, sustainable, and profitable businesses in the community. Each enterprise is formally a division of the larger charity, with the profits from each enterprise flowing into Bulembu's Sustainability Fund for the advancement of the community vision.

One of the volunteer projects at Bulembu was the design and construction of a chicken coop to house 200 birds. Local high school agriculture students will learn how to take care of the chickens from day-old chicks until they are fully grown, gaining vital skills in commercial poultry breeding and how to run a business.

## OUR COMMUNITIES | LOCAL COMMUNITY INITIATIVES

### Local Community Initiatives

#### Caring for the Community

Golder's Redmond, Washington office has been recognized for the fifth straight year as a Best Workplace for Waste Prevention and Recycling – reaching “Honor Roll” status. This King County initiative shines a light on businesses with “exceptional commitment to recycling and reducing the amount of waste their company sends to the landfill.”

Harnessing their colleagues' passion for taking care of the environment and their community, the Redmond Environmental and Sustainability Committee is the driving force behind the program of activities that has resulted in the ‘Honor Roll’ achievement. Activities include the King County Adopt-A-Road program and the “Office Trading Post,” which facilitates the reduction, reuse, and recycling of office supplies and equipment, instead of purchasing new items.



The “Office Trading Post”



#### Back to School Support in New Jersey

The Mt Laurel office in New Jersey (US) got into the back-to-school spirit by supporting Volunteers of America's Operation Backpack. One of the most devastating consequences of homelessness is the impact it has on a child's education. Operation Backpack is a program which aims to lessen the financial burden of families at-risk of homelessness or living in shelters by helping with school supplies.

#### Fort McMurray Wildfire

In May 2016, a wildfire swept through the northern Alberta city of Fort McMurray, destroying approximately 2,400 homes and buildings, and forcing the evacuation of more than 100,000 residents, including Golder employees from our Fort McMurray office. In the wake of this disaster, Golder people stepped up – donating more than \$40,000 CDN – including corporate matching funds, to the Red Cross.

#### Riding for a Reason

Cam Stevens, Associate, and Aquatic Biologist from the Edmonton (Canada) office, endured 210km of cycling over two days in Alberta's Ride to Conquer Cancer fundraiser in support of cancer research. The event saw more than 1,500 riders raise \$6.7M for the Alberta Cancer Foundation. Cam and his team of riders raised nearly \$80,000 in memory of a special friend who lost her life to cancer. They will do it all again in 2018.



#### Whitby Waterfront Cleanup

Colleagues from Canada's Whitby office helped in the annual clean-up of Lake Ontario's Waterfront around the Heydenshore Pavilion, pictured here at the end of the day.



#### Holiday Giving

Golder staff from the Tampa (Florida, US) office collected food and toys for Thanksgiving and Christmas for distribution through Metropolitan Ministries and the local crisis center. This collection program has been running for a number of years and is now a well-establish activity on the calendar of Golder's Tampa office.



## OUR COMMUNITIES | LOCAL COMMUNITY INITIATIVES

### Cleaning Up After Harvey

**Jeremy Yeglin**, Senior Engineer from the Houston (US) office, volunteered his time for many weeks to help with the demolition of houses on the west side of Houston in the wake of Hurricane Harvey that devastated large parts of the US and Caribbean in 2017.

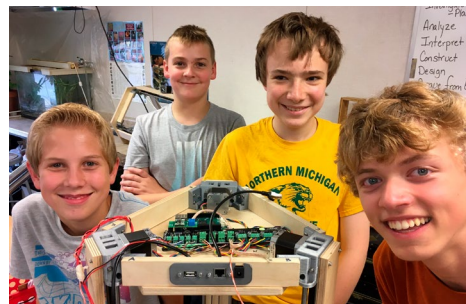


### Robogators

Golder's Maquette office in Michigan (US) sponsored the FIRST Tech Challenge Robotics (FTC) Team of 6th-8th grade students from the North Star Academy. FIRST (For Inspiration and Recognition of Science and Technology) is an international youth organization to develop ways to inspire students in engineering and technology fields.

Known as the Robogators, the team had to complete a series of challenges using and programming their robot. The Robogators qualified at the FTC Qualifier competition in Petoskey, MI for the State competition in Battle Creek in December 2016. They were very successful and were honored at the FTC Qualifier competition with the 1st runner up for the Inspire Award. The Inspire Award is FIRST's top award at every tournament. They also received the Connect Award and 1st runner up for the Think Award.

The Robogators are keen to show their community their new skills, demonstrating their robot, Roberta, at the Northern Michigan University Aviation Center for residents of the Jacobetti Veterans community.



Finishing up the survey in February 2016. Left to right – Chris Phillips (Mississauga), Stephane Sol, (Mississauga) & Jason McGonigle (Whitby). People who also supported the project were Henry Cary (Nova Scotia), Robert Murdoch (Mississauga) & Thierry Imbert (Paris).

### Providing Closure 100 Years after the Battle of Vimy Ridge

*Contributing our expertise for the benefit of history*

The Battle of Vimy Ridge in France in 1917 has become a defining moment in Canada's history. Over four grueling days, Canadians from across the country fought side by side, as all four divisions of the Canadian Corps waged a bloody battle. The Canadians were victorious but with huge loss of life, and over 10,000 men killed or wounded.

Thousands of those men killed in battle are still missing and for the families of those missing men, their stories remain unresolved. Volunteering their vacation time to work on the project, six Golder people helped locate 44

of these missing men who lie near what was the front line of the war under what is now a farmer's potato field. With the site soon to be built over by an industrial estate, time was of the essence. Golder colleagues responded to the challenge, and offered geophysical, GIS, and archaeological support to the project, providing closure to the families of these men in time for observance of the one hundred year anniversary of the battle in 2016.

## OUR COMMUNITIES | LOCAL COMMUNITY INITIATIVES

### Adopt a Family

Over the past six years, the Golder London (Canada) office has worked with Community Living London (CLL) to sponsor needy families in their community. These families have at least one child in the home with an intellectual disability, and all of these families have required some help over the holiday period.

CLL identifies families that need support and provide Golder with a story about each one, as well as a “wish list” for each person.

Souper Thursday fundraising lunches were held during the year where Golder colleagues donate homemade soup and others pay to enjoy a “Souper Lunch”. A shopping extravaganza is held before the holidays with Golder volunteers braving the Christmas crowds for a massive shopping blitz to buy the wish list items using the funds raised throughout the year. Golder volunteers deliver their goods to CLL just prior to the holiday break and CLL’s ‘Christmas Elves’ deliver gifts to families.



### Golder Boulders

The ‘Golder Boulders’ volleyball team participated in the 22nd Heatwave for SickKids Volleyball Tournament at Toronto’s Ashbridges Bay. This is the 7th year in a row for Golder Boulders and despite valiant efforts and having lots of fun, the team only had one win, but are winners for raising awareness and funds for SickKids Hospital.

### Catchment Care

In 2010 to celebrate Golder’s 50th anniversary, a team from Brisbane, Australia, joined a project to help re-establish and maintain ecologically-healthy catchments in the inner-western suburbs of Brisbane. It is an initiative of the Cubberla Witton Catchments Network, a volunteer organization formed in 2001, and is focused on creating environmental and community benefits in the catchment.

Since that time, Golder has been working on this project to restore and maintain native plant species on riverbanks within the catchment.

*“CWCN has really appreciated the continuing relationship we have with Golder. There is no way that we could have achieved the successes along Cubberla Creek without this support.”*

*“I want to let you know how much we value the relationship with, and support of Golder – freely and happily given by Golder staff and families in their own time (usually Sunday mornings). We have often had over 20 staff and families attend.”*

*“Thank you Golder for this continuing support, and the successful outcomes achieved.”*

**Dr Tony Pressland**

*Cubberla-Witton Catchments Network Inc*



# GRI REFERENCE TABLE

GRI REF	INDICATOR	LOCATION/COMMENT
<b>GENERAL DISCLOSURE – ORGANIZATION PROFILE</b>		
102-1	Name of the organization	<a href="#">About Us – page 2</a>
102-2	Activities, brands products and services	<a href="#">About Us – page 3</a>
102-3	Location of headquarters	Golder does not have a designated headquarter location <a href="#">About Us – page 3</a>
102-4	Location of operations	<a href="#">About Us – page 3</a>
102-5	Ownership and legal form	<a href="#">About Us, Governance – page 4</a>
102-6	Markets served	<a href="#">About Us – page 3</a>
102-7	Scale of the organization	<a href="#">About Us – page 3</a>
102-8	Information on employees and other workers	<a href="#">About Us – page 3</a> <a href="#">Our Operations – page 12</a>
102-9	Supply chain	<a href="#">Our Operations, Auditing – page 23</a>
102-10	Significant changes to the organization's size, structure, ownership, or supply chain	There are no significant changes to report. <a href="#">About Us – page 2</a>
102-11	Precautionary principle or approach	<a href="#">EHL Board Message – page 4</a>
102-12	External initiatives	Golder is a signatory to the UNGC Global Compact
102-13	Membership of associations	Golder is a member of the Zofnass program at Harvard University, the Sustainable Development Council of New Zealand, Consult Australia, CIAC, and the ICMM.
<b>STRATEGY</b>		
102-14	Statement from senior decision-maker	<a href="#">Message from Global President &amp; CEO – page 1</a> <a href="#">Message from EHL Board – page 4</a> <a href="#">Message from Sustainable Development Leader – page 25</a>
<b>ETHICS &amp; INTEGRITY</b>		
102-16	Values, principles, standards, and norms of behavior	<a href="#">About Us, Governance – page 4</a> Overview – Vision & Values All employees are encouraged to complete training and understanding of the Code of Conduct.
<b>GOVERNANCE</b>		
102-18	Governance structure	<a href="#">About Us, Governance – page 4</a>
<b>STAKEHOLDER ENGAGEMENT</b>		
102-40	List of stakeholder groups	<a href="#">About Us, Materiality – page 6</a>
102-41	Collective bargaining agreements	<a href="#">About Us, Governance – page 4</a>
102-42	Identifying stakeholders	<a href="#">About Us, Materiality – page 6</a>
102-43	Approach to stakeholder engagement	<a href="#">About Us, Materiality – page 6</a>

GRI REF	INDICATOR	LOCATION/COMMENT
102-44	Key topics and concerns raised by stakeholders	<a href="#">About Us, Materiality – pages 6-10</a>
<b>REPORTING PRACTICE</b>		
102-45	Entities included in the consolidated financial statements	As an employee-owned privately held company there are no publicly available consolidated financial statements or equivalent documents.
102-46	Defining report boundaries	The boundaries of the report are the Global operations and alignment of Clients priorities for sustainable development. <a href="#">About Us, Materiality – pages 6-10</a> <a href="#">About Us – pages 2-10</a> <a href="#">Our Operations – pages 11-24</a> <a href="#">Our Work – pages 25-38</a>
102-47	List of material topics	<a href="#">About Us, Materiality – pages 6-10</a> Material topics: 205 – Anti-corruption 302 – Energy 305 – Carbon Emissions 401 – Employment 403 – Occupational Health & Safety 404 – Training and education 405 – Diversity & Equal Opportunity 413 – Corporate Social Responsibility
102-48	Restatements of information	Not applicable in this reporting period
102-49	Changes in reporting periods	<a href="#">About Us – page 2</a>
102-50	Reporting period	Calendar year
102-51	Date of most recent report	2015
102-52	Reporting cycle	Annual
102-53	Contact point for questions regarding the report	<a href="#">Lindsay Pickles</a>
102-54	Claims of reporting in accordance with the GRI standards	This report has been prepared in accordance with the GRI Standards: Core option.
102-55	GRI Index Table	Evident herewith
102-56	External assurance	Not verified
<b>ANTI-CORRUPTION</b>		
103	Management approach	<a href="#">About Us, Governance – page 5</a>
205.1	Operations assessed for risks related to corruption	<a href="#">About Us, Governance – page 5</a>
205.2	Communication and training about anti-corruption policies and procedures	<a href="#">About Us, Governance – page 4</a>

# GRI REFERENCE TABLE

GRI REF	INDICATOR	LOCATION/COMMENT
<b>ENERGY</b>		
103	Management approach	<a href="#">Our Operations, Carbon Footprint – page 24</a>
302.1	Energy consumption within the organization	<a href="#">Our Operations, Carbon Footprint – page 24</a>
302.2	Energy consumption outside of the organization	<a href="#">Our Operations, Carbon Footprint – page 24</a>
302.3	Energy intensity	<a href="#">Our Operations, Carbon Footprint – page 24</a>
302.4	Reduction of energy consumption	<a href="#">Our Operations, Carbon Footprint – page 24</a>
302.5	Reduction of energy requirements of products and services	<a href="#">Our Operations, Carbon Footprint – page 24</a>
<b>CARBON EMISSIONS</b>		
103	Management approach	<a href="#">Our Operations, Carbon Footprint – page 24</a> Given the nature of our operations, Golder is not subject to any specific industry level emissions regulations and or policies.
305.1	Direct GHG emissions	Golder does not have any significant Direct Scope 1 emissions
305.2	Energy indirect	Our energy indirect (Scope 2) emissions are reflected in the energy consumption figures set out in: <a href="#">Our Operations, Carbon Footprint – page 24</a>
305.3	Other indirect	Our other indirect (Scope 3) GHG emissions are given under <a href="#">Our Operations, Carbon Footprint – page 24</a>
305.4	GHG emissions intensity	Our emissions intensity data is given on a per person basis. <a href="#">Our Operations, Carbon Footprint – page 24</a>
305.5	Reduction of GHG emissions	CO2 emission reduction target set out on: <a href="#">Our Operations, Carbon Footprint – page 24</a>
305.6	Emissions of ozone depleting substances	Not applicable to our business
305.7	Nitrogen oxides, sulfur oxides and other significant air emissions	Not applicable to our business
<b>EMPLOYMENT</b>		
103	Management approach	<a href="#">Our Operations, People – page 11</a> Code of Conduct – Golder code of conduct, built on and reflective of our values, guides the behaviors of all our employees, at all levels, wherever they conduct business. It sets out the expectations of Golder conduct towards her employees, employees conduct towards Golder, and conduct with clients and suppliers.
401-1	New employee hires	<a href="#">Our Operations, People – page 11</a>
401-2	Employee benefits	<a href="#">Our Operations, People – page 12</a>
401-3	Parental leave	Specific parental leave metrics not collected. Parental leave is accommodated according to different requirements in different jurisdictions.

GRI REF	INDICATOR	LOCATION/COMMENT
<b>OCCUPATIONAL HEALTH &amp; SAFETY</b>		
103	Management Approach	<a href="#">Our Operations, Health, Safety, Security &amp; Environment – page 17</a>
403.1	Workers representation in formal joint management – worker health and safety committees	<a href="#">Our Operations, Health, Safety, Security &amp; Environment – page 18</a>
403.2	Types of injury and rates of injury	<a href="#">Our Operations, Health, Safety, Security &amp; Environment – page 17</a>
403.3	Workers with high incidence or high risk of diseases related to their occupation	<a href="#">Our Operations, Health, Safety, Security &amp; Environment – page 17</a>
403.4	Health and safety topics covered in formal agreements with trade unions	<a href="#">Our Operations, Health, Safety, Security &amp; Environment – page 17</a>
<b>TRAINING &amp; EDUCATION</b>		
103	Management approach	<a href="#">Our Operations, Training – page 16</a>
404.1	Average hours of training per employee per year	<a href="#">Our Operations, Training – page 16</a>
404.2	Programs for upgrading skills and transition assistance programs	<a href="#">Our Operations, Training – page 16</a>
404.3	Regular performance and career development reviews	<a href="#">Our Operations, People – page 11</a>
<b>DIVERSITY &amp; EQUAL OPPORTUNITY</b>		
103	Management approach	<a href="#">Our Operations, Diversity – page 13</a>
405.1	Diversity of governance bodies and employees	<a href="#">Our Operations, Diversity – page 13</a> <a href="#">Our Operations, People – page 11</a> <a href="#">About Us, Governance – page 4</a>
405.2	Ratio of basic salary and remuneration of women to men	Information not available
<b>LOCAL COMMUNITIES</b>		
103	Management approach	<a href="#">Our Communities – page 43</a>
413-1	Operations with local community engagement, impact assessments, and development programs	<a href="#">Our Communities – page 43</a>
413-2	Operations with significant actual and potential negative impacts on local communities	Golder has no operations with significant and potential negative impacts on local communities.

# EYE ON THE HORIZON



Thank you for reading our 2016-2017 Sustainable Development Report. We hope our work encourages you to look through the sustainability lens in the work you do and within your community. Visit [golder.com](http://golder.com) to learn more information about the projects Golder has contributed to, and the challenges we have helped our clients to navigate.

