2018 SUSTAINABILITY REPORT

KIRKLAND LAKE GOLD
About This Report

This is the first year that Kirkland Lake Gold Ltd. (Kirkland Lake Gold) has produced a sustainability report that combines all operations in one global report. The report details Kirkland Lake Gold’s health, safety, environment and social performance for the year ended December 31, 2018. Our intention is to provide this information to help our stakeholders, including shareholders, employees, business partners, government bodies and people in the communities in which we operate, understand how we manage our operational safety, environmental and social risks, and how our systems and performance are evolving.

www.klgold.com
A MESSAGE FROM OUR LEADERSHIP

SOCIAL LICENCE IS NOT A PERMIT OR DESIGNATION. IT IS NOT PROCESS OR PROCEDURE. SOCIAL LICENCE IS AN UNDERSTANDING BETWEEN YOU AND YOUR STAKEHOLDERS THAT YOU OPERATE RESPONSIBLY, IN A WAY THAT SUPPORTS THE SUSTAINABILITY AND FUTURE SUCCESS OF YOUR BUSINESS.

At Kirkland Lake Gold, “doing the right thing” is part of our culture. It is an integral part of our business and key contributor to our success. For most of our history, measuring success has been focused almost entirely on financial and operating results.

Increasingly, and for good reason, success is now also being measured through the key drivers of social licence, that is your licence to operate in the communities where you are located. These drivers include health and safety, the employment and development of people, economic value creation, environmental management and community engagement and outreach.
Looking at 2018, it was a year of record results. Production totaled close to 725,000 ounces, 21% higher than the year before. We achieved record earnings and cash flow and our share price increased 85%, after increasing 175% in 2017. Our market capitalization at the end of 2018 was CAD$5.6 billion, up from $3.3 billion when the year began. 2018 was also a year when considerable progress was made in many key areas relating to social licence. Reporting on our achievements in these areas was not something we traditionally had done. But, with increased scrutiny and a good story to tell, it was clearly something that we needed to start doing. So, we began working on improving our documentation and building reporting processes for the key drivers of social licence. This report, our first consolidated sustainability report, is an outcome of those efforts and is an important step in the right direction. We still have much work to do.

Throughout this report, we share a number of stories about initiatives aimed at “doing the right thing.” At Macassa, we did major progressive rehabilitation work on our Macassa tailings storage facility during 2018. We also began work on a new thickened tails facility designed to reduce the use of water, increase stability and reduce the footprint required for tailings impoundment. In the Northern Territory (NT) of Australia, we worked with government agencies toward developing an adaptive water management strategy (the first of its kind in the NT) with a view to improving water treatment and discharge. In addition, we started a trial at Fosterville to see whether biosolids produced at our treatment plant could be used to support revegetation of an old in-pit tailings site, with native plants selected as part of a community consultation process.

Very importantly, we have continued to invest in our people and increase our economic contribution to the communities where we operate. During 2018, we increased our consolidated workforce by 144 positions. Total labour costs for the year were $167 million, with most of that money remaining within local communities. In terms of investment, purchases of local goods and services for the year totalled $315 million. We also committed $467,000 directly to communities in the form of sponsorships, donations, scholarships and grants. These numbers tell the story of a company that does not just operate in communities; it becomes an active and very committed member of those communities.

Another key development for our company in 2018 was joining the World Gold Council (“WGC”), which encourages its members to follow internationally accepted standards across a range of subjects. The World Gold Council recently announced its Responsible Gold Mining Principles, developed after a vigorous consultation and review process including external consultation with government, international organizations, civil society, supply chain participants and investors. The principles form a framework with clear expectations for consumers, investors and the downstream gold supply chain as to what constitutes responsible gold mining, addressing key environmental, social and governance issues for the gold mining sector. We fully endorse these principles and are using them to guide our disclosure and provide a model for continued progress in the area of responsible mining.

At Kirkland Lake Gold, we fully appreciate that social licence is not a right, it is something that is earned each and every day. We made significant progress in 2018 on advancing our efforts around sustainability, with the initiatives we undertook, the investments we made and the disclosures that we provided. We are by no means finished and look forward to updating our stakeholder groups about our continued progress going forward.
ABOUT THIS REPORT

This is the first year that Kirkland Lake Gold Ltd. (Kirkland Lake Gold) has produced a sustainability report that combines all operations in one global report.

The report details Kirkland Lake Gold’s health, safety, environment and social performance for the year ended December 31, 2018. Our intention is to provide this information to help our stakeholders, including shareholders, employees, business partners, government bodies and people in the communities in which we operate, understand how we manage our operational safety, environmental and social risks, and how our systems and performance are evolving.

All dollar amounts in this report are presented in United States dollars (“$”), unless otherwise noted by CAD$ for Canadian dollars or AUD$ for Australian dollars.
ABOUT KIRKLAND LAKE GOLD

KIRKLAND LAKE GOLD IS A GROWING GOLD MINING COMPANY TARGETING PRODUCTION OF 950,000 – 1,000,000 OUNCES OF GOLD FOR 2019 FROM MINES IN CANADA AND AUSTRALIA.

Kirkland Lake Gold’s solid base of quality assets is complemented by district scale exploration potential, supported by a strong financial position with extensive management and operational expertise. Kirkland Lake Gold is committed to delivering low-cost production, advancing its exploration and development pipeline, and maintaining a large resource and reserve base of quality assets to foster future production growth, while maintaining its social licence through sustainable and responsible operations.
OUR APPROACH TO SUSTAINABILITY

WE BELIEVE IN RESPONSIBLE GOLD MINING.

That means:

• ensuring we provide a safe working environment;
• implementing responsible environmental practices and effective environmental management systems throughout our organization;
• creating meaningful opportunities for local employment and training;
• developing community relationships based on open and honest communication; and
• ensuring that the communities in which we operate benefit from our presence.
We strive to uphold stakeholder expectations, which is to act ethically and responsibly from exploration through to mine closure, and to conduct ourselves transparently and accountably. When we mine responsibly and follow good governance practices, it’s good for us, and it’s good for local communities and the broader province, state, territory and nation. Responsible mining:
- increases prosperity for all stakeholders, including governments, investors, employees, supply chain partners, communities and contractors;
- provides jobs and builds skills; and
- through partnerships with governments and other actors, facilitates investment in infrastructure and public services.

We recognize the need to seek the support of authorities and affected communities throughout the exploration, development, production and closure phases of the mine life-cycle. We will always strive to be a valued community member as we’re Going for Gold.

Through conducting our businesses responsibly, we aim to contribute to the delivery of the Sustainable Development Goals developed by the United Nations. Responsible gold mining involves the careful management of risks; but it should also be about the realization of opportunities for those whose lives we touch.

We support, and are building systems to address, internationally recognised normative standards, such as the International Bill of Human Rights, the UN Guiding Principles on Business and Human Rights, the Principles of the UN Global Compact, the UN Declaration on the Rights of Indigenous Peoples, the OECD Guidelines for Multinational Enterprises, the OECD Convention on Combating Bribery of Foreign Public Officials in International Business Transactions, the Gold Supplement of the OECD Due Diligence Guidance for Responsible Sourcing of Minerals from Conflict-Affected and High-Risk Areas, the OECD Due Diligence Guidance for Responsible Business Conduct, the Extractive Industries Transparency Initiative (EITI), the Voluntary Principles on Security and Human Rights (VPShRs) and the International Council on Mining and Metals’ Performance Expectations.
HEALTH & SAFETY

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</table>
KIRKLAND LAKE GOLD IS COMMITTED TO PROVIDING A SAFE WORKING ENVIRONMENT FOR OUR EMPLOYEES, CONTRACTORS, SUPPLIERS AND STAKEHOLDERS. WE WILL NEVER COMPROMISE ON ANY OF OUR SAFETY VALUES.

We strive to provide a zero-harm working environment through our integrated health and safety management system. To continuously improving our health and safety performance, we partner with our employees to develop, implement and maintain high standards for working in a safe manner. We also promote healthy lifestyles through appropriate awareness and training.
Our operations achieved strong safety performance during the year, reaching our Total recordable injury frequency rate (TRIFR) objective. Of particular note, our Holt Mill site reached a milestone of seven years without a lost time injury.

To fulfill our commitment to health and safety, we aim to improve our performance continually by regularly reviewing our objective and targets; engaging with our employees and stakeholders to improve and implement our integrated health and safety management system; identifying and managing health and safety impacts, risks and opportunities; measuring and reporting performance transparently against our objectives and targets; and communicating regularly with our stakeholders about our health and safety performance.

To learn more about how we are fulfilling our commitment to health and safety, please download our Workplace Health & Safety Policy here.

In 2018, Kirkland Lake Gold implemented our Cardinal Rules across all operations. The Cardinal Rules are the product of a review of industry-wide high loss-potential incidents, and the identification of targeted control procedures aimed at preventing injuries in those cases. The rules represent Kirkland Lake Gold’s commitment to implementing a consistent health and safety culture throughout the organization.

2018 Performance Highlights
- Total recordable injury frequency rate (number of injuries per 100 full-time equivalent workers) of 4.8 (not including contractors) and 5.2 (including contractors)
- Over 60 safety audits conducted during the year
- 9 formal health and safety committees
- 3 mine rescue teams
- 21 emergency drills
HEALTH & SAFETY

KEY INITIATIVES

Kirkland Lake Gold has instituted integrated health and safety management systems at each of our sites and is working toward aligning these systems with internationally recognized standards.

All of our sites conducted health and safety audits throughout the year as part of our commitment to assessing and continuously improving our performance. Additionally, joint committees of employees and management exist at each site to help identify any workplace health and safety problems, and to develop appropriate solutions.

At our Ontario operations, we hired a former inspector from the Ministry of Labour to provide ongoing training to managers on health and safety leadership, and to instill a safety culture among employees. At our Fosterville operations, we engaged a third party to provide safety leadership training.

Mine rescue personnel at our Ontario operations received training during the year in how to respond to emergencies involving hazardous materials, in addition to their regular training. In 2018, our Fosterville operations purchased a new ambulance and fire truck to respond to site emergencies.

Lastly, at our Ontario operations an on-staff nurse has developed and now delivers wellness training for employees while in Australia, our operations bring in third parties to provide various training programs and services from time to time. Employees also benefit from reduced membership prices at local fitness centres, and in the case of our Northern Territory operations, our camps are equipped with on-site fitness centres and swimming pools.
CASE STUDY

Fosterville Mine Rescue Team Wins Gold at National Competition

Fosterville not only hosted the 26th Victorian Mine Rescue Competition (VMRC) this past October, its Mine Rescue team took home top honors in four categories – including Overall Winner.

The Minerals Council of Australia sponsors the VMRC, an annual mine rescue and emergency response capacity building exercise. The 2018 competition hosted nine teams from around Australia across three days of scenarios designed to test and improve each team’s emergency response skills, including practical exercises in ropes rescue, first aid and search and rescue.

The Fosterville team, led by Captain Tyson Taylor, achieved outstanding results. The team came first in firefighting, first aid and overall safety, making them Overall Winner of the VMRC event.

As competition host, many of our employees volunteered their time to help organize this event and to act as ‘casualties’, technical experts and team escorts. It is great training for everyone and an excellent opportunity to share best practices across our industry. Congratulations to Fosterville’s Mine Rescue team for winning gold at this highly-regarded national competition!
OUR PEOPLE
WE EMPLOY OVER 2,000 PEOPLE AT OUR CANADIAN AND AUSTRALIAN OPERATIONS, AND WE ENCOURAGE EACH AND EVERY ONE OF THEM TO CONTRIBUTE TO THEIR FULL POTENTIAL. AS WE GROW OUR GLOBAL OPERATIONS, WE ARE COMMITTED TO CREATING MEANINGFUL CAREER OPPORTUNITIES FOR OUR TEAM.

We focus on building the talent and capacity of our employees and on providing our diverse workforce with the tools and training they need to do their jobs properly and safely.

Our corporate culture is to treat all people with respect and dignity. Kirkland Lake Gold actively fosters health and wellness in the workplace by offering our employees various social, wellness and recreational programs for themselves and their families.
Emerging Leaders

During 2018, more than 40 Fosterville supervisors and front-line leaders completed an Emerging Leaders Program, which was developed by the mine’s own Health & Safety Manager and delivered in partnership with the Australian Institute of Management.

The program emphasizes the need to develop effective communication skills in order to lead and influence without authority, respectfully challenging others, and to communicate at all levels of the organization.

The three pillars of the program are:

1. **Self-Leadership**: the ability to manage yourself, increasing personal effectiveness, develop emotional intelligence, communicate with influence and build relationships.

2. **Team Leadership**: the ability to successfully lead and develop the capabilities of others.

3. **Business Leadership**: the ability to optimize resources, develop a vision for the future and successful plan to implement change within the team and the wider organization.

Each participant completed an emotional intelligence assessment prior to taking the course program, which was delivered over three two-day sessions. The program not only increased the leadership capabilities of our front-line leaders, it successfully developed a core shared language and an increased awareness of self and others.

Employee Relations

Kirkland Lake Gold finalized its Fosterville Enterprise Agreement 2018 with the Employee Representative Committee (Australian Workers’ Union) and formally submitted it to the national workplace relations tribunal, Fair Work Commission (FWC). The FWC formally approved the Agreement in March 2019, with a nominal expiry date of June 30, 2021. We believe the Agreement strikes the right balance between providing competitive employment terms and conditions while providing Kirkland Lake Gold with the ability to maintain labor costs at a sustainable level for the future.

2018 Performance Highlights

We seek to create meaningful opportunities for employment and training in our local communities. Our mines are considered major employers in their regions, offering both full and part-time employment, as well as apprenticeship and summer employment opportunities.

In 2018, for example, Kirkland Lake Gold hired and helped train two diesel fitter apprentices and an electrical apprentice at Fosterville. Fourteen university students were provided with summer employment, with two working in the environmental department, five in geology, two in processing and one in surface maintenance.
Kirkland Lake Gold sponsors several recreational facilities in the communities where our employees live, including the local golf and curling clubs in the town of Kirkland Lake, and the tennis centre in Bendigo. We also sponsor local social and cultural events to help promote the communities where we operate as places where our employees want to live and raise their families.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Full-Time Equivalent Employment</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Male</td>
</tr>
<tr>
<td>Macassa</td>
<td>740</td>
</tr>
<tr>
<td>Holt</td>
<td>488</td>
</tr>
<tr>
<td>Corporate Toronto</td>
<td>28</td>
</tr>
<tr>
<td>Fosterville</td>
<td>483</td>
</tr>
<tr>
<td>NTMO</td>
<td>184</td>
</tr>
<tr>
<td>Total Kirkland Lake Gold</td>
<td>1,923</td>
</tr>
</tbody>
</table>
CASE STUDY

Preparing to Work in Remote Areas with Snakes, Crocodiles and Buffalo

At Kirkland Lake Gold, employees must often work remotely as they conduct mine exploration or environmental monitoring activities. The rugged terrain and tropical monsoon environment in Australia’s Northern Territory pose a number of risks including exposure to snakes, crocodiles, buffalo and wet, boggy conditions. Awareness of these conditions forms part of the job orientation program, with specific training provided by external professionals.

In 2018, the Alice Springs Reptile Centre delivered a Snake Handling Course to 16 Kirkland Lake Gold employees. Participants were trained on snake identification and snake capture techniques. This included hands-on live capture practice of the Western Brown and Mulga snakes, which are two of the top 10 most venomous snakes in Australia.

Crocodile Training Contractors (Triple C) also provided training to key personnel on how to work in areas occupied by both crocodiles and buffalo. Team members from Environment and Geology undertook 4x4 training facilitated by Charles Darwin University to learn advanced skills for operating and recovering four-wheel drive vehicles in off-road situations.
ENDURING ECONOMIC VALUE

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KIRKLAND LAKE GOLD’S ACTIVITIES GENERATE SIGNIFICANT AND ENDURING ECONOMIC BENEFITS FOR THE COMMUNITIES IN WHICH WE OPERATE. WE BELIEVE IN CONTRIBUTING TO THE PROSPERITY AND SUSTAINABILITY OF OUR LOCAL AND REGIONAL ECONOMIES.

We do this by creating long-term employment opportunities and providing competitive wages and benefits; contributing to regional supply chains through the purchase of local goods and services; contributing to government revenues through the payment of taxes and other fees; and making ongoing investments in our community through sponsorships, donations, scholarships and grant programs.
Our operations make substantial and direct contributions to their local and regional economies through ongoing employment, supply chain, government revenue, community sponsorship and grant programs.

Our employees and their families also make indirect contributions, that are not measured, by spending their wages buying local goods and services in the communities where they work and live. We also give local students the opportunity to work onsite at our operations during their academic breaks, with our Canadian operations and Fosterville providing 53 and 12 students respectively with the opportunity to learn about the operation and the mining industry during the year.

In 2018, our operations spent a total of $167 million in wages and benefits; $315 million in supply chain purchases of local goods and services; and $476,000 in community investments through sponsorships, donations, scholarships and grants.

### 2018 Performance Highlights

Kirkland Lake Gold’s economic support to our local and regional economies during the year included the following:

<table>
<thead>
<tr>
<th>Operation</th>
<th>Wages</th>
<th>Goods &amp; Services</th>
<th>Community Grants</th>
<th>Sponsorship/Donations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Operations</td>
<td>$156,080,451</td>
<td>$192,154,922</td>
<td>n/a</td>
<td>$497,000</td>
</tr>
<tr>
<td>($CAD)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Fosterville ($AUD)</td>
<td>$61,697,121</td>
<td>$222,202,224</td>
<td>$30,613</td>
<td>93,263</td>
</tr>
<tr>
<td></td>
<td></td>
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</tr>
</tbody>
</table>
Supporting Local Business and Economies

Our operations operate in close proximity to communities and we are committed to using the services of local and regional businesses whenever possible.

The Canadian operations spent CAD$192 million within Northern Ontario, which represents 59% of their total spend for 2018. Fosterville spent AUD$135 million in the Victoria area, which represents over 54% of its total spend for the year. Both regions surpassing 50% is a testament to Kirkland Lake Gold’s commitment to procuring goods and services from local businesses and suppliers as much as possible.

<table>
<thead>
<tr>
<th>CANADIAN OPERATIONS SUPPLY SPEND</th>
<th>% TOTAL SPEND</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northern Ontario</td>
<td>41%</td>
</tr>
<tr>
<td>Victoria</td>
<td>59%</td>
</tr>
<tr>
<td>Interstate</td>
<td>44.5%</td>
</tr>
<tr>
<td>Overseas</td>
<td>0.8%</td>
</tr>
</tbody>
</table>

In 2018, Kirkland Lake Gold announced our support for the Kirkland and District Hospital (KDH) in acquiring a new CT scanner and upgrading its intensive care suite. These improvements are expected to shorten wait times for patients and reduce costs. Without the CT scanner, KDH must send patients by ambulance to other hospitals for diagnostic scans and then bring them back for treatment – a return trip that can take several hours in good weather, and much longer when the Northern Ontario winter is uncooperative. The upgraded ICU will also eliminate the need to transfer patients to other hospitals for intensive care. Kirkland Lake Gold will provide CAD$3.2 million to finance the full cost of the equipment and upgrades.

**CAD$3.2M**

will be provided by Kirkland Lake Gold to finance the full cost of equipment and upgrades to the Kirkland and District Hospital (KDH), including a new CT scanner and upgrading the intensive care suite.

CEO Tony Makuch signs off on funding a CAD$3.2 million Intensive Care Unit that includes a CAT Scan machine for Kirkland Lake District Hospital. We are committed to Kirkland Lake and to recognizing the importance of emergency health services in our communities.
CASE STUDY

Kirkland Lake Business Services
Global Mining Industry

The gold camp in the town of Kirkland Lake is one of the most famous in the world, celebrating its 100th anniversary in 2019. There were originally seven mines in the camp, but today only Kirkland Lake Gold’s Macassa Mine is still producing gold.

During the 1920s, Messrs Heath & Sherwood started a drilling contractor business to support the burgeoning mining activity in the region and then moved into manufacturing consumables, eventually broadening into sampling and testing equipment and expanding worldwide. Today, Heath & Sherwood (H&S) sampling systems are used by every major mining company in over 65 countries and have been recognized by leading sampling consultants and experts as among the highest quality sampling equipment available.

Recently, Heath & Sherwood provided customized sampling equipment to Kirkland Lake Gold’s Macassa Mine, and, through a long-time partnership between H&S and Consep Pty Limited of Australia, began supplying automatic sampling equipment to our Fosterville Mine. H&S is a great success story of a local company leveraging mining expertise to become an internationally recognized supplier to the mining industry.
ENVIRONMENT

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KIRKLAND LAKE GOLD IS COMMITTED TO INTEGRATING AND PROMOTING SUSTAINABILITY INTO ALL FACETS OF OUR BUSINESS. WE RECOGNIZE THAT IMPLEMENTING RESPONSIBLE ENVIRONMENTAL PRACTICES AND EFFECTIVE MANAGEMENT SYSTEMS IS CRITICAL TO OUR FUTURE SUCCESS.

Our Environmental Policy states we will:

- Meet or exceed all applicable laws, regulations and licences.
- Develop and maintain a comprehensive and effective Environmental Management System.
- Integrate environmental, social, cultural and economic considerations into our business.
- Foster mutually beneficial environmental partnerships with our communities.
- Conduct business in a manner that minimizes potential environmental impacts.
- Instill a behaviour of responsible environmental performance.
- Continuously improve our management and use of resources through environmentally sustainable exploration, mining, processing, waste management and rehabilitation.
- Communicate openly and honestly about our performance in a timely manner.
- Maintain appropriate and effective communication with our stakeholders.
- Provide for the reclamation and rehabilitation of areas impacted by our operations.

In order to advance our environmental performance, we have identified seven environmental priorities for our global operations:

1. Environmental Management
2. Air Quality, Energy Efficiency and Greenhouse Gas Emissions (GHGs)
3. Water Stewardship
4. Noise Abatement
5. Waste Management
7. Biodiversity

We are continuously striving to improve our performance in these areas by developing and implementing environmental management programs and mitigation measures across our organization. This year, we are reporting on our performance in these seven priority areas and introducing key initiatives and case studies to highlight areas of innovation and best practice at Kirkland Lake Gold’s mine sites.
ENVIRONMENTAL MANAGEMENT

Our Environmental Management Plan (EMP) provides a framework to address operational and environmental risks associated with our operations, including an environmental risk register, an environmental effects statement and a monitoring program.

The EMP summarizes the relevant environmental factors potentially associated with each area of our operations, including information on prevention, minimization and mitigation measures for any potential environmental impacts.

The EMP also details Kirkland Lake Gold’s monitoring and reporting processes, our engagement with relevant stakeholders, including local community and management practices for each key area of potential environmental or community risk.
AIR QUALITY, ENERGY EFFICIENCY & GREENHOUSE GAS EMISSIONS

OUR OPERATIONS ARE ACTIVELY WORKING TO REDUCE KIRKLAND LAKE GOLD’S ENVIRONMENTAL AND CARBON FOOTPRINT.

We focus on minimizing the adverse impact of emissions from our mining operations and processing facilities, and on improving our overall energy efficiency.

In addition to our collective global transition to a lower carbon future, a priority issue for our community stakeholders is reducing the amount of dust and other particulates related to our mining activities. All of our operations have air quality monitoring and mitigation programs in place to track and reduce such emissions. We also measure and report greenhouse gas (GHG) emissions to national databases.
Kirkland Lake Gold closely tracks air quality levels for both dust emitted to the air from its processing facilities (called “high-volume” dust) and dust deposited in the environment that surrounds its facilities (called “depositional” dust). At Fosterville, 11 air quality monitoring stations track depositional dust around the site to determine the ash content in dust levels that can be directly attributed to mining activities; while two High Volume Air Samplers (HVAS) monitor ambient air quality, high-volume dust and particulate levels in the air.

Similarly, the Macassa Mine’s monitoring activities include two HVAS, four dust fall collection jars, dust suppression, visual inspections (weekly during dry season), source mitigation, and ongoing rehabilitation to avoid dust erosion.

Our operations are actively working to reduce their energy consumption and GHG emissions. Our energy efficiency projects include upgrades to various air pumps and compressors and switching to LED lighting. Additionally, Fosterville minimized its electricity consumption in 2018 by introducing a 23kW solar power system which produced 27.88 MWh of power.

2018 Performance Highlights
Dust Emissions
In 2018, there was a notable increase in exceedances of fine particulates/high-volume dust detected at Fosterville, however the majority of these occurrences resulted from external environmental conditions, such as agricultural activities and vehicles on unsealed roads, and not from Fosterville’s operations. A new continuous air quality monitor has been installed to proactively address any increased dust levels in the future.

There were 18 exceedances of high-volume dust – two of coarse particulates and 16 of fine particulates, with 10 of those attributed to broader regional environmental conditions and three occurring while Fosterville was undertaking repairs of its HVAS, making it difficult to accurately attribute data to any specific source.

There were four exceedances of depositional dust, however none were attributable to Fosterville’s mining activities.
Energy Consumption & GHG Emissions

In 2018, total energy consumed was 1,403,277 gigajoules (GJ). Total direct (Scope 1) GHG emissions from our operations were 51,410 tCO₂e in 2018, while GHG emissions from purchased electricity (Scope 2) totalled 123,439 tCO₂e. The local Australian power grid plays a large factor in our Scope 2 emissions because a significant portion of the generated electricity comes from coal, hence Fosterville’s Scope 2 emissions are much higher than the Canadian operations.

Our Macassa mine is among the lowest greenhouse gas emitters per ounce of gold in the world. This is primarily due to its use of battery electric vehicles underground. Macassa’s GHG emissions in 2018 were 39% higher than in 2017, mainly due to the ramping up of two major construction projects in 2018, which involved the addition of significant new equipment. The two projects were the #4 Shaft and the North Tailings Storage Facility. Once #4 Shaft is operational, we anticipate the mine’s efficiency will improve, further reducing Macassa’s energy consumption and GHG emissions.

<table>
<thead>
<tr>
<th>Site</th>
<th>kWh/hour</th>
<th>kWh/tonne</th>
<th>GJ/year</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macassa</td>
<td>127.1</td>
<td>358.6</td>
<td>457,639.4</td>
</tr>
<tr>
<td>Taylor</td>
<td>25.8</td>
<td>145.2¹</td>
<td>93,052.1</td>
</tr>
<tr>
<td>Holt</td>
<td>99.6</td>
<td>145.2¹</td>
<td>358,688.5</td>
</tr>
<tr>
<td>Fosterville</td>
<td>106.7</td>
<td>232.8</td>
<td>382,950</td>
</tr>
<tr>
<td>NTMO²</td>
<td>30.8</td>
<td>–</td>
<td>110,947</td>
</tr>
</tbody>
</table>

1. Holt and Taylor represent the Holt Complex as the ore from Taylor is processed at the Holt Site. Therefore, the energy intensity is presented combining these properties as one operational unit.
2. NTMO data is for the period July 1, 2017 to June 30, 2018. Production was suspended at NTMO sites during this period.

Energy Intensity

<table>
<thead>
<tr>
<th>Site</th>
<th>kWh/tonne</th>
<th>kWh/tonne</th>
<th>kWh/tonne</th>
</tr>
</thead>
<tbody>
<tr>
<td>Macassa</td>
<td>163.4</td>
<td>153.0</td>
<td>171.3</td>
</tr>
<tr>
<td>Holt /Taylor</td>
<td>218.0</td>
<td>154.9</td>
<td>188.5</td>
</tr>
<tr>
<td>Fosterville</td>
<td>358.6</td>
<td>145.2</td>
<td>232.8</td>
</tr>
</tbody>
</table>

NOTE: NTMO production was suspended in 2018, consequently no energy intensity data is provided.
ENVIRONMENT

GHG Emissions

Our Canadian operations submit GHG emissions data to the federal Greenhouse Gas Reporting Program and our Australian operations submit GHG emissions data under the National Greenhouse and Energy Reporting Scheme.

2018 GREENHOUSE GAS EMISSIONS AND ENERGY CONSUMPTION

<table>
<thead>
<tr>
<th>GREENHOUSE GAS EMISSIONS</th>
<th>GHG INTENSITY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Scope 1 (tCO₂-e)</td>
<td>Scope 2 (tCO₂-e)</td>
</tr>
<tr>
<td>-----------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>Macassa</td>
<td>10,261</td>
</tr>
<tr>
<td>Holt</td>
<td>8,257</td>
</tr>
<tr>
<td>Taylor</td>
<td>7,530</td>
</tr>
<tr>
<td>Fosterville</td>
<td>21,516</td>
</tr>
<tr>
<td>NTMO</td>
<td>3,846</td>
</tr>
</tbody>
</table>

NOTE: GHG emissions are measured as carbon dioxide equivalence (CO₂-e) used to express the impact of each different greenhouse gas in terms of the amount of CO₂ that would create the same amount of global warming. Emissions are divided into Scope 1 and Scope 2 types. Scope 1 are emissions released to the atmosphere as a direct result of an activity at a facility (e.g. burning of diesel fuel in trucks). Scope 2 are emissions released to the atmosphere from the indirect consumption of an energy commodity (e.g. purchase of electricity generated at another facility).

PROGRAMS & PERFORMANCE

Over the past three years, our operations have introduced a number of energy efficiencies and productivity improvements. The higher energy intensity at Macassa, relative to our other mines, is due to the fact that we use battery electric vehicles at the site, and have been increasing the size of the fleet each year due to the significant benefits of switching from diesel equipment. Electricity production in Ontario has a small greenhouse emission factor, so switching from diesel equipment to battery electric has numerous air quality benefits, including for GHG emissions. Energy intensity at Fosterville has increased as mining progresses deeper, increasing the requirements for ventilation and other services.
**Cleaner Air**

We have implemented a number of dust abatement measures to reduce dust levels and to improve overall air quality around our sites.

During the construction of the #4 Shaft at Macassa, for example, the mine introduced various prevention, mitigation and suppression measures to manage fugitive dust levels:

1. Misting fans were used to keep the work areas moist and to reduce the generation of wind-blown dust.

2. A large water bladder was used to house and supply additional water for use in surface work.

3. Site visual inspections were increased, as was the application of calcium chloride which helps keep surfaces damp and dust down.

4. We required the construction contractor to have a dust control program in place.

---

**Saving Energy**

The Canadian operations have implemented a number of energy efficiency initiatives that are paying off in reduced energy and cost savings:

- **2,780 MWh**
  The Holt Mine achieved energy savings of 2,780 MWh/year by upgrading to more energy efficient compressors and by introducing a heat recovery system.

- **20 MWh**
  The Taylor Mine achieved energy savings of 20 MWh/year by replacing lighting fixtures throughout the facility with LED lights.

- **115.3 MWh**
  The Macassa Mine switched to LED lighting across its surface facilities, achieving energy savings of 115.3 MWh/year.
CASE STUDY

Promptly Addressing Community Priorities

In late 2018, Kirkland Lake Gold installed a continuous air quality monitor at Fosterville to simultaneously monitor fine and heavy particulates (PM2.5 and PM10) and to investigate the increase in high volume dust exceedances during the year. With the new monitor in place, the team is now able to immediately investigate any spikes in dust levels, determine if they are related to our operating activities, and quickly take any necessary corrective actions.

We also applied a dust suppressant to a paved tailings area to limit any fine particles of dust becoming airborne during periods of high winds. A similar suppressant was added to a hydro seeding mix and applied to an historic tailings area to reduce the surface area exposed to erosion and to promote vegetation cover and growth.
WATER IS A VITAL GLOBAL RESOURCE AND OFTEN CRUCIAL TO OUR PROCESSING ACTIVITIES. WE SEEK TO MANAGE WATER RESPONSIBLY, INCLUDING PROTECTING WATER QUALITY AND IMPROVING OUR WATER USE EFFICIENCY.

Our goal is to minimize any potential water-related impacts from our operations and to ensure our activities do not compromise any shared use of water with our local communities.

We continue to expand and evolve our water quality monitoring and management activities – including conducting appropriate risk assessments and implementing any necessary corrective actions. Each of our operations has unique monitoring and treatment demands, based on their location, the season and the on-site process they use. For example, our Australian operations are located in water-scarce regions, and are pro-actively managing their consumption of surface and groundwater to reduce Kirkland Lake Gold’s overall water footprint.
PROGRAMS & PERFORMANCE

In 2018, we continued to build the Fosterville Mine water treatment plant, with construction expected to be completed in 2019. Pilot testing to date indicates water quality will be high, meeting all regulatory requirements.

The treatment process is being designed to remove heavy metals and suspended solids, with the treated water suitable for reuse on site, which will allow consumption of recycled water from the Epsom water treatment plant to be reduced and make the water available for other high-level uses.

The new water treatment plant will also reduce Fosterville’s need to evaporate and store excess mine water, which will improve its sustainability performance. Additionally, the treated water will be of high enough quality to inject back into the mine’s underground reservoirs, known as aquifers, where it was originally pumped from during the mine dewatering stage. This will help stabilize the quantity of groundwater available.

At the Cosmo Mine/Howley Project Area (CHPA), we are working to improve water quality and reduce site water inventory, with a goal of improving water quality to an acceptable level for active discharge to meet established environmental criteria. In 2017-2018, we conducted a small-scale lime treatment test onsite and a water chemistry analysis has confirmed the quality of the discharge water has improved, indicating it will pose a lower risk to the environment and require less dilution to meet licence criteria.

In order to move forward with large-scale lime treatment, we refurbished and relocated an historic lime silo to the Howley West Pit prior to the 2018-2019 wet season, which allowed us to treat more than 1.3 gigalitres (GL) of water and make it available for active discharge. This large inventory of pre-treated water allows Kirkland Lake Gold to maximize discharge opportunities during high creek flows, effectively removing a previously identified bottleneck in the site’s Water Management Strategy.

2018 Performance Highlights

Fosterville used 13,744 m³ of potable water and 585,359 m³ of reclaimed water. Fosterville is a ‘no discharge’ site, therefore total effluent discharge levels were 0 m³. The Macassa Mill used 61,430 m³ of potable water and 900,500 m³ of reclaimed water, while total treated effluent discharge levels were 522,332 m³.

In 2018, no significant breaches in water quality were recorded at our sites, including ammonia and cyanide discharge levels which are closely monitored and managed. While none of our mine sites discharge mercury into the surrounding environment, we support the World Health Organization’s (WHO’s) Minamata Convention which is designed to raise awareness about the public health issues related to this naturally occurring element.

<table>
<thead>
<tr>
<th>FOSTERVILLE</th>
<th>MACASSA MILL</th>
</tr>
</thead>
<tbody>
<tr>
<td>13,744 m³</td>
<td>61,430 m³</td>
</tr>
<tr>
<td>Potable water used</td>
<td>Potable water used</td>
</tr>
<tr>
<td>585,359 m³</td>
<td>900,500 m³</td>
</tr>
<tr>
<td>Reclaimed water used</td>
<td>Reclaimed water used</td>
</tr>
<tr>
<td>0 m³</td>
<td>522,332 m³</td>
</tr>
<tr>
<td>Total treated effluent discharge levels</td>
<td>Total treated effluent discharge levels</td>
</tr>
</tbody>
</table>
While water scarcity is less of an issue for our Canadian operations, improving overall water quality and reducing our water consumption remain a priority. At our Macassa Mine, 90% of water used in the mill is reclaimed water, with effluent pumped from the mine’s Conditioning Pond back to the Mill for re-use as process water. This ultimately reduces potable water usage and also reduces the amount of effluent in the Conditioning Pond that requires treatment before being discharged.

Macassa has a number of other initiatives underway to improve water quality and reduce its consumption:

- **Moving Bed Bio-Reactor Pilot Project (MBBR)**
  We conducted a pilot plant test using MBBR technology to demonstrate the removal efficiency of both cyanide and nitrogen compounds from the mine’s effluent water and to reduce effluent aquatic toxicity. The pilot tests showed significant promise as a method to manage cyanide and nitrates. As a result, we conducted a trade-off feasibility study for the design and construction of a full-scale plant for the operation.

- **Zeolite Trial**
  We are exploring different underground sump techniques to determine whether they could reduce the amount of ammonia released to the aquatic environment that is generated from using explosives underground.

- **Phase 5 Environmental Effects Monitoring (EEM)**
  We recently completed Macassa’s latest EEM study on freshwater mussel collection, artificial substrates and toxicity testing to determine whether the mine’s effluent has potential negative impacts on local aquatic species. The study, which was submitted to Environment and Climate Change Canada in 2018, determined that no acute toxicity effects were observed on the species being monitored. The study recommended that the Phase 6 EEM continue to focus on mussels found in both the receiving water, Amigoukami Creek, and in additional exposure areas, in order to further define potential chronic effects.
Site water management is a key priority for mining operations, project development and closure activities in Australia's NT – where water resources are under constant pressure.

The NT effectively has two seasons – the wet season and the dry season, with most rainfall occurring from November to March (average of 1,400mm/year). Our team has been actively working with NT government agencies to develop an effective Five-Year Water Management Strategy for our Cosmo Howley Project Area (CHPA).

Our long-term goal is to progressively reduce the overall CHPA site water inventory by improving our active mine water treatment and discharge. Recent upgrades to the CHPA water management system include implementing improved water treatment technology, increasing the treated water volumes available for active discharge to maximize opportunities during high creek flows, and ensuring that siphons, pumps and pipelines are able to meet demand.

As a result of the upgrades, a record 2.9 gigalitres (GL) of treated mine water was discharged from the CHPA during the 2017-18 (above average) wet season; while during the 2018-19 wet season, which experienced below average rainfall and low creek flows, 1.2 GL of treated mine water was discharged.

Our CHPA site water inventory has fallen from 9GL in 2016-17 to 7.4GL in 2018-19, which is an 18% reduction and confirms that we are achieving the goals of our Water Management Strategy and improving our stewardship of this vital natural resource.
REDUCING THE AMOUNT OF NOISE THAT EMANATES FROM OUR SITES IS IMPORTANT TO OUR COMMUNITY STAKEHOLDERS, AS OUR MACASSA AND FOSTERVILLE MINES ARE LOCATED IN OR NEAR THE COMMUNITIES OF KIRKLAND LAKE AND BENDIGO.

We incorporate noise criteria into our design and expansion activities, and we regularly monitor our activities, in order to minimize any impacts to employees and local residents. We are committed to keeping our local communities informed about the timing and extent of our blasting activities.
Noise Monitoring
At Fosterville, we conduct regular noise monitoring sessions during the day, evening and nighttime at nine locations around the mine each week.

In 2018, external consultants studied noise levels around the site, particularly at the processing plant and Ellesmere Pit saddle. The study concluded that while noise levels remained generally consistent over a 24-hour operating period, there was noise fluctuation at the Ellesmere Pit saddle related to both on-site mining activities and non-mining activities – with the non-mining activities generally the cause of noise above the reportable limit.

Blasting is an essential part of the mining process and is used in both open pit and underground operations. In April, we installed four continuous blast meters to allow data to be captured from development firings in addition to stope firings, which were previously captured.

Kirkland Lake Gold is rolling out a Blast Notification System for the Fosterville Mine, as part of our commitment to keep community stakeholders informed about our activities. The system will provide residents with notification 24 hours in advance of planned production firings, when they may feel ground vibration during the designated firing periods between 6:30 and 7:00 am or 6:30 and 7:00 pm (although independent development firings may be conducted at other times).

Kirkland Lake Gold monitors ground vibration from Fosterville operations using a network of blast monitors (geophones) installed on the surface at designated locations. The monitors measure peak particle velocity (PPV) in mm/s and provide data which is used to ensure Fosterville maintains compliance with the vibration limits detailed in its mining licence. No blasts over the mining licence limits were recorded during the year at Fosterville.

2018 Performance Highlights
At Macassa, we recorded six nighttime noise breaches over 593 monitoring sessions during 2018. Each breach incident included an investigation, any subsequent remedial actions and a detailed report to the appropriate regulators.

Each of our sites keeps a complaints register to actively track, assess and resolve any complaints about our mining activities. In 2018, our Canadian and Australian operations received a total of nine complaints related mainly to noise and blast vibrations from our mining activities: two related to noise; four to noise/vibrations; two to vibrations; and one to water.

6
Nighttime noise breaches at Macassa during 2018

0
Blasts over the mining licence limits were recorded during 2018 at Fosterville
### 2018 Community Complaints

<table>
<thead>
<tr>
<th>Category</th>
<th>Site</th>
<th>Complaint(s)</th>
<th>Resolution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Noise/vibration</td>
<td>Macassa Mine</td>
<td>Expansion activities have increased noise and vibration in the area, which have been the primary complaint category.</td>
<td>Community noise monitoring program initiated, along with continuous vibration monitors placed throughout town. Complaints logged into our register and our VP was notified. A team was deployed to assess the nature of the complaint and resolve the issue. No outstanding issue was left unresolved.</td>
</tr>
<tr>
<td>Noise/vibration</td>
<td>Fosterville Mine</td>
<td>3 complaints related to larger than usual blast vibrations. All readings related to each complaint were well below site vibration reportable limits.</td>
<td>In response to blast vibration complaints three new continuous blast monitors were installed during the year at different sensitive receptors. The monitors will provide additional and immediate information regarding any blasting activities that occur onsite.</td>
</tr>
<tr>
<td>Noise/exploration drilling</td>
<td></td>
<td>1 noise complaint and 1 water complaint related to exploration drilling and groundwater sampling in the Exploration Licence area EL3539.</td>
<td>Additional noise monitoring was conducted and resulted in drilling operations being limited to dayshift only for the remainder of drilling at that site. Groundwater sampling of the landholder bore was also conducted and there was no change in the bore water quality or level during the drilling or following the drilling program.</td>
</tr>
<tr>
<td>Noise level/road conditions</td>
<td>Bendigo City Council</td>
<td>Council received complaints regarding noise levels and road conditions associated with exploration drilling programs.</td>
<td>All noise monitoring indicated the drilling program was operating within noise limits. Subsequent to any drilling program on public dirt or gravel roads, Fosterville repairs and grades the road as soon as practicable up to Council standards.</td>
</tr>
</tbody>
</table>
Key noise abatement initiatives at Fosterville for 2018 included:

- Installing a silencer for the stockpile tunnel fan, which resulted in a decrease in noise emissions of up to 5dB from approximately 3 meters away.
- Building shipping container noise attenuation walls around surface drill rigs. The containers reduced noise levels by up to 22dB from 10 meters away.
- Building a hay bale wall around a compressor to assist mitigation of noise emissions. The wall successfully reduced sound by approximately 40dB immediately behind the hay bales.

CASE STUDY

Community Noise Modeling and Mitigation at Macassa

The Macassa Mine is situated in the heart of the town of Kirkland Lake. Being a good neighbor means that as the mine began developing its expansion plans, noise mitigation was a core design criterion that was factored into every design option.

The latest design for the new #4 Shaft development project features a concrete headframe to minimize the sound and a drive-through load out to avoid backup beepers. The site already has enclosures on much of the noise generating equipment and has invested in expanding its fleet of electric vehicles.

The location of the project necessitates extremely careful control of blast vibrations, with seismographs and air overpressure sensors continuously logging blast data.

Kirkland Lake Gold hired an external consultant to collect ambient noise levels from residences that surround the mine site prior to any development activities. Noise samples were taken for an average of 48 hours at each location to factor in all times of the day over multiple days. The data will be used to monitor noise levels throughout our development and future operating activities.
EACH OF OUR SITES HAS APPROPRIATE WASTE ROCK AND TAILINGS MANAGEMENT PLANS IN PLACE DESIGNED TO MINIMIZE IMPACTS TO SOILS, SURFACE WATER AND GROUNDWATER RESOURCES.
Efforts continued during 2018 to reduce the volume of waste going to landfill by reducing, reusing and recycling as much waste as possible. Our waste management and recycling programs incorporate cardboard, industrial plastics, used oil filters, spill material wastes, used oil, scrap metal, battery and tires. Our sites work with licensed waste haul contractors and local stewardship organizations to properly collate, handle and recycle these materials.

At Fosterville, 45% of solid waste taken offsite during 2018 was recycled as compared to 34% in 2017.

**WASTE TO LANDFILL VS. RECYCLING (2018)**

![Waste Landfill vs. Recycling Chart]

**2018 Performance Highlights**

In 2018, we removed more steel and copper recycling waste materials from our sites, while generating and removing less inert general solid waste. Other waste material volumes generally remained steady over the period.

**SUMMARY OF WASTE REMOVED FROM SITE (t) 2018**

<table>
<thead>
<tr>
<th>Waste Material</th>
<th>Quantity (t)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Inert general solid waste</td>
<td>381</td>
</tr>
<tr>
<td>Hydrocarbon solid waste</td>
<td>49</td>
</tr>
<tr>
<td>Comingle recycling</td>
<td>2</td>
</tr>
<tr>
<td>Paper and cardboard recycling</td>
<td>20</td>
</tr>
<tr>
<td>Steel recycling</td>
<td>282</td>
</tr>
<tr>
<td>Copper recycling</td>
<td>22</td>
</tr>
<tr>
<td>Timber recycling</td>
<td>4</td>
</tr>
</tbody>
</table>
The Macassa Mine works with external service providers to collect and recycle five hazardous and non-hazardous materials as part of its overall waste management program:

1. **Cardboard** is placed in large green metal bins at strategic locations around the site and removed monthly by a contracted recycling company.

2. **Industrial plastics** are transported from satellite locations to the Waste Containment Area for storage, where a licenced waste haul contractor picks them up every 8 to 12 weeks.

3. **Used oil filters, spill material wastes and used oil items** are transported to the Waste Containment Area for storage, where a licenced waste haul contractor picks them up every 8 to 12 weeks; with some items covered under the Ontario Stewardship Program.

4. **Scrap metal** such as aluminum, steel, copper and non-ferrous metals are removed from site by a designated metal recycling company.

5. **Lead-acid and nickel cadmium batteries** (general purpose batteries) are collected and dropped off at local stewardship locations.

**CASE STUDY**

**Diverting Cable Reels from Landfill to Reduce Environmental Impacts**

During 2018, Kirkland Lake Gold entered a contract with ‘Cable Reels R Us’ to collect used cable reels from the Fosterville mine site. These reels are used to transport cable and pipe and are usually made from wood or plastic. Implementation of the project means that the reels can now be reused, reducing the amount of waste produced on site and reducing the consumption of new materials for their construction. To date, the project has been very successful, with the first truck load of reels diverted from landfill. We will continue to collect these materials on an ongoing basis.
OUR LAND AND RESOURCE MANAGEMENT INITIATIVES FOCUS ON IDENTIFYING, PROTECTING AND PRESERVING INDIGENOUS AND HISTORICAL CULTURAL HERITAGE SITES; ENSURING OUR MINE SITES PROVIDE AN APPEALING VISUAL AMENITY FOR OUR COMMUNITY STAKEHOLDERS; AND, PROACTIVELY AND PROGRESSIVELY REHABILITATING OUR MINE SITES TO ENSURE THEIR LONG-TERM STABILITY.

We collaborate with Indigenous communities in both Canada and Australia, as well as with local, provincial, state and national government officials and agencies, along with other interested parties, to inform them of our development activities and to incorporate their natural, cultural and social knowledge and concerns into our project plans.
Protecting Indigenous and historical cultural heritage is a key element of our environmental management practices. We conduct archaeological assessments to ensure cultural and heritage rights are protected. We work with Indigenous communities to identify and preserve cultural heritage sites and to incorporate Traditional Knowledge studies where appropriate.

In 2018, Kirkland Lake Gold developed a Cultural Heritage Management Plan (CHMP) for Fosterville in anticipation of activities related to the construction of a new tailings dam, which we propose to locate within 200 metres of an ephemeral waterway (Gunyah Creek). It therefore falls within an area of cultural heritage sensitivity and constitutes a high impact activity, as defined in Australia’s Aboriginal Heritage Regulations.

Also during the year, Fosterville environmental and geology employees participated in cultural heritage training to raise awareness of Aboriginal Heritage legislation and to learn more about identifying artefacts and sensitive areas. The training was undertaken by the local Dja Dja Wurrung Clan and involved a presentation, followed by a field visit to some nearby aboriginal cultural sites along the Campaspe River. The field training involved investigating scar trees, rock wells, fish traps, ring trees and rock chips for making tools.

This training initiative is part of Kirkland Lake Gold’s ongoing collaboration with the Dja Dja Wurrung Clan to ensure significant aboriginal sites across its mining lease area are preserved and protected, particularly when planning any new exploration or development work.

Environmental Subcommittee
Kirkland Lake Gold has established an Environmental Subcommittee as part of our Impact Benefits Agreement (IBA) with the First Nations of Matachewan and Wahgoshig in Northern Ontario. Our goal is to engage early and often with committee members regarding any exploration or mining project activity in order to keep all parties up to date and to identify and address any potential concerns or planning gaps.

Meetings are held quarterly to discuss project status and milestones, provide updates on upcoming or in-progress permitting as it relates to a project, and coordinate annual site visits.

Visual Amenity
From the outset of our planning processes, we work closely with community stakeholders to ensure our mine sites provide an appealing visual amenity, and any impacts are reduced by employing various revegetation and rehabilitation techniques to ensure each site is brought back to a natural state. The Macassa Mine, for example, annually participates in the Earth Day Cleanup hosted by the town of Kirkland Lake, with various departments cleaning up litter that has accumulated near and onsite over the winter months.
Closure and Progressive Rehabilitation

We proactively and progressively rehabilitate our mining sites to ensure their long-term stability and visual amenity. We work to return the land to some degree of its former state, planting hectares of native seeds and vegetation and monitoring our sites to ensure we are meeting our long-term rehabilitation objectives.

At Fosterville, for example, we progressively rehabilitates available areas each year, planting vegetation that is typically found in the Box Ironbark forest that is predominate in the area.

We also annually monitor and assess whether the local landscape and ecosystems around Fosterville are functioning properly on key areas of the mine site that have been rehabilitated. If they are not, the Landscape-Ecosystem Function Analysis determines how they can be properly rectified.

In 2018, the team finalized the Ecosystem Function Analysis component of the program, which examines the overall functionality of the ecosystem by investigating landscape function, vegetation, erosion and habitat and compares functionality against identified control sites. The presence of ants, kangaroos and other species at these sites indicates that Fosterville’s rehabilitation sites have good vegetation diversity and are creating suitable habitat for fauna to return to, improving the biodiversity of the site.

At the Macassa Mine, we annually conducts progressive rehabilitation activities including geotechnical investigations, investigative drilling, surveys and replacing old features with new ones that meet the latest mining codes. Since many of these are legacy mining features from previous mining activity on our properties that are below the surface, a large portion of Macassa’s rehabilitation program includes drilling, backfilling and/or replacing shaft caps to meet the current standard.

In 2018, the environmental team at Macassa supervised the rehabilitation of three legacy features, which included drilling paste delivery boreholes and overseeing the placement of paste backfill. The work was partially completed during the year and is carrying on in 2019, as it is not uncommon for these programs to span over the course of several years, due to the complexity and potential sensitivity of the work.

1. In Ontario, progressive rehabilitation is a legislative function of the Mining Act, which includes a framework on how to adequately rehabilitate legacy mining features, such as shaft caps, old buildings, fencing, stopes, etc.
In 2018, our progressive rehabilitation and vegetation monitoring activities included:

- At Macassa, progressive rehabilitation of three legacy features to reduce potential safety risks to the public and improve the overall visual amenity of these properties.
- At Fosterville, earthworks to realign drainage areas and repair erosion; hydro seeding of banks to promote growth of vegetation; infill plantings on a waste dump and storage retaining wall to increase species diversity and abundance; and spray drift vegetation monitoring to determine any impact from evaporation spray systems on surrounding native vegetation and/or rehabilitation.

KEY INITIATIVES

At Fosterville, Kirkland Lake Gold is undertaking a biosolids trial on a rehabilitated In-Pit Tailings facility to assess whether biosolids could support the growth of pasture and other plants. The current trial covers over 3 hectares, and the area has been seeded with Wallaby Grass, Kangaroo Grass, Burra Weeping Grass, Rough Spear Grass, Native Wheat Grass and Saltbush. These species were selected in conjunction with community and other representatives that sit on the mine’s Environmental Review Committee.

Biosolids are a solid product from the sewage treatment process, which has been treated to ensure it is safe for further use. The biosolids used in the trial are classed as contaminant grade C2 and treatment grade T3, which are suitable for land application for agriculture. Biosolids contain nutrients including nitrogen, phosphorus, trace metals and organic matter which assist with soil conditioning, plant growth, moisture retention and soil texture.

Monitoring is now underway to determine the success and rate of plant growth, and whether biosolids are safe and suitable for future agricultural use and rehabilitation purposes.

CASE STUDY

Can Biosolid-Sewage Waste Support Pasture and Plant Growth?

At Fosterville, Kirkland Lake Gold is undertaking a biosolids trial on a rehabilitated In-Pit Tailings facility to assess whether biosolids could support the growth of pasture and other plants. The current trial covers over 3 hectares, and the area has been seeded with Wallaby Grass, Kangaroo Grass, Burra Weeping Grass, Rough Spear Grass, Native Wheat Grass and Saltbush. These species were selected in conjunction with community and other representatives that sit on the mine’s Environmental Review Committee.

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Monitoring is now underway to determine the success and rate of plant growth, and whether biosolids are safe and suitable for future agricultural use and rehabilitation purposes.
BIODIVERSITY IS AN INTEGRAL PART OF MAINTAINING THE NATURAL HABITATS AND ECOSYSTEMS THAT SURROUND OUR SITES.

We monitor and help preserve local biodiversity by conducting regular studies and updates on aquatic life, species at risk, breeding birds, and animal and plant life. We also integrate best practices in land use planning and conservation into our operating activities in order to minimize our impact on the local environment.
Ghost Bat Monitoring and Management

In October, Kirkland Lake Gold began a ghost bat monitoring program at the Union Reefs Project Area (URPA) in Australia’s NT in order to develop a management plan as we expand exploration and mining activities in the area.

Ghost bats are a vulnerable species under the Australian Environment Protection and Biodiversity Conservation Act 1999 and often roost in small horizontal mine entrances, known as adits, which are a result of historical mining activities. Kirkland Lake Gold engaged an external consultant to assess and monitor ghost bat activity around the URPA and to understand the role that adits play in protecting regional populations of the species. We expect to implement the management plan in 2020 and hope to become a knowledge hub for this vulnerable species.

Macassa Wildlife Safety Activities

Wildlife is abundant in northern Ontario and around our mining operations. The Macassa Mine security team annually offers a wildlife safety training course to employees, instructing them on how to avoid and what to do should they encounter any large wildlife species such as deer, moose and bears.

The Macassa team also regularly captures and releases smaller wildlife roaming on or near the mining site. In 2018, for example, beavers were removed from the Amikougami Creek Culverts and F Dam Creek. When necessary, the team also removes unsafe relic bird nests to avoid repeat nesting in unsafe local nesting areas.
The Fosterville team conducted a follow-up aquatic macroinvertebrate and river health assessment of six sites in the mine’s vicinity during the spring and autumn of 2018 – five along an 18 km stretch of the Campaspe River and one in Axe Creek.

The key objectives of the monitoring program were to:

- assess the health status of the Campaspe River in the mine’s vicinity by sampling fish, macroinvertebrates and macrophyte communities as well as in situ water quality; and
- provide Kirkland Lake Gold with an effective biological monitoring program which could be used to demonstrate current and future environmental performance and compliance.

Similar to the 2016/17 findings, the 2018 assessment indicated a relatively healthy river system and a diverse and abundant community of aquatic fauna. The location, surrounding land uses and water regulation from a regional water catchment dam are having an observable impact on the river, namely water quality and macroinvertebrate diversity and abundance.

**KEY INITIATIVES**

Nina’s Ark is a not-for-profit organization that rescues, rehabilitates and releases injured animals and wildlife native to Australia. The team at Kirkland Lake Gold has worked closely with Nina’s Ark since 2011, providing financial support as a Gold Level Sponsor of $500 annually. When Kirkland Lake Gold rescues an injured animal on site, Nina’s Ark provides advice on how to stabilize the animal and transport it for further care and eventual release. The organization’s facilities include a veterinary surgery, holding pens and rehabilitation areas for rescued wildlife. At any one time, the facility is caring for 60-70 native animal at the facility. Kirkland Lake Gold Environment personnel visited the facility during 2018, interacting with brush-tail possums and sugar gliders.

**CASE STUDY**

**Working to Protect Australia’s Injured Wildlife**

Nina’s Ark is a not-for-profit organization that rescues, rehabilatates and releases injured animals and wildlife native to Australia. The team at Kirkland Lake Gold has worked closely with Nina’s Ark since 2011, providing financial support as a Gold Level Sponsor of $500 annually. When Kirkland Lake Gold rescues an injured animal on site, Nina’s Ark provides advice on how to stabilize the animal and transport it for further care and eventual release. The organization’s facilities include a veterinary surgery, holding pens and rehabilitation areas for rescued wildlife. At any one time, the facility is caring for 60-70 native animal at the facility. Kirkland Lake Gold Environment personnel visited the facility during 2018, interacting with brush-tail possums and sugar gliders.
COMMUNITY ENGAGEMENT

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COMMUNITY ENGAGEMENT

OUR GOAL IS TO MAKE A POSITIVE AND LASTING IMPACT BY CREATING MEANINGFUL OPPORTUNITIES FOR OUR EMPLOYEES AND LOCAL SUPPLIERS, AND BY CONTRIBUTING TO THE SUSTAINABILITY AND PROSPERITY OF THE COMMUNITIES IN WHICH WE OPERATE.

We believe that being socially responsible is essential to our operating and financial success. We are committed to developing relationships based on open and honest communication with our stakeholders and communicating with them in a timely manner.

We highly value community engagement and work continuously to maintain our social licence to operate. Our goal is to maximize the benefits of mining while minimizing any negative consequences from our activities.

Our operations regularly engage with community stakeholders in order to incorporate their values and concerns into our business activities. Our engagement programs and activities include formal and informal communication and feedback sessions; community partnerships; site visits and tours; and sponsorships and community investments.
COMMUNITY ENGAGEMENT

SOCIAL RESPONSIBILITY POLICY

Our Social Responsibility Policy states we will:

- Meet or exceed all applicable laws, regulations, as well as our own standards.
- Acknowledge cultural and other human rights and ensure all levels of the workforce understand and respect such rights.
- Integrate social responsibility into our decisions and activities.
- Act ethically and respectfully regarding Indigenous rights, cultural beliefs and aspirations.
- Understand, encourage and promote cross-cultural awareness.
- Engage our stakeholders regarding their values in connection with the development, operation and closure of mineral projects.
- Communicate openly and honestly about our performance in a timely manner.
- Maintain ongoing dialogue based on transparency, respect and good faith.

To learn more about how we fulfil our commitment to social responsibility, please download our Social Responsibility Policy here.

PROGRAMS & PERFORMANCE

Indigenous Engagement

We engage directly with Indigenous communities to foster meaningful and mutually beneficial relationships and to ensure our operations are respectful of Indigenous rights, cultural beliefs and aspirations.

We have entered into a number of agreements and partnerships with Indigenous communities, with a goal to promote Indigenous businesses and employment opportunities. In Canada, for example, our IBA with the First Nations of Matachewan and Wahgoshig includes various employment and training opportunities, as well as ongoing environmental and conservation programs.

Community Engagement

The Fosterville team actively engages with local community stakeholders through personal visits, open town hall meetings, information bulletins, community newsletters, information booths, open days, Environmental Review Committee (ERC) meetings, social media and attendance at local and regional community meetings, functions and events.
In 2018, Fosterville’s community team expanded its relationships with many of the landholders in the surrounding community and beyond, as the mine continues to advance its work in the new exploration licence areas. The team’s key community activities included: holding quarterly Environmental Review Committee meetings with local government and community representatives; hosting five meetings in the surrounding townships to discuss operational and exploration activities; publishing a quarterly community newsletter; and providing an update during the annual Fosterville Family and Friends Day in the old Fosterville township.

In Canada, the Macassa Mine annually hosts a Community Open House to provide members of the public with an opportunity to network with our management team, receive updates on various ongoing projects and to provide their feedback on our activities.

**Addressing Community Issues**

As part of maintaining our social licence, we welcome community feedback and we monitor and track any issues raised by local citizens. We have formal grievance mechanisms to ensure any complaints we receive are promptly addressed. Specifically, each of our sites keeps a complaints register to actively track, assess and resolve any complaints about our mining activities.

**2018 Performance Highlights**

In addition to supporting local businesses and indigenous communities, Kirkland Lake Gold contributes to the sustainability and prosperity of the communities in which we operate through targeted philanthropic programs.

In 2018, our operations spent a total of $476,000 in community investments through various sponsorships, donations, scholarships and grants.

<table>
<thead>
<tr>
<th>Operation</th>
<th>Community Grants</th>
<th>Sponsorship/Donations</th>
</tr>
</thead>
<tbody>
<tr>
<td>Canadian Operations ($CAD)</td>
<td>n/a</td>
<td>$497,000</td>
</tr>
<tr>
<td>Fosterville ($AUD)</td>
<td>$30,613</td>
<td>$93,263</td>
</tr>
</tbody>
</table>
Community investments – Get In the Game

We invest in social, educational, environmental and recreational programs that benefit our operating communities. We target a portion of our funding toward initiatives that encourage active, healthy lifestyles in the community. We also sponsor groups, events and facilities to build positive relationships and to have a positive impact on the communities that surround our operations.

The Fosterville Mine has been operating its community grants program for 13 years and in that time, it has awarded 192 community groups with a total of AUD$281,000 to support their community endeavours. The grants are offered twice a year and focus on projects which have strong links and long-lasting benefits to the wider community. Grants are allocated to projects in the arts, education, environment, recreation and community development areas. In 2018, approximately AUD$30,000 was dispersed to 17 local and regional community groups.

In Kirkland Lake, our employees are active volunteers in the community and our operations provide ongoing support for local food drives, health organizations, hospitals and to local curling, golf and other sports and recreational facilities.

192 Community groups awarded with community grants at Fosterville

AUD$281k Total given to support community endeavours in 13 years at Fosterville

CAD$497k Total spent to our local and regional economies in 2018
Kirkland Lake Gold was named 2018 Citizen of the Year (CJKL) for helping to improve the quality of life for people in the Kirkland Lake area. The honour is presented annually by the Kirkland Lake District Chamber of Commerce to local people, groups and/or businesses who have made an outstanding contribution to their community.

The Chamber recognized our investment of CAD$3.2 million toward the Kirkland and District Hospital for a new six-bed intensive care unit, which will include a CAT scan machine.

Gary Sims, President and CEO at the hospital said, “Kirkland Lake’s Gold’s investment will revolutionize health care delivery for our region for years to come.”

The Chamber also highlighted CAD$280,000 in additional funding from Kirkland Lake Gold to support other local organizations and initiatives, including:

- the Kirkland Lake Curling Club, to replace failing equipment, and to the Kirkland Lake Golf Club for clubhouse repairs;
- the Kirkland Lake Gold Junior A Hockey team and the free Canada Day Party and fireworks (Kirkland Lake Festivals Committee);
- the Toburn Operating Authority, which preserves the historic Toburn Mine and is a monument to the mining history of Kirkland Lake;
- the Kirkland Lake 100th Anniversary Committee; and
- the Kirkland Lake Arts Council and many other local not-for-profit service groups and sports organizations.

Kirkland Lake Gold employees were also acknowledged for volunteering their time to support many good causes in the area including support for a local food bank drive, a breakfast program at Federal Public School, manning the Salvation Army Christmas kettles, and sponsoring a blood donor clinic. Go Team!
COMPLIANCE

CONTENTS

2018 Reportable Events 57
KIRKLAND LAKE GOLD HAS A STRONG TRACK RECORD OF COMPLIANCE AND OUR GOAL IS TO MEET OR EXCEED ALL APPLICABLE LAWS, REGULATIONS AND LICENCES.

Our operations work in a transparent and cooperative manner with all authorities regarding environmental matters or any events that occur at our mine sites.

Our Fosterville team maintains clear communication channels with the Department of Economic Development, Jobs, Transport and Resources (DEDJTR) Earth Resources Regulation and other relevant regulators in Australia, while the team in the NT maintains relationships with both the Department of Primary Industry and Resources and the Department of Environment and Natural Resources. Our Canadian operations personnel communicate with the Ontario Ministry of Energy, Northern Development & Mines, as well as with Environment and Climate Change Canada, the Ontario Ministry of Environment, Conservation and Parks, and other relevant regulators.
For Fosterville, Kirkland Lake Gold has developed a risk-based incident assessment system, based on the specifications included in the Guidance Note on Reportable Events for Mineral and Extractive Operations (EEV 2013). Under this system, any incident is reportable if it is considered to be significant and outside normal operating conditions. Events that occur as expected during normal operations are not reportable events, even though they may be significant. Similarly, for Macassa and our Northern Ontario operations, we are guided by the Classification and Exemption of Spills and Reporting of Discharges and have developed a risk-based program in accordance with Spill Prevention and Contingency Plans, in accordance with Ontario’s Environmental Protection Act.

In addition to these incident assessment systems, our mine sites each have mechanisms in place for local stakeholders to contact us directly to report any environmental incidents or concerns that require follow up.

In 2018, there were 10 reportable incidents: two at Fosterville, seven at Macassa and one at Holt. None of the reportable incidents had adverse impacts on the environment, no fines were levied and no permits were compromised as a result of any outstanding issues.

### ENVIRONMENTAL COMPLIANCE – REPORTABLE EVENTS

<table>
<thead>
<tr>
<th>MINE LOCATION</th>
<th>INCIDENT</th>
<th>ACTIONS/MITIGATION MEASURES</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>FOSTERVILLE</strong></td>
<td>Emergency discharge valve on flotation tailings discharge line opened approximately 20mm resulting in uncontrolled discharge of flotation tailings and process water through drainage lines via a series of freshwater dams on Crown Land and into private land and a dam. Tampering suspected.</td>
<td>Soil/water samples collected, communication with private landholder, site inspection by regulators (ERR, EPA, DELWP); removal of tailings from drainage lines, removal of process water from impacted dams, additional monitoring/inspections and removal of all flotation tailings emergency discharge valve handles.</td>
</tr>
<tr>
<td>January 31*</td>
<td>Small leak of Epsom Class B water from an existing repair sleeve on main pipeline along Huntly-Fosterville Road, outside mining lease.</td>
<td>Field testing indicated water was neutral and only small area impacted ≤ 3m². Sleeve repaired and regulators notified. Landholder notified and raised no concerns due to good water quality.</td>
</tr>
<tr>
<td><strong>MACASSA</strong></td>
<td>Air quality monitors showed an exceedance, which was reported to the Ministry after sample was re-analyzed for accuracy.</td>
<td>It was determined that the air quality exceedance was a result of forest fires in the area which were picked up by our monitoring station. Upon investigation, the Ministry deemed this not to be an incident resulting from the Macassa mine and the incident has been closed.</td>
</tr>
<tr>
<td>June 28</td>
<td>Combination of too much acid and improper flushing of the acid wash circuit ahead of caustic addition caused an uncontrolled release of nitrogen dioxide in the air.</td>
<td>Updated acid wash procedure (identify pH targets, checks and balances); socialized and trained employees on procedural changes; updated SPCR (Spill Prevention and Contingency Plans).</td>
</tr>
<tr>
<td>August 8</td>
<td></td>
<td></td>
</tr>
<tr>
<td>MINE LOCATION</td>
<td>INCIDENT</td>
<td>ACTIONS/MITIGATION MEASURES</td>
</tr>
<tr>
<td>---------------</td>
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<td>-----------------------------</td>
</tr>
<tr>
<td>MACASSA (CONTINUED)</td>
<td>September 13</td>
<td>Air quality monitors showed an exceedance, which was reported to the Ministry after sample was re-analyzed for accuracy.</td>
</tr>
<tr>
<td></td>
<td>It was determined that the air quality exceedance was a result of forest fires in the area which were picked up by our monitoring station. Upon investigation, the Ministry deemed this not to be an incident resulting from the Macassa mine and the incident has been closed.</td>
<td></td>
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<tr>
<td></td>
<td>October 01</td>
<td>Recirculation pump for lime tank was left in Manual Mode when it should have been in Auto Mode, resulting in spill of lime.</td>
</tr>
<tr>
<td></td>
<td>The area was power washed to clean residual lime. Vacuum truck was used to suction spilled lime and the lime was then disposed in the tailings basin. Changes to the tandem pump system are being explored.</td>
<td></td>
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<tr>
<td></td>
<td>October 28</td>
<td>Cement truck rolled over due to slippery weather conditions. While roads are maintained for northern weather conditions, this was a result of a sudden stoppage.</td>
</tr>
<tr>
<td></td>
<td>Spill was cleaned up and cement truck brought to shop for inspection. Additional signage on potentially slippery roads was introduced.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>November 19</td>
<td>A leak at tailings valve was detected due to a faulty valve.</td>
</tr>
<tr>
<td></td>
<td>The tailings were spilled right back into the tailings basin as the valve is located on the crest of the dam. While there was no spill into the environment, incident was still reported due to the fact that it was a tailings related incident. Upon investigation, the Ministry also deemed this not to be a spill and the incident has been closed.</td>
<td></td>
</tr>
<tr>
<td></td>
<td>November 19</td>
<td>Additional leak at tailings valve was detected due to the faulty valve.</td>
</tr>
<tr>
<td></td>
<td>As with the previous incident, the tailings were spilled right back into the tailings basin as the valve is located on the crest of the dam. While there was no spill into the environment, incident still reported due to the fact that it was a tailings related incident. Upon investigation, the Ministry also deemed this not to be a spill and the incident has been closed.</td>
<td></td>
</tr>
<tr>
<td>HOLT</td>
<td>November 13</td>
<td>An acute toxicity release into the mine’s discharge was recorded. The polishing pond is used to clean the water prior to release: a new toxicity lab company was used, and two results were taken, one showed a pass and the second showed a fail.</td>
</tr>
<tr>
<td></td>
<td>The discharge was stopped within 24 hours of sample taken and additional aeration solutions deployed to reduce toxicity of the water prior to release.</td>
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</tbody>
</table>

* On the above-noted January 31st event, a minor works pollution abatement notice (PAN) was issued, requiring an Environmental Impact Assessment to be prepared by March 16th, 2018. Following a third-party review of the assessment, and a final site inspection, the PAN was revoked on March 29th. The EPA issued an Infringement Notice on the March 23rd, which included a fine of AUD$7,929.00 for causing an environmental hazard in contravention of Section 27A (1)(c) of the Environmental Protection Act 1970.