



# SUSTAINABILITY REPORT 2018

**IVANHOE MINES**  
NEW HORIZONS



# Table of CONTENTS

1.	<b>Our approach to sustainability reporting</b>	<b>1</b>	
	1.1 About this report	1	
	1.2 Reporting guidelines	1	
	1.3 Independent assurance	1	
	1.4 Report scope	1	
	1.5 Message from our co-Chairmen	2	
	1.6 Message from our President and Chief Executive Officer	6	
	1.7 Message from the Chair of our Sustainability Committee	8	
2.	<b>Our business at a glance</b>	<b>10</b>	
	2.1 Who we are	10	
	2.2 Our principal projects	11	
	2.3 Progressing our projects	12	
	2.4 Governance and management approach	18	
3.	<b>Our most material matters</b>	<b>20</b>	
4.	<b>Our stakeholders</b>	<b>22</b>	
	4.1 Stakeholder mapping	22	
	4.2 Engagement	24	
5.	<b>Our performance</b>	<b>29</b>	
	5.1 Economic capital	29	
	5.2 Human capital	36	
	5.3 Social and relational capital	46	
	5.4 Natural capital	58	
	5.5 Intellectual capital	68	
	5.6 Infrastructure capital	70	
6.	<b>Conclusion</b>	<b>73</b>	
7.	<b>Appendices</b>	<b>74</b>	
	7.1 Qualified Person's statement	74	
	7.2 Cautionary statement on forward-looking information	75	
	7.3 Global Reporting Initiative Standards Index for the <i>Ivanhoe Mines Sustainability Report 2018</i>	77	
	7.4 Alignment with Mining Local Procurement Reporting Mechanism	89	
	7.5 Alignment with International Council of Mining and Metals	91	
	7.6 The United Nations Global Impact	92	
	7.7 South African Mining Charter Performance	93	
	7.8 Broad-based Black Economic Empowerment (B-BBEE) Scorecard 2018 – Platreef Project	95	
	7.9 Abbreviations	96	
	7.10 Stakeholder feedback form	96	
	7.11 Contact details and other information	99	

FRONT COVER PICTURE: LEONIE NFUND KAT, A COMMUNITY WORKER AT THE KAMOA LIVELIHOODS VEGETABLE GARDEN PRUNING BANANA SEEDLINGS

## 1. OUR APPROACH to sustainability reporting

### 1.1 About this report

This 2018 Sustainability Report is the second report published in accordance with the Global Reporting Initiative (GRI) Core Option Guidelines. It augments filings and public disclosures made by Ivanhoe Mines Ltd. (also Ivanhoe Mines, Ivanhoe, or the Company) under applicable securities laws and stock exchange rules, copies of which can be found under the Company's profile on the System for Electronic Document Analysis and Retrieval (SEDAR) at [www.sedar.com](http://www.sedar.com). It reinforces the Company's objective of transparency in reporting on its sustainability initiatives. This annual report consists largely of information about the Company's sustainability policies, practices and performance for the reporting period from January 1, 2018 to December 31, 2018, and information has been provided for preceding years only where available and applicable. This report aims to provide relevant disclosures and information that meet the needs of individuals and groups across various stakeholder groups, investment analysts and investors.

### 1.2 Reporting guidelines

Frameworks, reporting guidelines and good practice standards that inform our approach to sustainability and the identification of material matters include the following:

- > The Global Reporting Initiative (GRI).
- > Local Procurement Reporting Mechanism (LPRM).
- > The Millennium Development Goals (MDGs).
- > The United Nations Global Compact (UNGC).
- > The United Nations Declaration of Human Rights (UNDHR).
- > The Carbon Disclosure Project (CDP).
- > The International Integrated Reporting Council's (IIRC) Integrated Reporting Framework.
- > International Council of Mining and Metals' (ICMM) 10 Principles, a best practice framework for sustainable development.

The information in this report has been prepared and presented in accordance with the Global Reporting Initiative's (GRI) Standards Core Option. Country-specific reporting compliance is provided in the appendices to this report.

### 1.3 Independent assurance

This report serves as the Company's second public sustainability report. Whilst the report has not been externally assured by a third party, the Company undertook an independent assurance readiness review. The review highlighted key areas in which the Company is implementing systems to ensure progress in delivering a complete independent third-party assured sustainability report by 2020. The Platreef Project has engaged Ernst & Young (EY) Incorporated in accordance with the International Standard on Related Services (specifically, ISRS 4400 Engagements to Perform Agreed-Upon Procedures) to provide independent assurance for the following:

- > Local economic development (LED)
- > Enterprise and supplier development (ESD)
- > Human capital development plan
- > Collaborative partnership with University of Limpopo
- > Employment equity and local employment
- > Preferential procurement

Consequently, the information relating to these performance areas of the Platreef Project has been independently assured as part of the Project's regulatory reporting processes.

### 1.4 Report scope

This report discloses information only on our material projects over which Ivanhoe has direct or joint management control. These are our three principal projects in Southern Africa, namely (1) the Platreef Project in Limpopo Province, South Africa, (2) the Kamoa-Kakula Project in Lualaba Province, Democratic Republic of Congo (DRC) and (3) the Kipushi Project in Haut-Katanga Province, DRC.

We disclose sustainability on a 100%-project basis, as if the Company owned 100% of all operations, even though each project has individual shareholding structures.

We disclose our water and climate change according to the CDP guidelines provided. Our full CDP water and climate change disclosures for 2018 can be viewed on CDP's website, [www.cdp.net](http://www.cdp.net).

For occupational health and safety statistics purposes, total workforce in this report means the average of 3,231 employees and contractors who are eligible for induction and/or medical surveillance and contributing to the safety statistics, as at December 31, 2018.





## 1.5 JOINT MESSAGE FROM OUR EXECUTIVE CO-CHAIRMAN AND FOUNDER

ROBERT FRIEDLAND



## OUR NON-EXECUTIVE CO-CHAIRMAN

YUFENG 'MILES' SUN

### To Ivanhoe Mines stakeholders

On behalf of all of our employees and our partners, we are pleased to share our second annual Sustainability Report, highlighting our people, community initiatives, responsible mining practices, sustainability performance in 2018, and our vision of the forces now shaping future markets for the metals we soon will be producing.

Our progressive focus on sustainability and responsible mine development well before we begin commercial mining operations, reflects our commitment to a culture of transparency, integrity, accountability and respect for our employees and the communities in which we operate.

Twenty-five years ago, we began our quest for major discoveries in and around Southern Africa's legendary mineral fields.

Now, building on the foundation of our two internationally-acclaimed discoveries at Kamoa-Kakula in the Democratic Republic of Congo (DRC) and at Platreef in South Africa, we are building two of the world's best new mines. We also are working to re-start production at Kipushi in the DRC, which was at one time the world's richest copper-zinc mine. To achieve our goal of bringing three world-scale mines into production, we are working closely with community, private, public, and state-owned partners.

Our visionary geologists have an impressive record of making outstanding mineral discoveries. They have positioned us for future success. So, while our development team focuses on transforming our earlier discoveries into world-scale mines, our exploration team will be in the field, drilling holes, and looking for Southern Africa's next great mineral discovery.



Last September, CITIC Metal Group, one of China's leading international resources companies, joined Ivanhoe as a strategic, global partner through its initial investment of US\$560 million. CITIC recently committed to invest another US\$457 million in Ivanhoe through equity financings. CITIC shares the same commitment to implement leading-edge, international best practices in building innovative, environmentally and socially-responsible mines. CITIC also has a profound appreciation of diverse cultures, which is an indispensable factor in successful construction and operation of large-scale mining assets in Africa. Ivanhoe and CITIC have shared a close working relationship for more than 15 years, and reflecting the prominent role that CITIC will play in shaping Ivanhoe's future, CITIC Metal's President Yufeng "Miles" Sun has joined the Ivanhoe team as Co-Chairman.

Kamoa-Kakula is on track to begin production in 2021 and, with phased expansions, is projected to become the world's second largest copper mine. Excellent development progress also is being made at Platreef and Kipushi, and both projects are advancing positively along the path to production.

After more than a quarter of a century of incredibly intensive efforts by our people, Ivanhoe is about to make a major transformative leap forward from one of the modern world's top explorers to a leading producer. We are extremely proud of our exploration and development successes to date. We are even more proud of our growing team of talented South African and Congolese women and men – who have embraced our goal of environmental, health and safety excellence – and our community enhancement programs that are having a meaningful, positive impact on the families living near our operations.

Our entire board is well aware of the damaging effects of climate change and air pollution on the quality of life on our planet, especially in many of the world's major cities. We are particularly worried for future generations – our children and grandchildren – who will bear the greatest costs unless we collectively take action now. Climate change and air pollution know no borders and present an existential challenge to us all.

The urgent, global need for humans to wean ourselves off of burning fossil fuels for transportation and energy generation – the leading contributor to greenhouse gas emissions – will drive the demand for commodities for years to come, paving the way for responsible miners of 'green metals' to play a crucial part in solving some of the planet's biggest problems.

SINAH TJALE – IVANPLATS  
FULL TIME HEALTH AND SAFETY  
REPRESENTATIVE



Our new mines will produce many of the metals that the world needs for cleaner air and water. Zero-emission, energy-efficient transportation, and the distribution and storage of grid-scale volumes of clean, renewable energy, will require new, long-term sources of platinum, palladium, rhodium, nickel, and especially copper.

Our team works closely with many of the world's leading automobile and technology companies, and one thing is inherently clear – copper is the king of the 'green metals'. When it comes to solving the world's most pressing environmental problems, almost every single solution drives you to copper – solar power, wind power, hydro power, and pure electric and fuel-cell electric vehicles.

The average electric vehicle requires four times the copper of a standard vehicle. Future, larger electrics are expected to use much more. Thanks to incredible advances in technology and massive investments by car makers around the globe, the pace of global electrical-vehicle adoption is expected to accelerate. Wind and solar energy are even more significant drivers of future copper demand as they are up to 37 times more copper intensive than conventionally generated electricity.

Globally, there is a scarcity of good, new copper projects. Kamoa-Kakula, with a projected peak annual copper production of more than 700,000 tonnes, has an increasingly important role to play as the world moves toward a more sustainable and energy-efficient future. Kipushi, with its ultra-high copper and zinc grades, has a similar promising future.

Platreef is positioned to become a major producer of palladium, platinum and rhodium, which are required in catalytic converters to control harmful emissions in exhausts from vehicles and factories. Platinum also is vital for fuel-cell electric vehicles. As well, Platreef contains large quantities of nickel and copper – both critical ingredients in electric-vehicle batteries.

The metals we will produce are important. So is the way we produce them. For us, strong sustainability performance means responsibly producing these metals while also being a trusted, valued neighbour in the communities near our operations.

The recent tailings pond collapse in Brazil is reason for pause for all miners, to take stock of their risk management practices. Our new mines at Platreef and Kamoa-Kakula are designed to

return the majority of tailings back underground, into the mined-out workings as paste backfill, with the remainder pumped to small tailings storage facilities equipped with state-of-the-art monitoring systems. At Kipushi, the incredibly high grade and modest volume of the ore that we plan to mine, allows for construction of a small, modern tailings impoundment facility.

However, in light of the Brazil accident and other similar incidents in recent years, we are conducting additional, independent, engineering audits of our planned tailings storage facilities to further safeguard our employees and neighbouring communities.

The growing, global awareness of ethical issues with respect to supply-chain management of metals plays a prominent factor in the design, construction and operation of our mines. Unlike many of the conventional, deep, narrow-veined, underground mines elsewhere in Africa – where thousands manually toil in extremely hot and challenging conditions – our mines will be air-conditioned, highly-mechanized operations that will prioritize safety and employ a new generation of highly-skilled women and men operating computerized equipment. The remarkable thickness and relatively flat-lying nature of our underground orebodies allows us to use the latest, most-advanced, bulk-scale mining technologies.

We also are focused on powering our mines primarily with electricity generated from clean, renewable energy sources, such as hydropower and solar, to help minimize the company's environmental footprint. Kamoa-Kakula and Kipushi already are using hydro-power generated electricity, and we are looking at ways to incorporate solar power and vanadium flow batteries to augment grid-supplied power at all of our operations. And, as technology advances, we plan to incorporate electric and automated vehicles into our mining fleet, replacing diesel-powered alternatives, to further reduce emissions and keep our employees safe.

Our projects are in areas where high unemployment and challenging living conditions are realities. For us to make lasting, positive impacts in our local communities and host countries, we need to work hand-in-hand with local and national governments to create stable fiscal, regulatory and taxation frameworks – owing to the long-term nature of large-scale exploration and mining, which only deliver returns after decades of work and billions of dollars have been invested. We all will benefit if we deal with the opportunities and challenges facing us, together.

On behalf of our entire board of directors, you have our commitment that we will continue to work hard and make no compromises to create long-lasting value for Ivanhoe's stakeholders in the Democratic Republic of Congo and South Africa, and our international shareholders.

We have demonstrated over the last 25 years our strong commitment to the men, women and children of our host African nations. We now are determined to build our mines as showcases for responsible mine development – and in the process help build a better, healthier world for future generations. After all, it's the only planet we have.

After more than a quarter of a century of incredibly intensive efforts by our people, **Ivanhoe is about to make a major transformative leap forward from one of the modern world's top explorers to a leading producer. We are extremely proud of our exploration and development successes to date.**



INSPECTION OF REFURBISHED  
PUMP STATION AT KIPUSHI





## 1.6 MESSAGE FROM OUR PRESIDENT AND CHIEF EXECUTIVE OFFICER: LARS-ERIC JOHANSSON

### To Ivanhoe Mines stakeholders

Ivanhoe Mines' second Sustainability Report details our health, safety, environmental and social responsibility performance in 2018, as well as the steps that are underway to further enhance our sustainability reporting as we advance our three flagship mines in Southern Africa toward production.

Our objective in producing this report is to communicate our sustainability performance and challenges to our stakeholders, most notably to our local communities, employees and shareholders, in a clear and concise form. It also provides a forum for us to proudly showcase members of our talented team.

The report documents our strategic focus on sustainability and responsibility considerations associated with the development of our mining projects and ongoing exploration. It also details how we work with our partners, host communities and employees to achieve our sustainability and responsible mining objectives.

We operate under clear, value-based principles of excellence, personal accountability, integrity and social and environmental responsibility. Working with our employees, contractors, partners, and the people of the communities in which we operate, we strive to build strong and lasting relationships to address stakeholders' interests, employ leading-edge technology, improve safety practices and minimize our impact on the environment.

**Our community enhancement initiatives, and our stakeholder agreements with our host communities, local entrepreneurs and employees, help to ensure that the social and economic benefits from our discoveries are widely shared.**

We have worked hard to form partnerships that can secure the delivery of long-term sustainability benefits to the people living within our projects' host communities. Our continued success requires cooperation with local communities, local governments, national governments and non-governmental organizations.

In addition, our community enhancement initiatives, and our stakeholder agreements with our host communities, local entrepreneurs and employees, help to ensure that the social and economic benefits from our discoveries are widely shared.

SURVEYOR CHIPENG KAVUL AND  
MINING ENGINEER PONTIEN KALALA  
IN KAKULA'S CONVEYOR DECLINE



The Kamoakakula Sustainable Livelihoods Project, established in 2012 by Ivanhoe with the support of U.K.-based Eco-Livelihoods, is significantly contributing to the economic empowerment of families who live in the communities that surround our Kamoakakula Project. These community-support initiatives include fish and chicken farming, agricultural projects, adult literacy programs, and the construction of new schools, houses, clinics, roads and power infrastructure.

Our Maru Mokopane initiative is an innovative step in establishing a digital, information-sharing system and making it freely accessible by residents of communities surrounding the Platreef Mine. The initiative reflects our belief that South Africa's youth will determine the country's future, and one of the most important means to assist them in achieving success is access to information and technology. South African students, with undergraduate degrees in geology, now are pursuing Masters and Doctor of Philosophy (PhD) degrees at Canada's Laurentian University through a program initiated and supported by Ivanhoe.

This Sustainability Report, as well as our initial report last year, contain a number of similar success stories, in the form of 'special reports', of which we are particularly proud.

As we advance our projects through construction and into production, we are focused on ensuring that our high-quality, long-life discoveries are developed responsibly and safely. Kamoakakula now has completed more than 12 million work hours – more than seven years – without incurring any lost-time injuries, and shaft-sinking safety initiatives implemented at Platreef resulted in a significant safety improvement in 2018.

Developing our mines responsibly – with respect for our employees, their safety, our neighbouring communities and the environment – remains our top priority.





## 1.7 MESSAGE FROM THE CHAIR OF THE SUSTAINABILITY COMMITTEE: GUY DE SELLIERS

### To our valued stakeholders

At Ivanhoe, as we build our three world-class projects, we are highly conscious of our responsibilities towards people and the planet, especially at a time when our world faces such critical issues such as climate change, responsible water stewardship, broad-based distribution of benefits from mineral resource extraction, conservation of natural resources, and human rights.

Our second Sustainability Report chronicles our efforts and achievements in applying best practices throughout the life of our projects, starting well before any of our projects deliver operating revenues. While the report covers a large number of initiatives, I want to highlight a few important ones.

**In 2018, our Platreef Project achieved an 85% improvement in its Lost Time Injury Frequency Rate (LTIFR) compared to 2017, in spite of a significant ramp up in our mine development activities.**

Local hiring also is a priority for Ivanhoe Mines. For example, we now have more than 50% of our shaft-sinking team at Platreef recruited from the surrounding communities, and these employees are well-integrated into the sinking teams. Platreef's excellent safety and productivity performance in 2018 is verification that this was highly successful.

Also in 2018, we continued with our commitment to make significant investments in the host countries in which we operate. In 2018, we spent more than \$242 million in the DRC and South Africa on procurement, payroll tax, employee salaries, infrastructure upgrades, and community development (refer to Total Value Created and Distributed tables on page 30).

BRICK-MAKING  
OPERATIONS AT  
KAMOA-KAKULA



To ensure that we are following current international best-practice standards for local procurement, we have introduced the use of the Local Procurement Reporting Mechanism (LPRM) on a project management and group reporting level. The community brick-making cooperative we facilitated at our Kamoa-Kakula Project is an example of providing opportunities to local communities to participate in the mine supply chain (refer to Special Report on page 33).

We also have made a concerted effort to provide opportunities for women in our host communities. International research has shown that providing opportunities to women to improve their education, living standards and employment status can benefit entire communities as women more readily transfer their newly acquired skills to children and other family members. One example of our women-focused initiatives is the adult literacy classes that we provide to hundreds of illiterate and semi-literate women in the communities near our Kamoa-Kakula and Kipushi projects (refer to the Special Report on page 48).

Climate-change adaptation and resilience strategies for our host communities and the Company's operations is a priority in our sustainability strategy. Our commitment to being a responsible global citizen is evidenced by our first public disclosure on climate-change on the Carbon Disclosure

Project (CDP) online platform during 2018. This submission provides our baseline greenhouse gas emission factors, which will serve as the foundation for energy efficiency and climate-change resilience targets and initiatives that will be formulated as our mines go into production (refer to 5.4.5 on page 63).

In the interim, our environmental departments are raising awareness among our employees, contractors and host communities through initiatives such as school science competitions where local students had to design context-applicable climate-change resilience strategies. At the Platreef Project, the winning team designed a carbon offset initiative using an indigenous tree with remarkable carbon removal capacity (refer to the Special Report on page 61).

We undertook an independent assurance readiness review during the 2018 reporting period, and are implementing actions to prepare for independent assurance. We are planning comprehensive third-party assurance of our annual Sustainability Report by 2020. In addition, all socio-economic development data of the Platreef Project has been independently audited as part of the regulatory reporting processes in South Africa.



# 2. OUR BUSINESS at a glance

## 2.1 WHO WE ARE

Ivanhoe Mines is a mineral exploration and development company with a vision to build a leading, commodity-diversified mining and exploration company. We are realizing this vision through the development of our principal projects in Africa.

We believe that broad common good can be attained by the consistent application of strategies and practices that treat people and the environment with respect, while pursuing the underlying business objective of building our core values.

In particular, the Company places a priority on the following:

- > Responsible exploration, development and production operations
- > Leadership through action
- > The value of human resources
- > The right to work, safety, health and skills development
- > Sustainable community partnerships
- > Respecting and promoting diversity
- > Environmental responsibility and innovation
- > Corporate integrity, transparency and accountability
- > Respect for human rights with the UNDHR as guidance

We view our sustainable development strategy as a vehicle through which we can create shared value for all our stakeholders and mitigate our impact on the environment.

### IVANHOE MINES AND STAKEHOLDERS

ECONOMIC CAPITAL

HUMAN CAPITAL

SOCIAL AND RELATIONAL CAPITAL

NATURAL CAPITAL

INTELLECTUAL CAPITAL

INFRASTRUCTURE CAPITAL

REGULATORY AND BEST PRACTICE FRAMEWORK

→ CREATE SHARED  
VALUE ←

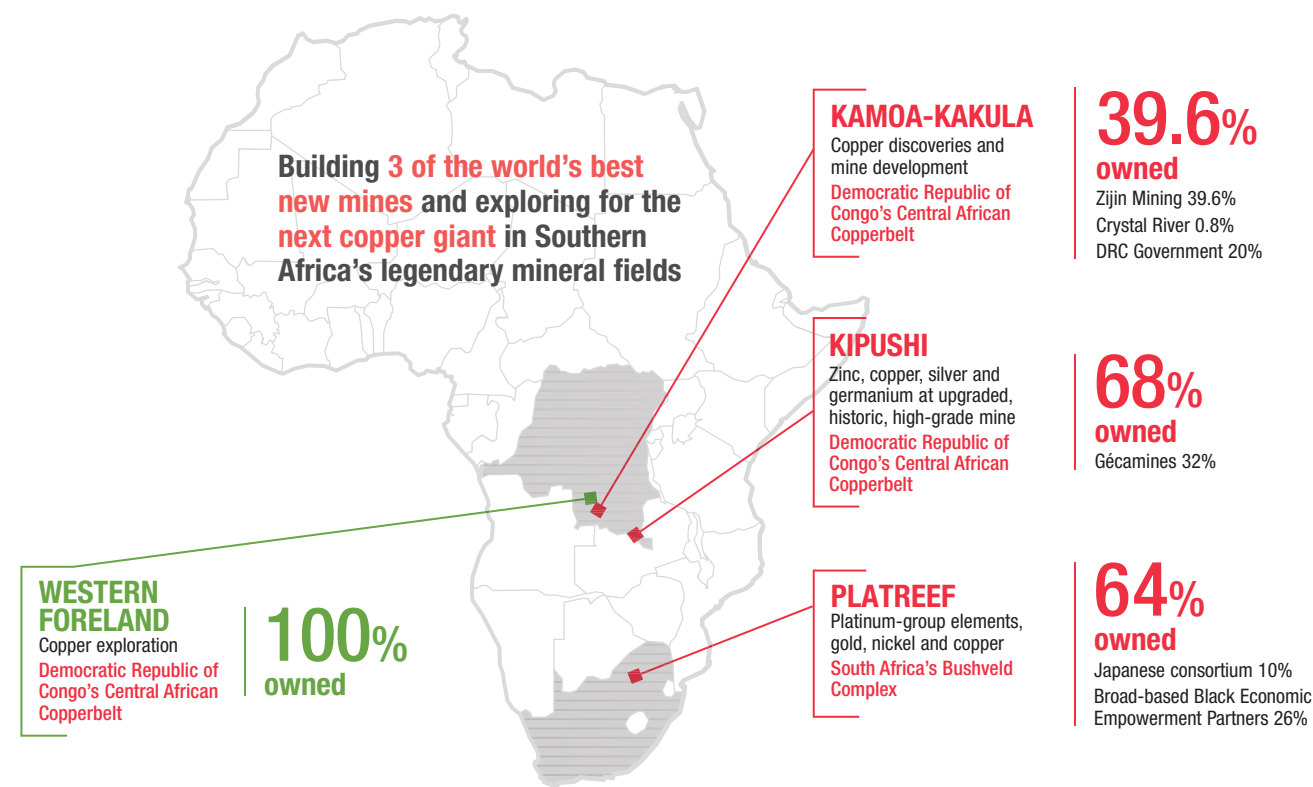
Our Code of Conduct (the Code) is fundamental to our business approach. The Code reflects our commitment to a culture of honesty, integrity, accountability and respect for the communities in which we operate. The Code also outlines the basic principles and policies with which every individual in the Company is required to comply. We require the highest standards of professional and ethical conduct from our employees, officers, directors, consultants, advisors and contractors. We have established broad-based communication programs to ensure that all individuals working on our projects take cognizance of how they conduct their duties.

Respect for human rights is the foundation of our corporate culture. It is ingrained in our values and into the way we do business and how we expect the companies in our supply chain to deliver their products and services. Our statement of values and responsibilities is included in employee induction programs and supply chain contracts and includes the following commitments:

- > Responsible global citizenship through support for human rights, social justice and sound environmental management
- > Responsible exploration and mining
- > Leadership through action
- > Recognizing that people are our true wealth
- > Providing a safe and healthy job environment and skills training
- > Sustaining communities and respecting diversity
- > Environmental responsibility and innovation
- > Corporate integrity, accountability and transparency

We recognize the importance of dialogue with our employees, contractors and external stakeholders who are or could potentially be affected by our actions. We pay particular attention to individuals or groups who may be at greater risk of negative human rights impacts due to their vulnerability or marginalization and recognize that women and men may face different risks.

Our reputation for honesty and integrity is important for the success of our business. We aim for our business practices to be compatible with, and sensitive to, the economic and social priorities of each location in which we operate. Although customs vary from country to country and standards of ethics may vary in different business environments, the highest degree of ethics, honesty and integrity must always be inherent in our business activities. The Company has a whistleblower hotline whereby employees and third parties may anonymously submit either by telephone or electronically, any concerns they may have regarding financial irregularities and/or failed corporate governance.



## 2.2 OUR PRINCIPAL PROJECTS

AERIAL VIEW  
OF PLATREEF  
SHAFT 2 BOXCUT

### THE PLATREEF PROJECT

Construction of the planned Platreef Mine is now underway on the Company's discovery of platinum, palladium, nickel, copper, gold and rhodium on the Northern Limb of South Africa's Bushveld Complex. Ivanhoe Mines holds a 64% interest in Platreef, the South African beneficiaries of a broad-based, black economic empowerment structure have a combined 26% stake and the remaining 10% is owned by a Japanese consortium of ITOCHU Corporation, Japan Oil, Gas and Metals National Corporation; and Japan Gas Corporation.

CELEBRATING  
THE SUCCESSFUL  
INSTALLATION OF  
THE CRUSHER PLANT  
ON 1,150-METRE  
LEVEL AT KIPUSHI

### THE KIPUSHI PROJECT

The existing Kipushi Mine is located on the Central African Copperbelt in the Democratic Republic of Congo's (DRC) southern Haut-Katanga province, one of Africa's major mining hubs. The mine, which operated between 1924 and 1993, is approximately 30 kilometres southwest of the provincial capital, Lubumbashi, and less than one kilometre from the DRC-Zambia border. Ivanhoe Mines holds a 68% interest in Kipushi; the state-owned mining company, La Générale des Carrières et des Mines (Gécamines), holds the remaining 32% interest.

MINING ENGINEER PONTIEN  
KALALA EXPLAINING THE  
KAKULA DEVELOPMENT  
TO CONTRACTORS

### THE KAMO-A-KAKULA PROJECT

A joint venture between Ivanhoe Mines, Zijin Mining Group Co., Ltd. ("Zijin" or "Zijin Mining"), Crystal River Global Limited (Crystal River) and the DRC Government within the Central African Copperbelt in the Democratic Republic of Congo's southern Lualaba province. Following the signing of an agreement with the DRC government in November 2016 to transfer an additional 15% interest in the Kamo-a-Kakula Project to the government of the DRC, Ivanhoe Mines and Zijin Mining each hold an indirect 39.6% interest in the Kamo-a-Kakula Project, Crystal River holds an indirect 0.8% interest and the DRC government holds a direct 20% interest.





DRILLING FOR VERTICAL  
SIDE WALL SUPPORT  
IN SHAFT 2 BOXCUT AT  
THE PLATREEF PROJECT

## 2.3 PROGRESSING OUR PROJECTS

### THE PLATREEF PROJECT

*Positive independent, definitive feasibility study for Platreef's first-phase development; Platreef projected to be Africa's lowest-cost producer of platinum-group metals*

On July 31, 2017, Ivanhoe Mines announced the positive results of an independent, definitive feasibility study (DFS) for the planned first phase of the Platreef Project's palladium-platinum-nickel-copper-gold-rhodium mine in South Africa.

The Platreef DFS covers the first phase of development that would include construction of a state-of-the-art underground mine, concentrator and other associated infrastructure to support initial production of concentrate. As Phase 1 is being developed and commissioned, there would be opportunities to refine the timing and scope of subsequent phases of expanded production.

## Platreef Mineral Resources

The Platreef Project's Mineral Resource estimate was prepared by Ivanhoe Mines under the direction of Dr. Harry Parker, RM SME, of Amec Foster Wheeler. Dr. Parker and Timothy Kuhl, RM SME, also of Amec Foster Wheeler, have independently confirmed the Mineral Resource estimate and are the Qualified Persons for the estimate, which has an effective date of April 22, 2016.

The Flatreef Mineral Resource, with a strike length of 6.5 kilometres, lies predominantly within a flat-to-gently-dipping portion of the Platreef mineralized belt at relatively shallow depths of approximately 500 metres to 1,350 metres below the surface. The Flatreef Deposit is characterized by its very large vertical thicknesses of high-grade mineralization and a platinum-to-palladium ratio of approximately 1:1, which is significantly higher than other recent PGM discoveries on the Bushveld's Northern Limb.

The Platreef Indicated Mineral Resources for all mineralized zones are 346 million tonnes at a grade of 3.77 grams per tonne (g/t) 3PE+gold (1.68 g/t platinum, 1.70 g/t palladium, 0.11 g/t rhodium, 0.28 g/t gold), 0.32% nickel and 0.16% copper at a 2.0 g/t 3PE+gold cut-off. The average thickness of the 2.0 g/t 3PE+gold grade shell used to constrain the T2MZ resources for the indicated area is 19 metres.

Inferred mineral resources for all mineralized zones are 506 million tonnes at a grade of 3.24 g/t 3PE+gold (1.42 g/t platinum, 1.46 g/t palladium, 0.10 g/t rhodium, 0.26 g/t gold), 0.31% nickel and 0.16% copper. The average thickness of the 2.0 g/t 3PE+gold grade shell used to constrain the T2MZ resources for the inferred area is 12.7 metres.

The results of the Platreef definitive feasibility study place the project at the

**BOTTOM OF THE CASH-COST  
CURVE AT AN ESTIMATED  
\$351  
per ounce of 3PE+Au  
produced.**

## Highlights

The 2017 DFS highlights include:

Indicated Mineral Resources containing an estimated **41.9 million ounces** of platinum, palladium, rhodium and gold, with an additional **52.8 million ounces** of platinum, palladium, rhodium and gold in Inferred Resources

Increased Mineral Reserves containing **17.6 million ounces** of platinum, palladium, rhodium and gold following stope optimization and mine sequencing work

Development of a large, safe, mechanized, underground mine, with an initial **four Mtpa** concentrator and associated infrastructure

Planned initial average annual production rate of **476,000 ounces** of platinum, palladium, rhodium and gold (3PE+Au), plus **21 million pounds** of nickel and **13 million pounds** of copper

Estimated pre-production capital requirement of approximately **\$1.5 billion**, at a ZAR:USD exchange rate of 13 to 1

Platreef would rank at the bottom of the cash-cost curve, at an estimated **\$351 per ounce** of 3PE+Au produced, net of by-products and including sustaining capital costs, and **\$326 per ounce** before sustaining capital costs

After-tax net present value (NPV) of **\$916 million**, at an **8%** discount rate. After-tax internal rate of return (IRR) of **14.2%**

All figures are on a **100%-project basis** unless otherwise stated. The DFS was prepared for Ivanhoe Mines by principal consultant DRA Global, with economic analysis led by OreWin, and specialized sub-consultants including Amec Foster Wheeler E&C Services, Stantec Consulting, Murray & Roberts Cementation, SRK Consulting, Golder Associates and Digby Wells Environmental



# PROGRESSING OUR PROJECTS

*continued*

MEMBERS OF PLATREEF'S  
DEVELOPMENT TEAM  
CELEBRATING THE  
INTERSECTION OF THE TOP OF  
THE HIGH-GRADE FLATREEF  
DEPOSIT, SHAFT 1, 780 METRES  
BELOW THE GROUND



## Shaft 1 now extends to a depth of 850 metres below surface

Shaft 1 reached the top of the high-grade Flatreef Deposit (T1 mineralized zone) at a depth of 780.2 metres below surface in Q3 2018 and has since been extended to the 850-metre-level with the 850-metre-level station development underway. The thickness of the mineralized reef (T1 & T2 mineralized zones) at Shaft 1 is 29 metres, with grades of platinum-group metals ranging up to 11 grams per tonne (g/t) 3PE (platinum, palladium and rhodium) plus gold, as well as significant quantities of nickel and copper. The 29-metre intersection yielded approximately 3,000 tonnes of ore, estimated to contain more than 400 ounces of platinum-group metals. The ore is stockpiled on surface for metallurgical sampling.

The 750-metre-level station, including the steelwork and concrete construction, was successfully completed in Q4 2018. The 750-metre-level and 850-metre-level stations will provide initial, underground access to the high-grade orebody, enabling mine development to proceed during the construction of Shaft 2.

As sinking of Shaft 1 advances, one more station will be developed at a mine-working depth of 950 metres. Shaft 1 is expected to reach its projected, final depth of 982 metres

below surface in early 2020. Shaft 1 ultimately will become the primary ventilation shaft during the project's initial four-Mtpa production case.

## Shaft 2 early-works construction progressing

Shaft 2, to be located approximately 100 metres northeast of Shaft 1, will have an internal diameter of 10 metres. It will be lined with concrete and sunk to a planned, final depth of more than 1,104 metres below surface. It will be equipped with two, 40-tonne, rock-hoisting skips capable of hoisting a total of six million tonnes of ore a year – the single largest hoisting capacity at any mine in Africa.

The headgear for the permanent hoisting facility was designed by South Africa-based Murray & Roberts Cementation. Nine blasts were successfully completed in 2018 enabling the excavation of Shaft 2's box cut to a depth of approximately 29 metres below surface and the construction of the concrete hitch (shaft collar foundation) for the 103-metre-tall concrete headgear that will house the shaft's permanent hoisting facilities and support the shaft collar. Excavation of the box cut and construction of the hitch foundation is expected to be completed in Q2 2019, enabling the beginning of the pre-sink, that will extend 84 metres below surface.

## Underground mining to incorporate highly productive, mechanized methods

Ivanhoe plans to develop the Platreef Mine in phases. The initial annual production rate of four million tonnes a year is designed to establish an operating platform to support future expansions. This is expected to be followed by a potential doubling of production to eight Mtpa, and then a third expansion phase to a steady-state 12 Mtpa, which would establish Platreef among the largest platinum-group-metals mines in the world.

The mining zones in the current Platreef mine plan occur at depths ranging from approximately 700 metres to 1,200 metres below surface. Shaft 2 will provide primary access to the mining zones; secondary access will be via Shaft 1. During mine production, both shafts also will serve as ventilation intakes. Three additional ventilation exhaust raises are planned to achieve steady-state production.

Planned mining methods will use highly productive, mechanized methods, including long-hole stoping and drift-and-fill mining. Each method will utilize cemented backfill for maximum ore extraction. The ore will be hauled from the stopes to a series of internal ore passes and fed to the bottom of Shaft 2, where it will be crushed and hoisted to surface.

## THE KIPUSHI PROJECT

*Pre-feasibility study for Kipushi completed in December 2017; definitive feasibility study expected in Q2 2019*

The Kipushi Project's PFS, announced by Ivanhoe Mines on December 13, 2017, anticipated annual production of an average of 381,000 tonnes of zinc concentrate over an 11-year, initial mine life at a total cash cost of approximately \$0.48 per pound (lb) of zinc.

## Highlights

of the PFS, based on a long-term zinc price of \$1.10/lb include:

After-tax net present value (NPV) at an 8% real discount rate of **\$683 million**

Existing surface and underground infrastructure allows for **significantly lower capital costs** than comparable greenfield development projects

Life-of-mine average planned zinc concentrate production of **381,000 dry tonnes per annum**, with a concentrate grade of 59% zinc, is expected to rank Kipushi, **once in production, among the world's largest zinc mines**

After-tax real internal rate of return (IRR) of **35.3%**

Pre-production capital costs, including contingency, estimated at **\$337 million**

After-tax project payback period of **2.2 years**

All figures are on a 100%-project basis unless otherwise stated. Estimated life-of-mine average cash cost of \$0.48/lb of zinc is expected to rank Kipushi, once in production, in the bottom quartile of the cash-cost curve for zinc producers internationally.

The planned primary mining method for the Big Zinc Deposit in the PFS is sublevel long-hole, open stoping, with cemented backfill. The crown pillars are expected to be mined

once adjacent stopes are backfilled using a pillar-retreat mining method. The Big Zinc Deposit is expected to be accessed via the existing decline and without any significant new development. The main levels are planned to be at 60-metre vertical intervals, with sublevels at 30-metre intervals.

The Kipushi Project's definitive feasibility study is progressing and is expected to be completed in Q3 2019.

REPAIR WORK  
BEING DONE ON THE  
PLATFORM OF THE  
ORE-LOADING AREA,  
JUST BELOW THE  
1,200 METRE LEVEL  
AT SHAFT 5, KIPUSHI





Project development and infrastructure

Significant progress has been made in modernizing the Kipushi Mine’s underground infrastructure as part of preparations for the mine to resume commercial production. In Q4 2018, the Kipushi Project successfully hoisted previously mined ore from Shaft 5 to surface. This was the first time that ore had been hoisted to surface since the mine was placed on care and maintenance by Gécamines in 1993.

Earlier in 2018, the Kipushi Project successfully completed initial, pre-production testing as part of the equipment commissioning process for the new, large-capacity rock crusher that has been installed 1,150 metres below surface. The Sandvik jaw crusher has a maximum capacity of 1,085 tonnes an hour. The 54-tonne machine was re-assembled and installed in the crusher chamber after it was disassembled on surface and its pieces were lowered down Shaft 5, which is the Kipushi Mine’s main production shaft.

Ivanhoe completed the upgrading of a significant amount of underground infrastructure at the

Kipushi Project, including a series of vertical mine shafts to various depths, with associated head frames, as well as underground mine excavations and infrastructure. A series of crosscuts and ventilation infrastructure still is in working condition and has been cleared of old materials and equipment to facilitate modern mechanized mining. The underground infrastructure also includes a series of pumps to manage the influx of water into the mine and water levels are easily maintained at the bottom of the mine.

Shaft 5 is eight metres in diameter and 1,240 metres deep. It now has been upgraded and re-commissioned. The main personnel and material winder has been upgraded and modernized to meet international industry standards and safety criteria. The Shaft 5 rock-hoisting winder now is fully operational with new rock skips, new head- and tail-ropes and attachments installed. The two newly manufactured rock conveyances (skips) and the supporting frames (bridles) have been installed in the shaft to facilitate the hoisting of rock from the main ore and waste storage silos feeding rock on the 1,200-metre level.

The main haulage way on the 1,150-metre level between the Big Zinc access decline and Shaft 5 rock load-out facilities has been resurfaced with concrete so the mine now can use modern, trackless, mobile machinery.

With the underground upgrading program nearing completion, the project’s focus now will shift to modernizing and upgrading Kipushi’s surface infrastructure to handle and process Kipushi’s high-grade zinc and copper resources.

A MINING CONSTRUCTION TEAM INSTALLING THE CRUSHER PLANT ON THE 1,150-METRE LEVEL AT KIPUSHI



THE KAMOA-KAKULA PROJECT

PFS for Kakula and updated PEA for an expanded Kamoa-Kakula production rate of 18 Mtpa announced

On February 6, 2019, Ivanhoe announced the results from the Kakula 2019 PFS. The study assesses the potential development of the Kakula Deposit as a 6 Mtpa mining and processing complex. The Kakula mill would be constructed in two smaller phases of 3 Mtpa each as the mining operations ramp-up to full production of 6 Mtpa. The life-of-mine production scenario provides for 119.7 million tonnes to be mined at an average grade of 5.48% copper, producing 9.8 million tonnes of high-grade copper concentrate, containing approximately 12.4 billion pounds of copper. All figures are on a 100%-project basis unless otherwise stated.

On March 22, 2019, Ivanhoe filed an updated NI 43-101 technical report for the Kamoa-Kakula Copper Project covering the independent pre-feasibility studies for the development of the Kakula and Kansoko copper mines, and an updated, expanded preliminary economic assessment for the overall integrated development plan for the project. The report, titled Kamoa-Kakula Integrated Development Plan 2019, is available on the company’s website and under the company’s SEDAR profile at [www.sedar.com](http://www.sedar.com).

Highlights

of the PFS, based on a consensus, long-term copper price of \$3.10/lb include:

Very high-grade, stage-one production is projected to have a grade of <b>7.1% copper</b> in the second year of production and an average grade of <b>6.4% copper</b> over the initial 10 years of operations, resulting in estimated average annual copper production of <b>291,000 tonnes</b>	Annual copper production is estimated at <b>360,000 tonnes</b> in year four	After-tax NPV, at an 8% discount rate, of <b>\$5.4 billion</b>
	Initial capital cost, including contingency, is estimated at <b>\$1.1 billion</b>	After-tax internal rate of return (IRR) of <b>46.9%</b> , and a payback period of <b>2.6 years</b>
	Average total cash cost of <b>\$1.11 lb of copper</b> during the first 10 years, inclusive of royalties	Kakula is expected to produce a very high-grade copper concentrate <b>in excess of 55% copper</b> , with extremely low arsenic levels

Ivanhoe also announced an updated independent PEA for an expanded Kakula-Kamoa production rate of 18 Mtpa, supplied initially by a 6 Mtpa mine at Kakula, followed by two 6 Mtpa mines at Kansoko and Kakula West, and a world-scale direct-to-blister smelter.

Highlights

of the combined scenario PEA, based on a consensus, long-term copper price of \$3.10/lb include:

Very high-grade initial phase projected to have a grade of <b>7.1% copper</b> in the second year of production and an average grade of 5.7% copper during the first 10 years of operations, resulting in estimated average annual copper production of <b>386,000 tonnes</b>	Recovered copper production is estimated at <b>740,000 tonnes</b> in year 12, which would rank the Kamoa-Kakula Project as the second largest copper producer in the world	Initial capital cost, including contingency, is <b>\$1.1 billion</b> , with subsequent expansions at Kansoko, Kakula West, and other mining areas, as well as the smelter, to be funded by cash flows from the Kakula Mine
	Average total cash costs of <b>\$0.93/lb of copper</b> during the first 10 years, including sulphuric acid credits	After-tax NPV, at an 8% discount rate, of <b>\$10.0 billion</b>
		After-tax IRR of <b>40.9%</b> and a payback period of <b>2.9 years</b>

Underground development progressing at the Kakula Deposit

Development of the twin access declines at the northern side of the Kakula Deposit started with the first blast on November 16, 2017. At the end of 2018, each of the twin declines at Kakula had been advanced more than 1,180 metres from the portal face toward the mineralized zone for a total advancement of 3,430 metres. Both declines currently are passing through the lower diamictite, approaching the high-grade mineralization. Construction of the 1,050-metre-level dam and the two access drifts also were initiated in Q4 2018. A single decline also is being developed on the south side of the Kakula Deposit to provide bottom access to Ventilation Shaft 2, enabling this shaft to be constructed by raise boring instead of sinking. This decline also will be used as a second means of egress from the mine.





# 2.4 GOVERNANCE AND MANAGEMENT APPROACH

At Ivanhoe Mines, we are guided by our sustainability strategy that includes our vision to create shared value for all our stakeholders. We are committed to responsible mineral development by incorporating sustainability best practice standards in our industry. These include (1) ensuring a safe and healthy working environment in our business operations; (2) eliminating or controlling potential workplace hazards for the protection of all employees, contractors and local communities; (3) promoting sound environmental practices in all of our activities; (4) continually improving the efficient use of resources, processes and materials; and (5) contributing to a local socio-economic environment in which local stakeholders can thrive.

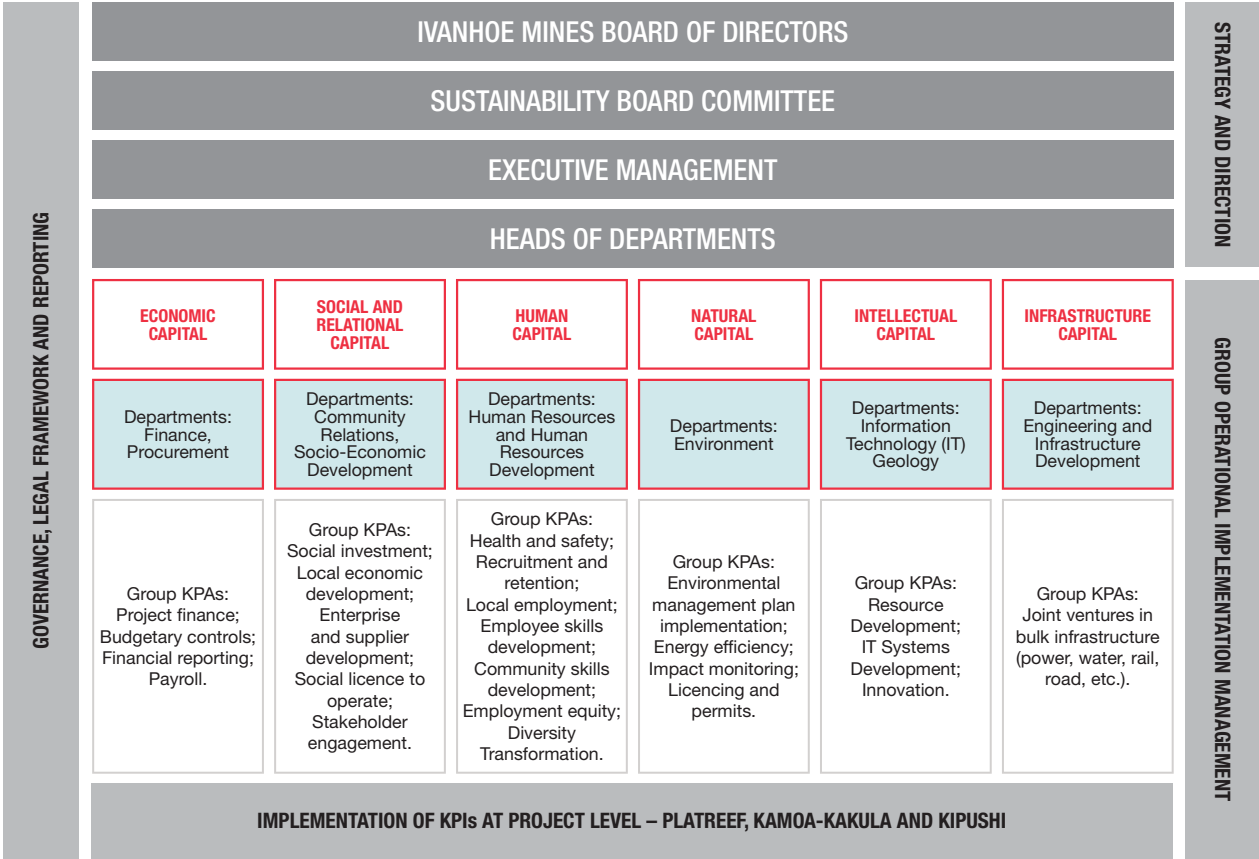
LAMP ROOM SUPERVISOR DISTRIBUTING PERSONAL PROTECTIVE GEAR AT KAMOA-KAKULA

The Board of Directors has delegated certain responsibilities to the Ivanhoe Mines Sustainability Committee with the objective to incorporate internationally recognized standards of corporate social responsibility in our internal policies by addressing issues such as labour, health, safety, environment, human rights and community engagement.

The Sustainability Committee reviews our business and sustainability strategies and activities at least twice each year to ensure that they meet the needs of the enterprise and our stakeholders while protecting, sustaining and enhancing the human and natural resources that will be needed in the future. Our sustainability strategy is integrated into our decision-making by embedding it into corporate, operational and employee annual key performance areas (KPAs).

## Sustainable development management approach

The figure below illustrates our management approach to the sustainable development of our key assets.



Our approach to sustainability reporting is adapted from the International Integrated Reporting Council and is underpinned by the six capitals model of sustainable development.

The six capitals include economic-, human-, social and relational-, natural-, intellectual- and infrastructure capital. The six capitals model of sustainable development states that sustainable development is attained if all six capitals are given appropriate attention during development and operation. For reporting purposes we define each of the capitals as follows:

- > **Economic capital** consists of the Company’s contribution to local and national economic growth.
- > **Human capital** consists of people’s safety, health, knowledge, skills, wellbeing and motivation.
- > **Social and relational capital** refers to the Company’s social licence to operate from its host communities and other stakeholders.



- > **Natural capital** refers to the management of the natural environment in which the Company operates.
- > **Intellectual capital** refers to the intangible assets in the Company that can produce wealth.
- > **Infrastructure capital** refers to the supporting infrastructure needed by the Company to develop each of its principal projects, such as bulk electricity provision, bulk water provision and transport infrastructure.



3.

Our most MATERIAL SUSTAINABILITY MATTERS

Our most material matters are those risks, opportunities and other factors that could materially impact our ability to create long-term sustainable value. For the purpose of this report, we use the GRI definition of materiality: “Those topics and indicators that reflect the organization’s significant economic, environmental, and social impacts or that would substantively influence the assessments and decisions of stakeholders.”

Our risks are continually monitored and evaluated through Company-wide risk assessments (refer p39) to ensure that our strategy and daily actions address them in the most efficient way. We identify our most material matters through our risk management processes, ongoing review of internal performance and our impacts on the external environment, and robust engagement with both internal and external stakeholders.

These matters are analyzed and prioritized according to the significance of their potential effects on the Company and our key stakeholders, and are built into our strategy, governance frameworks, risk management systems and operational management processes. This analysis also helps inform the information we report to stakeholders through the publication of our MD&A and Annual Information Form (AIF).

This sustainability report expands on Ivanhoe Mines’ financial reporting by highlighting opportunities and challenges according to the capitals that are mainly impacted by our performance. In practice, each of these capital performance areas impacts the others and affects our ability to generate a sustainable financial return over the long term.

The following section shows the most material sustainability matters identified, the stakeholders and performance areas to which they relate, and the mitigation strategies in place to address these matters.



KAMOJA-KAKULA'S LIVELIHOOD PROJECT FACILITATES FOOD SECURITY AND SOCIO-ECONOMIC GROWTH IN ITS HOST COMMUNITIES



STAKEHOLDERS AT OUR KIPUSHI PROJECT READING THE COMMUNICATIONS PROCEDURE SIGN BOARD AT THE MINE GATE

Our most material matters relating to sustainability are determined through continuous engagement with internal and external stakeholders, such as employees, contractors, affected people in our host communities and government representatives, at a project level and through an executive management survey at a group level. The information obtained from these engagements is analyzed and collated into the four material matters most representative of the sentiments of all stakeholder groups. The table below provides an overview of our four most material matters, as well as a short description of the performance areas involved and risk mitigation measures currently in place. Alignment with the GRI standards is provided in Appendix 7.3.

IVANHOE MINES – MOST MATERIAL SUSTAINABILITY MATTERS

1	High social expectations of our local stakeholders due to projects being situated in emerging economies		
	STAKEHOLDERS AFFECTED	PERFORMANCE AREA INVOLVED	RISK MITIGATION MEASURES
	Communities	Social and relational capital	> Active community relations teams at all projects. > Sustainable development plans for host communities developed in collaboration with local governing bodies as well as interested and affected groups.
2	Recruiting and retaining competent staff to work on projects situated in remote areas and instituting training programs to train local staff to international standards		
	STAKEHOLDERS AFFECTED	PERFORMANCE AREA INVOLVED	RISK MITIGATION MEASURES
	Employees	Human capital	> Active regulated human resource development (HRD) programs in place at the Platreef Project as part of its Social and Labour Plan (SLP). > High-potential employee development program in place at the Kamoa-Kakula and Kipushi Projects with special attention to redressing the gender gap. > Planning for skills transfer programs for all the projects in progress.
3	The Company must develop bulk infrastructure (electricity, rail and water availability) at its projects in order to commence development and mining operations		
	STAKEHOLDERS AFFECTED	PERFORMANCE AREA INVOLVED	RISK MITIGATION MEASURES
	All	Infrastructure capital	> Strategic partnerships and negotiations regarding local infrastructure development in place. > Active partnership with Société Nationale d'Électricité (SNEL) in the DRC for provision of electricity to the Kamoa-Kakula and Kipushi projects. > Active partnership with Société Nationale des Chemins de Fer du Congo (SNCC) in the DRC for the rehabilitation of the Kipushi spur railway. > Pursuing active partnerships with national, regional and local government as well as state owned enterprises (SOE's) for the provision of water and electricity to the Platreef Project.
4	The Company must ensure responsible stewardship of its natural resources		
	STAKEHOLDERS AFFECTED	PERFORMANCE AREA INVOLVED	RISK MITIGATION MEASURES
	All	Natural capital	> Active Environmental Management Plans (EMPs) in place at all three projects. > Full ESIA's completed at all three projects and in the process of being updated with the latest project process.



MINERS UNDERGROUND AT KIPUSHI



# Our STAKEHOLDERS

Ivanhoe Mines views stakeholders as any group or individual that has a material interest in, or is affected by, our projects. We are committed to an open door policy and our continuous engagement with our stakeholders guides the Company's long-term strategy. We heed the legitimate concerns of our stakeholders and endeavour to engage in a transparent and accessible manner.

KGOLE MOLEBOGENG  
PRECIOUS AND MASANABO  
PONTSHO ROSE FROM  
ALFRED B MAKAPAN SCHOOL.  
IN THE MINE-SPONSORED  
COMPUTER LAB, PLATREEF

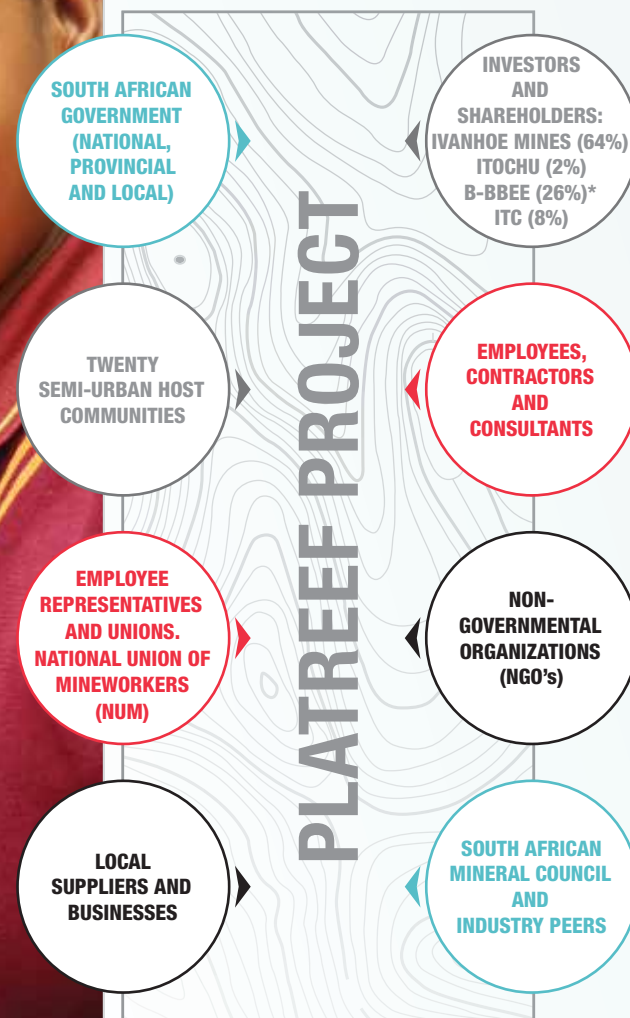
4.

## 4.1 Stakeholder mapping

Our projects each have unique geological characteristics, geographical settings and key stakeholder groups. Each project has a team dedicated to stakeholder relations focusing on building relationships that will maintain our social licence to operate (SLO). In addition to local stakeholders, each project has a unique set of employees, contractors, investors, government bodies (national, provincial and local), suppliers and non-governmental organizations (NGO) interested in, and affected by, the respective projects.

### 4.1.1 THE PLATREEF PROJECT

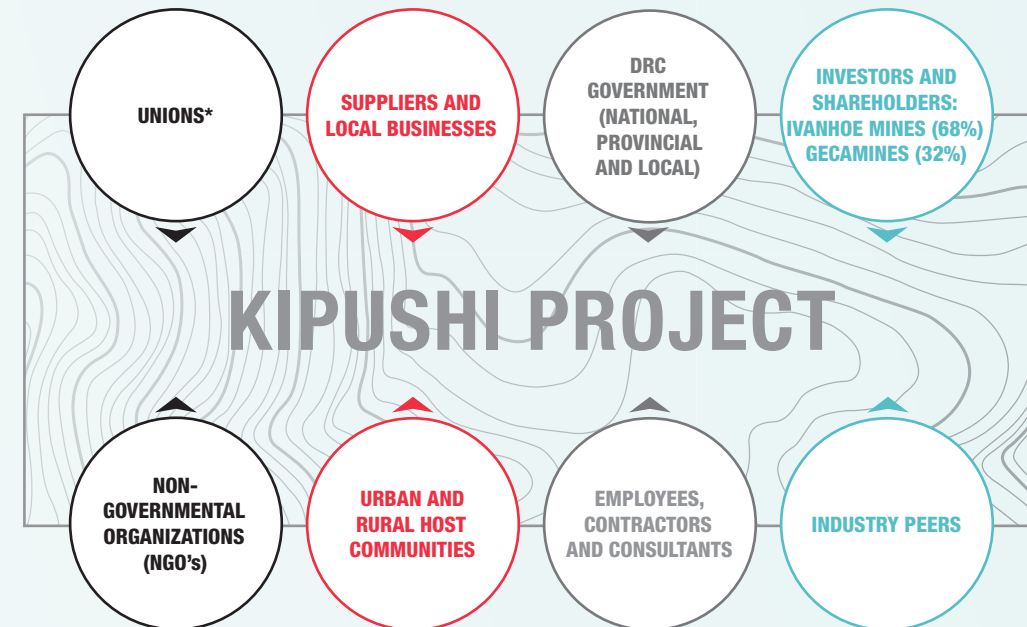
The Platreef Project is situated in the Limpopo Province of South Africa, close to the town of Mokopane. The region is characterized by semi-urban development and its 20 host communities comprise a total of approximately 150,000 individual residents. Major stakeholder groups in the Platreef Project are:



\* Broad-Based Black Economic Empowerment participants

### 4.1.2 THE KIPUSHI PROJECT

The Kipushi Project is situated in the Haut Katanga Province of the DRC, in the town of Kipushi. Kipushi is home to approximately 180,000 individual residents and surrounded by widespread rural communities. Major stakeholder groups in the Kipushi Project are:

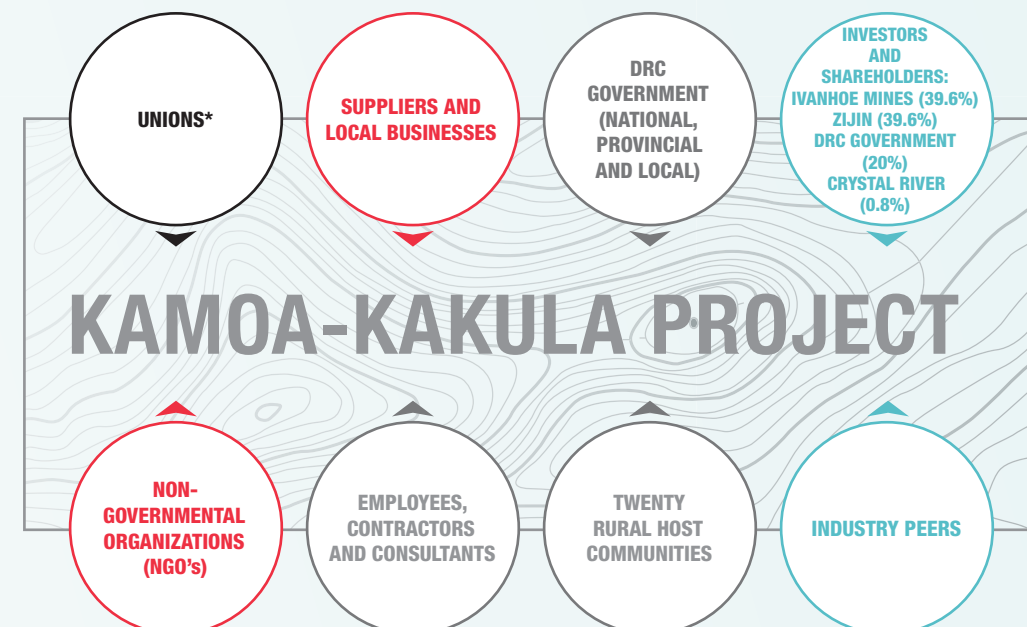


\* *Kipushi* employees are represented by a democratically elected group of union representatives that belong to the following union groupings:

- > Alliance des Travailleurs Avertis et Conscientieux (ATAC)
- > Garantie Sociale des Travailleurs (GST)
- > Alternative Syndicale pour L'industrie au Congo (ASLIC)
- > Force Ouvrière pour la Renaissance de la Connaissance et de l'Ethique Syndicale (FORCES)
- > Centrale Générale des Travailleurs du Congo (CGTC)

### 4.1.3 THE KAMOA-KAKULA PROJECT

The Kamoa-Kakula Project is situated in the Southern Lualaba Province of the DRC, approximately 25 kilometres west of the mining hub of Kolwezi. The area adjacent to the Kamoa-Kakula Project footprint is home to approximately 20,000 people in 20 communities governed by two traditional leaders. Major stakeholder groups in the Kamoa-Kakula Project are:



\* *Kamoa-Kakula* employees are represented by a democratically elected group of union representatives that belong to the following union groupings:

- > Travailleurs Unis des Mines, Métallurgies, Énergie, Chimie et Industries Connexes (TUMEC)
- > Confédération Syndicale du Congo (CSC)
- > Conscience des Travailleurs et Paysans (CTP)
- > ATAC





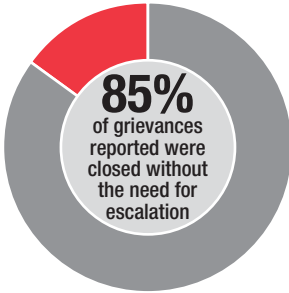
STAFF MEMBER, JABULANE MANGANYI, HELPING COMMUNITY MEMBERS TO UPLOAD THEIR INFORMATION AND DOCUMENTS ONTO THE PLATREEF SKILLS DATABASE AT THE BONEGA TRUST-SPONSORED WI-FI HOTSPOT

## 4.2 Engagement

At Ivanhoe Mines, stakeholder engagement is a continuous integrated business function providing support to other business units to ensure that different stakeholder groups are identified, considered and informed as the projects are being developed. Formal and informal engagements take place on an ongoing basis. Functional, accessible multi-lingual and widely published external grievance mechanisms are in place at all three projects. Grievances are managed by the community relations teams at the respective projects. The following grievances were recorded per project site during the reporting year:

Grievances		
	Total	Pending
Kamoa-Kakula	28	3
Kipushi	3	0
Platreef	3	2
Group total	34	5

Of the grievances reported, 85% were closed out successfully without the need for escalation to the respective management committees. The remaining 15% of grievances (5 in total) are still being investigated in collaboration with the affected community members. Appropriate remedial actions will be implemented once the investigation of each grievance is completed.



The statistics on the following pages list all stakeholder meetings per project, and indicate that the Kamoa-Kakula project had more engagements than the Kipushi and Platreef Projects. This can be attributed to the fact that the Kamoa-Kakula Project was subject to more processes needing engagement, such as economic displacement and household relocation (see 5.3 Social and relational capital), than the Kipushi and Platreef Projects which resulted in increased engagement with stakeholders.

### 4.2.1 THE PLATREEF PROJECT

The Platreef Project has a community relations team of 12 staff members dedicated to maintaining our SLO through continual engagement with local stakeholder groups including traditional authorities, local government, civic groups, the Project's B-BBEE partners and individual local residents. The team engages with the community on various topics including: employment; local procurement; B-BBEE community trust processes, surface lease, livelihood restoration; and opportunities from the project's social development initiatives.

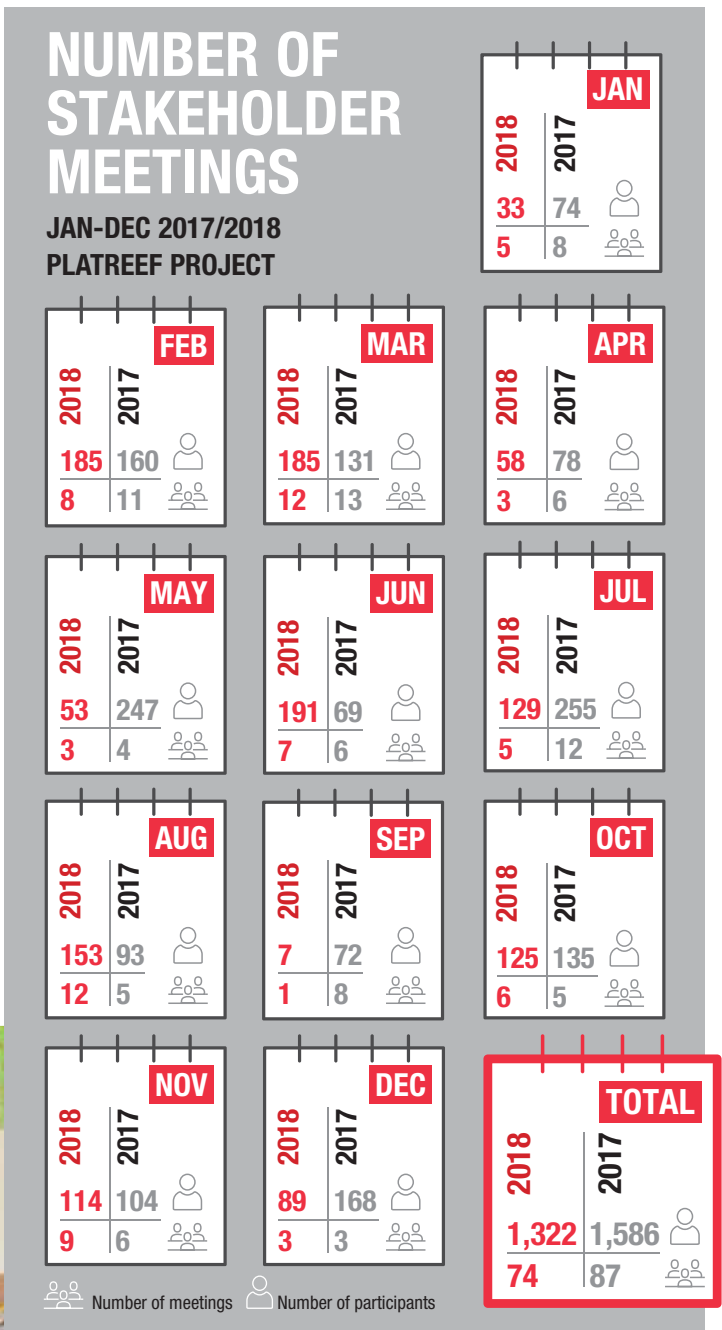
The Platreef Project has various communication mechanisms in place through which communities can raise issues of concern to the community relations team. Direct communication channels exist between the traditional leadership and other groups or structures within the community and the Platreef Project team.

The community relations department has daily assessment meetings where staff members provide feedback on daily events and sentiments within the community that may have an impact on the Company. These meetings are attended by security, human resources and community relations managers. Based on the communication received from the various channels available, the community relations department, in close alignment with human resources and security management, formulates the actions necessary to address the prevalent issues.

These processes have proven to work well, resulting in the Platreef Project team being able to maintain and strengthen the Project's SLO.



SIMON MOKHANDU, FACILITATOR OF THE MINICHESS PROGRAM AT MOTSHITSHI PRIMARY SCHOOL NEAR PLATREEF

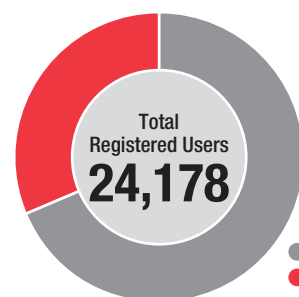




## SPECIAL REPORT

AN INDUSTRY FIRST:  
DIGITAL STAKEHOLDER  
ENGAGEMENT AND LOCAL  
RECRUITMENT

The Platreef Project launched a digital engagement portal, titled “Maru a Mokopane” (Sepedi for “the Clouds of Mokopane”) in 2017. In partnership with the Bonega Communities Trust (previously the Platreef Communities Umbrella Trust), the Company installed and maintains 20 free Wi-Fi hotspots in its host communities. Local residents can access the internet; view the latest opportunities and news; and engage with the Company and the Trust through the digital portal. In February 2018, the Company launched an online local recruitment system to ensure that all local stakeholders get equal opportunity to apply for positions for which they qualify at the Platreef project and its contractors. The majority of recruitment is done via this online platform. In addition to an online recruitment function, local stakeholders are also able to create a professional curriculum vitae to submit to other potential employers.

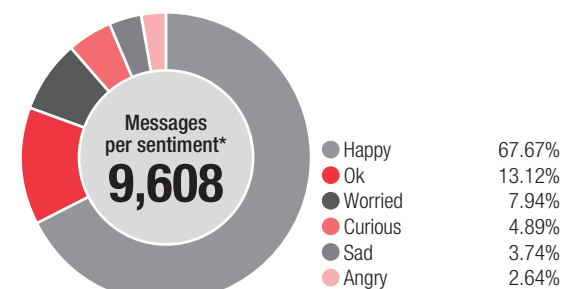
STAKEHOLDER  
ENGAGEMENT

Number of  
registered users  
**24,178**



## Types of messages received

My CV – Skills database	32.70%
Ivanplats enquiries	21.51%
Local employment	18.96%
Wi-Fi and Internet access	8.55%
Maru a Mokopane portal	7%
Sharing information	5.58%
Donations and sponsorships	2.60%
Procurement and supply chain	2.30%
Suggestions and innovations	0.80%
<b>Total</b>	<b>100%</b>



\* Sentiment determined through continuous perception analysis

NUMBER OF  
MESSAGES  
RECEIVED AND  
RESPONDED TO  
**9,608**

## ONLINE RECRUITMENT

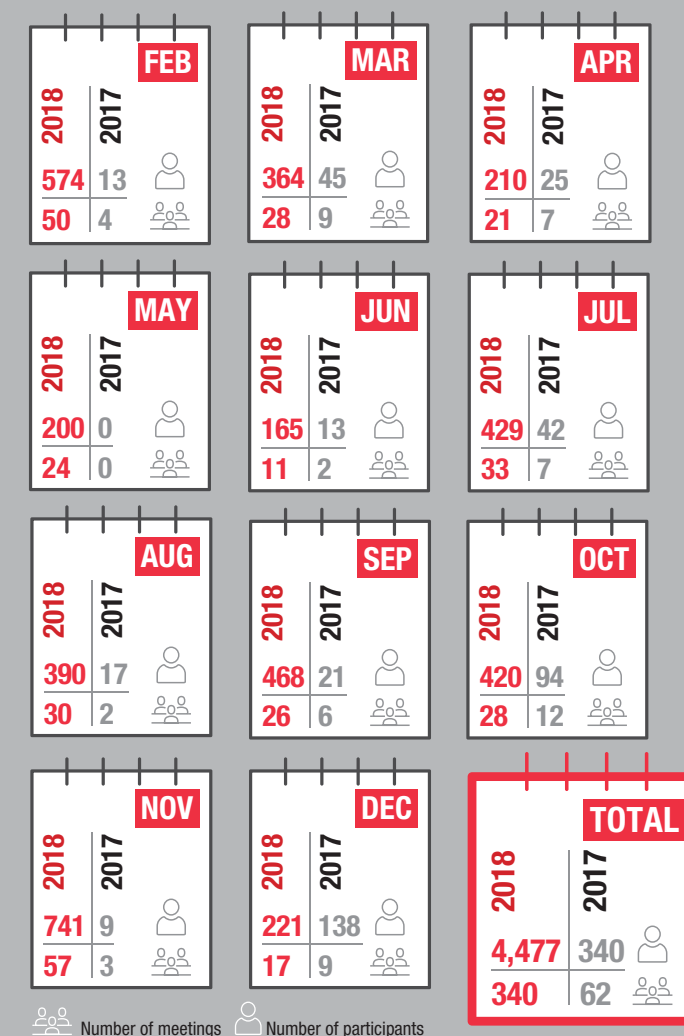
Number of verified curricula vitae	2,431
Number of online job applications	2,308
Number of available positions during 2018	62
Number of positions still open at end of 2018	35
Number of positions filled in 2018	27
Percentage of positions filled with information gathered through the online recruitment system	74%

## 4.2.2 THE KIPUSHI PROJECT

The Kipushi Project has a community relations staff complement of seven members dedicated to maintaining our social licence to operate through continual engagement with local stakeholder groups including traditional authorities, local government, civic groups and individual local residents. The most discussed topics include employment, local procurement, project development and opportunities from the project's social development initiatives. The increase in meetings from 2017 to 2018 can be ascribed to increased activity at the Kipushi Project resulting in increased stakeholder interest in topics related to project ramp-up.

NUMBER OF  
STAKEHOLDER  
MEETINGS

JAN-DEC 2017/2018  
KIPUSHI PROJECT





### 4.2.3 THE KAMOA-KAKULA PROJECT

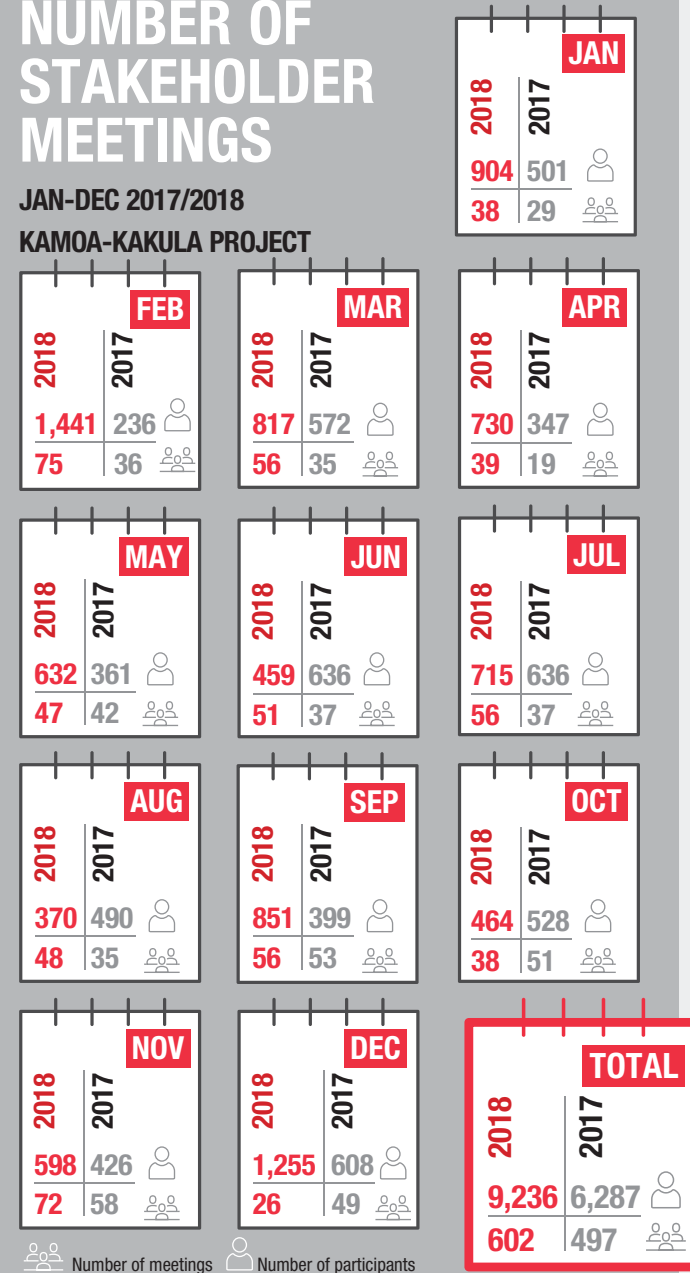
The Kamoa-Kakula Project has a community relations staff complement of four members dedicated to maintaining our social licence to operate through continual engagement with local stakeholder groups, including traditional authorities, local government, civic groups and individual local residents. The most discussed topics include: employment; economic displacement and relocation; project development; and opportunities from the project's social development initiatives.



KAMOA-KAKULA COMMUNITY RELATIONS TEAM ENGAGING WITH COMMUNITY MEMBERS

## NUMBER OF STAKEHOLDER MEETINGS

JAN-DEC 2017/2018  
KAMOA-KAKULA PROJECT



# 5. Our PERFORMANCE

## 5.1 ECONOMIC CAPITAL

The Company's financial performance is primarily affected by ongoing exploration and development activities being conducted at its three material projects. The Company has no producing operations or operating revenues. The Company expects to fund all of its exploration and development activities through debt and equity financing until operating revenues are generated.

For more information regarding the Company's financial results for the year ending December 31, 2018, please refer to the Company's MD&A and annual financial statements at [www.ivanhoemines.com](http://www.ivanhoemines.com) and [www.sedar.com](http://www.sedar.com).

This section details the Company's contribution to local and national economic growth in the countries in which it operates.

WORKERS EMERGING FROM THE KAKULA DECLINE AFTER THEIR SHIFT



## > Our economic capital performance at a glance

**\$242,647,222**

total value created and distributed at our projects

**334**

total beneficiary businesses of local enterprise and supplier development initiatives at our projects

**\$5,078,789**

total budget spent on socio-economic development projects during the reporting year

**\$142,755,982**

total local procurement spend in the DRC and SA combined

**14,149**

estimated number of beneficiaries of the Bonega communities trust projects



Total value created and distributed

The following tables show the total value created and distributed by Ivanhoe Mines’ three principal projects in South Africa and the DRC during 2017 and 2018 respectively. To date, no operating revenue has been generated by any of the Company’s principal projects.

Total value created and distributed in 2017									
Project	Government				Employees salaries	Socio-economic development	Procurement		
	Payroll tax	VAT paid/ (net refund)	Other tax	State-owned entity			DRC	South Africa	Other African
Platreef	2,273,457	6,996	–	457,327	5,966,558	1,630,335	–	44,653,746	–
Kamoa-Kakula	6,264,510	10,831,557	1,212,122	42,022,378	8,884,627	2,131,154	66,182,542	8,362,023	572,505
Kipushi	4,804,779	2,452,130	1,756,090	5,860,150	7,864,615	992,197	11,819,175	9,135,510	1,799,102
Total	13,342,746	13,290,683	2,968,212	48,339,855	22,715,799	4,753,685	78,001,717	62,151,280	2,371,607
* Excluding acquisition costs for Kipushi Project ** As at December 31, 2017									

Total value created 2017				
Total national value distribution 2017	National value distribution South Africa	National value distribution DRC	National value distribution Other African	
54,988,418	54,988,418	–	–	
146,463,418	13,841,275	131,888,443	733,700	
46,483,747	12,009,430	32,473,645	2,000,671	
247,935,584	80,839,124	164,362,089	2,734,371	

Total value created and distributed in 2018									
Project	Government				Employees salaries	Socio-economic development	Procurement		
	Payroll tax	VAT paid/ (net refund)	Other tax	State-owned entity			DRC	South Africa	Other African
Platreef	2,740,000	10,980	–	468,556	5,384,279	1,601,492	–	39,956,092	–
Kamoa-Kakula	7,405,038	9,231,570	3,479,905	27,971,970	8,898,722	1,924,145	63,176,378	11,018,942	630,745
Kipushi	5,873,020	3,984,539	1,239,051	6,118,527	9,300,842	1,553,152	12,125,131	16,479,438	2,074,707
Total	16,018,058	13,227,089	4,718,956	34,559,053	23,583,843	5,078,789	75,301,509	67,454,472	2,705,452
* Excluding acquisition costs for Kipushi Project ** As at December 31, 2018									

Total value created 2018				
Total national value distribution 2018	National value distribution South Africa	National value distribution DRC	National value distribution Other African	
50,161,399	50,161,399	–	–	
133,737,416	14,349,748	118,756,922	630,745	
58,748,407	20,411,790	36,261,910	2,074,707	
242,647,222	84,922,938	155,018,832	2,705,452	

5.1.2 Local procurement

Because Ivanhoe Mines’ principal projects are being developed in emerging economies, we have instituted programs to build capacity in suppliers residing in our footprint areas to increase our local procurement performance. At our Platreef Project, this program is guided by the South African Mining Charter as well as the Department of Trade and Industry (DTI’s) B-BBEE Codes of Good Practice. At Kamoa-Kakula and Kipushi, the programs are guided by the applicable DRC regulatory framework, and we set internal targets to ensure that the development of our projects bring direct benefit to local businesses through our supply chain.

Our local procurement statistics from 2017 to 2018 indicate that capital expenditures for specialized equipment caused a slight decline in local procurement figures at all three projects.

Procurement statistics 2017 – 2018 collated				
Project	Percentage of goods and services procured			
	DRC	South Africa	Other African countries	Other
Kamoa-Kakula 2018	75.18%	16.30%	0.69%	7.82%
Kamoa-Kakula 2017	80.61%	10.18%	0.70%	8.51%
Platreef 2018	0.00%	96.80%	0.00%	3.20%
Platreef 2017	0.00%	93.88%	0.00%	6.12%
Kipushi 2018	49.01%	41.11%	5.17%	4.71%
Kipushi 2017	50.30%	38.88%	7.66%	3.17%



DELMA MASOGO, AN OWNER-WORKER AT THLEKWISA LAUNDRY AT THE PLATREEF PROJECT

5.1.3 Local procurement standards of practice

Ivanhoe Mines is committed to contributing to economic diversification in the host communities of its respective projects. To facilitate this process, and support the growth of the number of local businesses in the Company’s supply chain, the enterprise and supplier development operational teams adopted the standards of practice as published in the LPRM (Appendix 7.4). The following table indicates our principal projects’ progress in implementing these standards of practice:

Standard of practice			
	Kamoa-Kakula	Kipushi	Platreef
Local procurement and anti-corruption policies in place	✓	✓	✓
Dedicated department responsible for ESD	✓	✓	✓
Local procurement requirements for major contractors communicated, implemented and monitored	In progress	In progress	✓
Local supplier database in place	✓	✓	✓
Requirements to register as a supplier widely publicized	✓	In progress	✓
Supplier dispute mechanism in place	✓	✓	✓
Preference to local suppliers in scoring of bids	✓	✓	✓
Methods to incentivise local procurement in place	In progress	In progress	✓
Supplier training initiatives in place	✓	✓	✓
Enterprise development initiatives in place and expanding	✓	✓	✓
Measures in place to encourage procurement from local special groups (women, youth and/or people with disabilities)	In progress	In progress	✓



### 5.1.4 Enterprise and supplier development (ESD)

Particular attention is given at site level to supplier and enterprise capacity building. Suppliers already in the Company’s supply chain are supported through various group and individual training sessions. Existing enterprises in the formal and informal sectors are strengthened to increase business capacity and gradually integrated into the Company’s supply chain where relevant. A summary of our ESD initiatives per project is presented below:

Supplier training			
Project	Number of suppliers in group training initiatives	Number of suppliers in individual training interventions	Type of training
Kamoa-Kakula	100	0	Payment terms, submission of proposals, costing and pricing, importation, delivery of goods, payment tracking
Kipushi	12	29	Payment terms, request for proposals, compliance with the DRC Mining Code, compliance with DRC Subcontracting Law
Platreef	130	1	Contractor’s pack, computer training, basic business skills, health and safety
Group total	242	30	




MADIMETJA MONAMA, A WORKER AT PLATREEF SITE KIOSK READY TO SERVE CUSTOMERS



Enterprise development

Project	Formal businesses supported and graduated to supply chain	Informal businesses supported
Kamoa-Kakula	4	3
Kipushi	6	4
Platreef	14	31
Group total	24	38




CELEBRATING THE PRODUCTION OF 100,000 BRICKS

SPECIAL REPORT

### BUILDING COMMUNITIES BRICK BY BRICK

The Kamoa-Kakula Project team identified brick making as an enterprise development opportunity in the Project’s supply chain for local community members. The Company recruited 19 local unemployed individuals of which six are female and provided start-up equipment and training. The brick making business was officially registered as Tujenge cooperative proudly owned by the 19 local owner-workers.

Tujenge has a three and a half year uptake agreement with the Kamoa-Kakula Project to supply bricks for construction of offices and houses. The cooperative agreed to repay the start-up financing they received from the Company within the contract period. Continuing Company support include quality control, entrepreneurial and safety training and support to find other clients to purchase bricks. Tujenge celebrated the production of 100,000 bricks in its facility on September 13, 2018. It plans to purchase another brick making machine and expand its market to Kolwezi.



BRICK MAKING OPERATIONS AT KAMOA-KAKULA

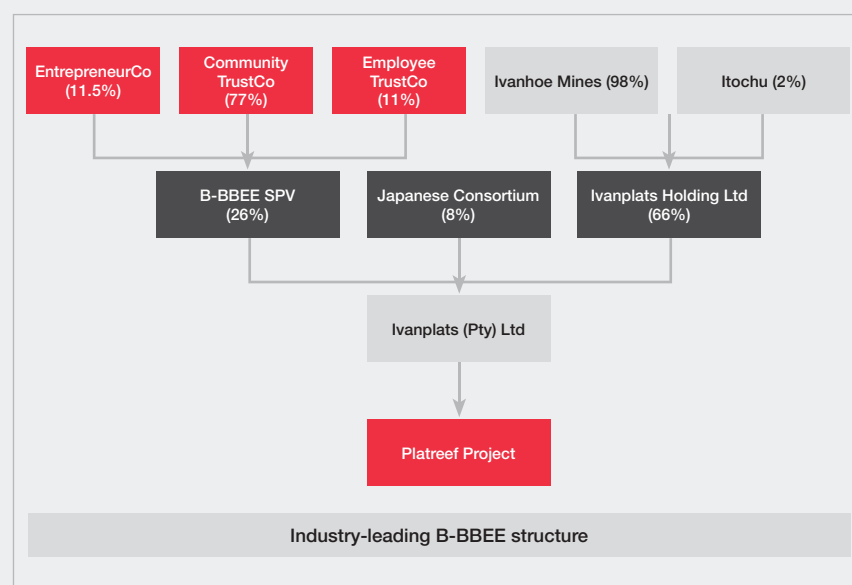
100,000 bricks were produced by Tujenge by September 2018



# SPECIAL REPORT

## BROAD-BASED BLACK ECONOMIC EMPOWERMENT (B-BBEE) AT THE PLATREEF PROJECT

In conformance with South Africa’s mining laws and in fulfilment of the requirements of the Company’s Mining Right, a 26% interest in the Platreef Project was transferred by the Company’s subsidiary Ivanplats (Pty) Ltd on June 26, 2014, to a Broad-Based Black Economic Empowerment Special Purpose Vehicle (B-BBEE Special Purpose Vehicle (SPV)). Within this industry-leading B-BBEE structure, 20 host communities, plus employees and local entrepreneurs, own a combined 26% of the Platreef Project. The figure below details the ownership structure of the Platreef Project and illustrates the transformative broad-based nature of Platreef’s local ownership.



The Company made a commitment to the Bonega Communities Trust (the Trust) to provide an fixed annual contribution of R11 million until such time as the Trust receives dividends. The Trust is governed by an independently elected Trust Advisory Council (60 members) and a Board of Trustees (eight members, of which three are independent). The Trust is a registered non-profit organization and the Board of Trustees receives, assesses and supports qualifying projects originating from the 20 member communities.

The Broad-Based Black Economic Empowerment Act, 2003 requires annual reporting on compliance with broad-based black economic empowerment. The Platreef Project is therefore assessed annually, and most recently in May 2019, in accordance with the DTI Amended Codes of Good Practice for Broad Based Black Economic Empowerment Gazetted on 11 October 2013 (i.e. the generic scorecard). Following this recent verification, the Platreef Project achieved a B-BBEE status of Level 2 Contributor for the 2018 assessment period. In the previous four years, Platreef achieved a Level 3 scoring. The Platreef Project’s recently achieved Level 2 score positions the Project as one of the forerunners of transformation in the South African mining industry. Appendix 7.8 page 96 provides an independently verified B-BBEE Scorecard for the Platreef Project for 2018.



## The Bonega Communities Trust implemented several projects during 2018:

### Marketing and branding

The Trust launched a naming competition in local schools to help root its activities in the member communities and publicize the activities of the Trust. The name ‘Bonega’ (Sepedi for “bringing light”) was selected as winner. The winning student received a laptop and the participating school received equipment to improve the school. The elephant family illustrated in the Bonega Trust logo was selected as the elephant is the symbol of the traditional authority to which the member communities of the Trust belong.

### Asset mapping process

The trust deed of the Bonega Communities Trust requires that the Trust undertakes a systematic consultation process through which the assets and prospective not-for-profit projects in the member communities are identified. The Trust appointed an independent consultant, Aurecon, to facilitate the community development process through targeted focus groups and community wide surveys, using an asset-based methodology. The process also included asset-based community development training for the Trust Advisory Council members to provide these individuals with a thorough understanding of the process being conducted in their communities.

### Free Wi-Fi project

The Bonega Communities Trust, in collaboration with the Platreef Project, sponsored 12 out of 20 of the free Wi-Fi hotspots in its member communities. During the implementation of this project, 25 digital youth enterprises were contracted to activate approximately 15,000 people in the Trust’s member communities on the Maru a Mokopane platform. The youth enterprises also showcased the Bonega Communities Trust’s new website to community members ([www.bonegatrust.org](http://www.bonegatrust.org)).

Types of projects	Number of projects for 2018	Estimated number of beneficiaries
<b>Education</b> <ul style="list-style-type: none"><li>&gt; Mokaba reading room</li><li>&gt; Lekwa high school extension</li><li>&gt; Jacob Madiba Early Childhood Centre</li><li>&gt; Refilwe Early Childhood Centre</li><li>&gt; Angel Tree vulnerable children Christmas project</li><li>&gt; Star schools program</li><li>&gt; Lesedi Early Childhood Centre</li></ul>	8	2,814
<b>Environment</b> <ul style="list-style-type: none"><li>&gt; Community cleaning project</li></ul>	1	200
<b>Digital inclusion (Wi-Fi hotspot project)</b>	12	7,099
<b>Agriculture</b> <ul style="list-style-type: none"><li>&gt; Malepetleke community garden</li></ul>	1	23
<b>Capacity building</b> <ul style="list-style-type: none"><li>&gt; Asset mapping process</li></ul>	1	3,823
<b>Social Development</b> <ul style="list-style-type: none"><li>&gt; Lesedi early childhood centre</li><li>&gt; Fundisizwe sewing project</li><li>&gt; Ditebogo retiree support centre</li></ul>	3	190
<b>Total beneficiaries</b>		<b>14,149</b>







## 5.2 HUMAN CAPITAL

At Ivanhoe Mines, our success relies greatly on our people. We place a premium on the health and safety of our workforce and are continually improving our training and education practices. Ivanhoe Mines is an equal opportunity employer and takes pride in our diverse workforce. Our recruitment and remuneration practices are guided by our corporate values, policies, standards and statement of corporate citizenship.

CONTRACTORS AT THE  
KAMOA-KAKULA PROJECT

### 5.2.1 Employment figures

We are committed to promoting equal opportunities for all employees in our projects, within the local regulatory frameworks of the countries in which we operate. This commitment is captured in our employment equity, skills development and recruitment policies and procedures. Our main contractors are held accountable for complying with our employment standards as set out in the contractor requirement frameworks of our three principal projects.

Total employees and contractors by gender						
	2017			2018		
	Male	Female	Total	Male	Female	Total
Platreef employees	111	50	161	120	51	171
Platreef contractors	480	103	583	582	108	690
Kamoa-Kakula employees	288	12	300	308	11	319
Kamoa-Kakula contractors	906	7	913	1,349	28	1,377
Kipushi employees	451	20	471	477	23	500
Kipushi contractors	158	0	158	167	7	174
	Total workforce 2017		2,586	Total workforce 2018		3,231

We are prioritizing an increase in the number of female employees in our DRC projects during the recruitment process. At the Kipushi Project, Ivanhoe inherited a mostly male workforce from its partner, Gécamines, when the Company acquired its shares in the Project, and is actively working to redress gender inequality in compliance with local legislation.

## Our human capital performance at a glance

**85%**  
reduction in lost time  
injury frequency rate at  
our **PLATREEF PROJECT**  
from 2017 to 2018

**12,707,807**  
number of lost time injury  
free man-hours at our  
**KAMOA-KAKULA PROJECT**

**25%**  
increase in  
overall workforce  
from 2017

**145**  
total number of employees in  
any type of study assistance

increase in local employment figures  
from 2017 at our **PLATREEF PROJECT**  
from **67%** to **71%**



CONTRACTORS AT THE  
PLATREEF PROJECT



### 5.2.2 Local employment

Ivanhoe Mines’ recruitment policy prioritizes recruiting local people from the projects’ host communities. To this end, the Company has local recruitment procedures in place which ensure that all positions are advertised internally and locally first, and are subsequently filled externally and by non-local candidates if a suitable local candidate cannot be found. All unskilled and casual labour requirements are filled locally. Ivanhoe Mines ensures that all on-site contractors comply with these local recruitment policies and procedures. In accordance with the Company’s skills transfer and development program and South African regulatory requirements, an increasing number of management positions (Paterson\* D and above) are being filled by local employees.



JENNIFER MAGONGOA  
LOGGING SITE  
ACTIVITIES AT  
PLATREEF

#### Ivanhoe Mines local employment statistics

PLATREEF PROJECT			
2018		2017	
Non-local employees	29%	Non-local employees <sup>1</sup>	33%
Local employees	71%	Local employees	67%

KIPUSHI PROJECT			
2018		2017	
Non-local employees	8%	Non-local employees <sup>2</sup>	8%
Local employees	92%	Local employees	92%

KAMOA-KAKULA PROJECT			
2018		2017	
Non-local employees	13%	Non-local employees <sup>2</sup>	15%
Local employees	87%	Local employees	85%

<sup>1</sup> Not from Mogalakwena Local Municipality  
<sup>2</sup> Not from DRC

Local employees in management statistics				
Percentage of local employees in management				
Local employment rates	2018		2017	
Platreef Project				
Total management employees	94	100%	88	100%
Historically disadvantaged South Africans (HDSAs) <sup>1</sup>	31	33%	28	32%
Local Non-HDSAs	63	67%	60	68%
Kipushi Project				
Total management employees	24	100%	17	100%
Congolese nationals	14	58%	10	59%
Expatriates	10	42%	7	41%
Kamoa-Kakula Project				
Total management employees	37	100%	32	100%
Congolese nationals	10	27%	10	31%
Expatriates	27	73%	22	69%

<sup>1</sup> HDSA refers to any person, category of persons or community, disadvantaged by unfair discrimination before the Constitution of the Republic of South Africa, 1993, came into operation

Due to the increased demand for highly skilled and senior managerial employees at the Kamoa-Kakula Project, during the final ramp-up to production, we anticipate that the proportion of non-local employees will increase in the short- to medium term. However at our Kamoa-Kakula and Kipushi Projects, we have active management development programs in place to progressively increase the number of Congolese nationals in the Company’s management. We expect that this program will normalize the proportion of local- and non-local employees at Kamoa-Kakula in the long-term.

\* Paterson job grading system is used internationally to grade jobs, based on decision-making criteria

### 5.2.3 Health and safety performance

#### Our approach to safety management

The health and safety of our employees, contractors and suppliers is of the utmost importance to us. We have instituted a group Health, Safety and Environmental (HSE) policy and supporting policies and standard operating procedures to ensure that we are able to comply with our vision of ‘Home without harm, everyone, every day.’

In our HSE policy, we commit to the following:

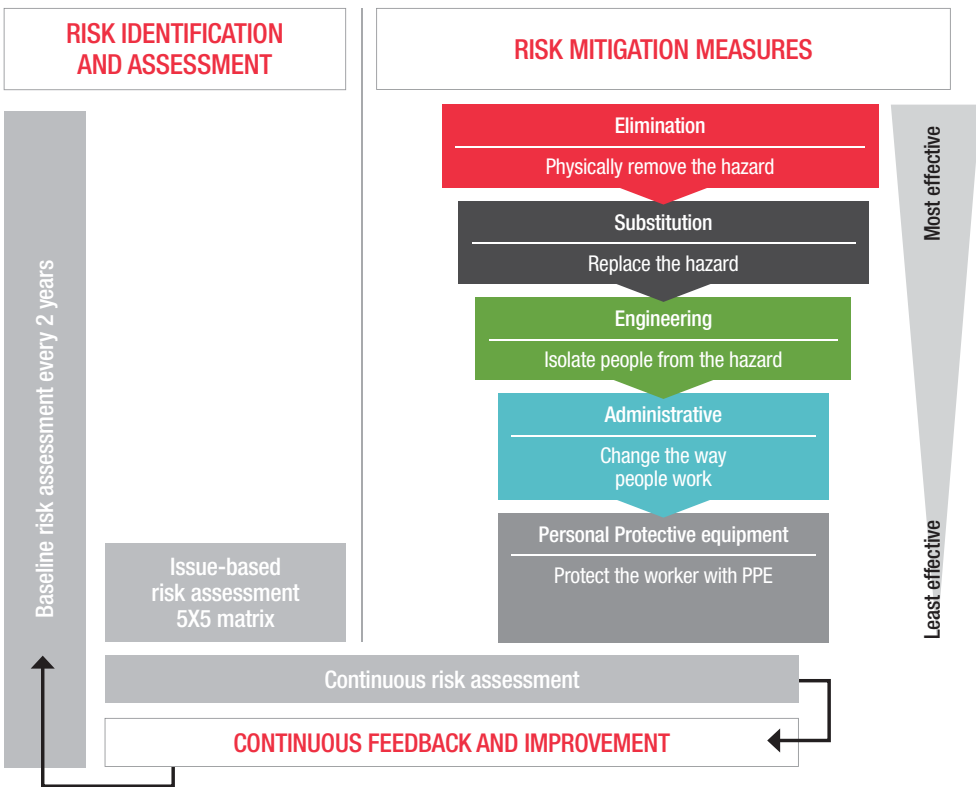
- > developing, implementing and maintaining the highest practicable standards of occupational health, safety and environmental management.
- > creating a culture of ‘zero harm’ in health, safety and environment. This culture aims to eliminate unsafe acts and conditions in the working environment.
- > complying with applicable laws, standards and legal requirements.
- > protecting people who are not employees, but who may be directly affected by our activities.
- > communicating legislation, Company standards, policies and best practices regularly and effectively to all levels within the organization.
- > reviewing the HSE policy on an annual basis.



IVANO MANINI, IVANPLATS  
HEAD OF OPERATIONS  
CONDUCTING A SAFETY  
BRIEFING WITH THE  
SINKING TEAM ON THE  
BANK, BEFORE GOING  
UNDERGROUND

#### Our approach to risk management

Our risk management strategy is at the core of creating a safe workplace. Effective risk management is fundamental to our operations as it addresses future uncertainties in a proactive manner. Our operational risk management process is based on key principles of risk management, that enable us to ensure the health and safety of employees and stakeholders while also meeting our business objectives and responsibilities and complying with regulatory requirements. These processes ensure that operational risks are identified, assessed, analyzed and managed in an integrated and co-ordinated manner to support the delivery of organizational objectives and targets.



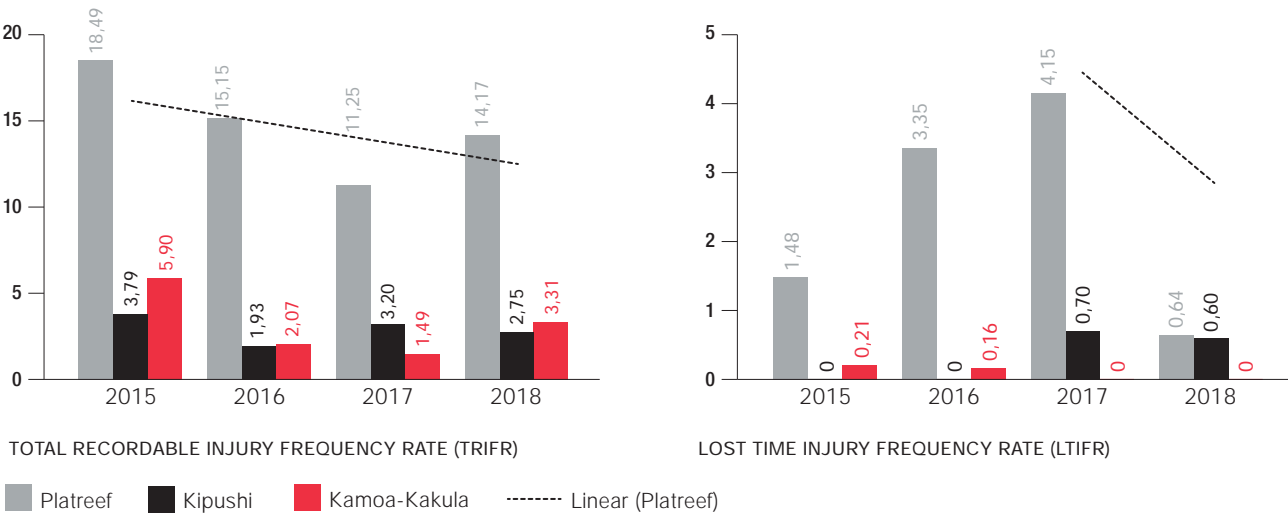


### Our safety statistics and initiatives

**Group safety performance improved in 2018 with the Kamo-Kakula Project achieving a lost time injury free (LTIF) year and significant downward trends in lost time injuries (LTIs) recorded across the projects.** The Platreef and Kamo-Kakula Project showed a slight increase in Total Recordable Injury Frequency Rate (TRIFR) for the reporting year due to increased activities. The incidents which occurred during the reporting period were reported through the standard operating procedures for safety incidents. These procedures include: root cause analysis, issue-based risk assessment and measures to prevent reoccurrence based on our risk management hierarchy especially at the Platreef Project considering conventional shaft sinking activities.



CONTRACTORS AT THE KAKULA PROJECT INSPECTING A PUMP



Safety initiatives implemented at the respective sites during 2018			
	Platreef	Kipushi	Kamo-Kakula
Number of hours worked	1,553,106	1,817,179	3,614,936
Total number of employees and contractors	861	674	1,696
Number of LTI free days during 2018	364	364	365
Number of visitor inductions conducted	103	89	404
Number of full inductions conducted	1,082	149	1,365
Number of safety-related training interventions conducted	16	8	6
Number of attendees for safety-related training interventions	3,015	4,000+	1,844
Digital HSE management system fully operational	Yes	In progress	In progress

### Our health statistics and initiatives

Ivanhoe Mines places a priority on our employees' health and wellness. In addition to occupational health and hygiene services, a fully equipped medical emergency response team is positioned at each project site.

In compliance with the relevant labour and mine health and safety regulations applicable to our projects, we provide basic medical care to our employees and, where applicable, their dependants. The following table provides an overview of the 2018 health statistics from our principal projects:

Health care statistics:					
		Platreef	Kamo-Kakula	Kipushi	Total
Number of annual employee medicals performed	Employees	1,208	1,309	1,409	3,925
Number of patients tested for malaria	Employees	0	970	747	1,717
Number of patients tested positive and treated for malaria	Employees	0	588	349	937
Total patients seen at site occupational health clinic	Employees	1,685	1,734	1,092	4,511
Total of chronic patients seen and treated on a monthly basis	Employee	1,328	328	223	1,879
Total of chronic patients seen and treated on a monthly basis	Employee dependants <sup>1</sup>	0	12	5	17
Total patients seen at designated hospitals	Employees	56	121	3,213	3,390
Total patients seen at designated hospitals	Employee dependants	0	1,030	2,698	3,728
Number of health induction attendees	Employees	1,082	1,272	343	2,697
Number of HIV tests performed	Employees	559	365	174	1,098
Number of HIV tests positive	Employees	20	10	2	32
Number of patients voluntarily on Highly Active Antiretroviral Therapy (HAART) <sup>2</sup>	Employees	20	69	1	90
Number of new cases of Tuberculosis (TB)	Employees	2	1	5	8
Number of Noise-Induced Hearing loss cases <sup>3</sup>	Employees	4	0	1	5
Number of Chronic Obstructive Airway Disease cases	Employees	0	0	36	36
Employee wellness topics covered	Employees	23	10	13	46
First Aid Awareness training attendees	Employees	161	47	626	834

<sup>1</sup> DRC labour regulations require that the Company provide medical care for the dependants of employees through state-owned or private medical facilities  
<sup>2</sup> Includes cases identified in previous years  
<sup>3</sup> A shift greater than 5% from the baseline

In addition to basic health care, our projects have occupational hygiene programs in place, where the following are monitored (where applicable):

Noise levels in workplace

Active monitoring of airborne pollutants

Active monitoring of potable water quality

Active monitoring of underground ventilation

Monitoring of noxious and or flammable gasses

Surface blast monitoring

Proactive occupational hygiene measurements provide project teams with timely information to institute preventative measures to mitigate health and safety risks. Regular occupational wellness campaigns at all three projects also support employees' capacity to look after their own health and wellbeing.



### Community-based health initiatives

The community relations- and development teams at all three projects prioritise engagement and support initiatives focused on community health and safety. At the Platreef project, the Company supports peer educators in six schools to provide preventative education regarding HIV/AIDS and substance abuse, benefiting approximately 4,000 students.

Ivanhoe supported the ‘Know for Sure’ malaria program in collaboration with the DRC Ministry of Health, and Fio Corporation, a Toronto-based global healthcare technology company. The initiative introduced integrated diagnostic and data technology to automated, rapid testing and real time reporting in the DRC provinces of Haut-Katanga and Lualaba – two malaria-burdened regions that host the Kipushi- and Kamo-a-Kakula projects. During the reporting year, a total of 58,357 malaria diagnostic tests were registered on the 200 Deki devices deployed at clinics in the two provinces, guiding health care providers in accurate diagnosis and treatment.

In addition to Ivanhoe’s support for the ‘Know for Sure’ program, the Kamo-a-Kakula and Kipushi community relations teams run yearly malaria awareness campaigns in its respective host communities. The Kamo-a-Kakula team also presented awareness campaigns regarding cholera and HIV to five communities benefitting 772 students and community leaders.



### 5.2.4 Human Resources Development

Ivanhoe Mines is committed to developing our most precious resource – the people who work to realize the vision of building a diversified mining company in Southern Africa. We focus especially on building the capacity of local employees through individual development – and career progression plans and study assistance. Skills transfer programs are in progress at our three projects. We are actively expanding our female workforce at our DRC projects and providing our existing female employees with opportunities for development and career growth, in compliance with local legislation.

Human resource development – employee performance management			
	Platreef	Kamo-a-Kakula	Kipushi**
Percentage of total workforce – yearly performance appraisal	100%	98%	24%
Percentage of total workforce – individual development plan in place or in progress	100%	66%	33%
Human resource development – employee development			
	Platreef	Kamo-a-Kakula	Kipushi**
Number of employees enrolled for certificate courses	9	45	8
Number of employees enrolled for diploma courses	4	–	Pending completion of the restructure process
Number of employees enrolled for graduate degrees	2	2	
Number of employees enrolled for postgraduate degrees	5	–	
Number of employees on any other type of study assistance	13	3	
Number of employees in adult training and education (literacy training)	8	–	
Number of employees in portable skills training related to retirement	0	43	
Human resource development – succession planning and skills transfer			
	Platreef	Kamo-a-Kakula	Kipushi**
Number of key positions identified for succession planning for local employees	8	42	3
Number of employees enrolled in mentoring program	14	22	Pending completion of the restructure process
Number of employees enrolled in skills transfer program (related to succession planning)	8	38	3
			Pending completion of the restructure process
Number of high potential candidates on a career development program	5	22	
Number of active interns for the reporting year	15	7	33

\* Paterson Job Grading System is used internationally to grade a job, based on decision-making requirements  
\*\* These numbers are expected to improve following the implementation of HRD restructure at Kipushi in August 2018



Our **Platreef Project** is guided by operational requirements and mandated by the project's SLP, implemented and reviewed in five-year intervals and regulated by South African mineral legislation. The 2018 reporting year was the fourth year of implementation of the project's first SLP.

At the **Kamoa-Kakula Project**, the HRD program takes into account the relative remote setting of the project, the multi-cultural workforce, the Company's commitment to local employment, the expansion of the mineral resources and the need for a future, skilled, local workforce. To reach these objectives, Kamoa-Kakula's HRD department focuses on identifying and assisting high potential individuals through mentoring, skills transfer programs, study assistance and active succession planning.

At the **Kipushi Project**, the HRD program is based on the progressive need for a variety of skills as the mine returns to production. The HRD department started a complete restructure in August 2018, focusing on instituting best practice policies and procedures. A formal skills transfer program is under way, through which expatriate workers and highly skilled nationals build the skills of local employees. Pending the completion of IDPs the Kipushi Project will provide its workers with appropriate study assistance to reach their career growth objectives.



DRC COMMUNITY RELATIONS TEAMS AND COMMUNITY LEADERS RECEIVE COMMUNITY DEVELOPMENT TRAINING IN LUBUMBASHI, DRC

## SPECIAL REPORT

### JICA – LOCAL INTERNS STUDY FAR AFIELD

The Platreef Project in collaboration with ITOCHU Corporation, assisted three interns from the Platreef Project's host communities to apply for scholarships at the Japan International Cooperation Agency (JICA).

After a stringent selection process, **Althea Seswahla Mokgata, Dolly Mmasabata Molekoa and Malesela Mokhiri Makhafola** were accepted into Japanese Universities to further their studies in their respective fields.

**Althea** is from Magongoa village in Mokopane and joined the Platreef Project as an environmental intern in 2015. She was accepted into Shimane University in Matsue, Japan to pursue a Master of Science (MSc) in Environmental and Sustainability Science. Althea is expected to complete her degree in 2020, and has adjusted well in spite of language barriers and cultural differences. She hopes to continue her research in the removal of phosphorus from waste water using absorbent materials after she completes her degree.

**Dolly** is from Molekane village in the Mokopane area and was the recipient of a Platreef Project bursary to complete her undergraduate studies in environmental management at the University of Limpopo. After graduating, she joined the Platreef Project's environmental department as an intern and applied through the JICA program to complete her postgraduate studies in Japan. Dolly was accepted into Hokkaido University in Sapporo, Japan to pursue an MSc in Global Environmental Management. Dolly is expected to complete her degree in 2021.

**Malesela** is from Chroompark in Mokopane and joined the Platreef project in 2015 as an intern after completing a BSc in Geology with honours. Through the JICA program, Malesela is pursuing an MSc in Sustainable Resources Engineering at the Hokkaido University in Sapporo, Japan. Malesela is expected to graduate in 2020 and is looking forward to return to Mokopane to apply his newly acquired knowledge in the field of sustainable mineral extraction.



MALESELA MAKHAFOLA PREPARING TO HIKE UP THE MOUNT FUJI VOLCANO

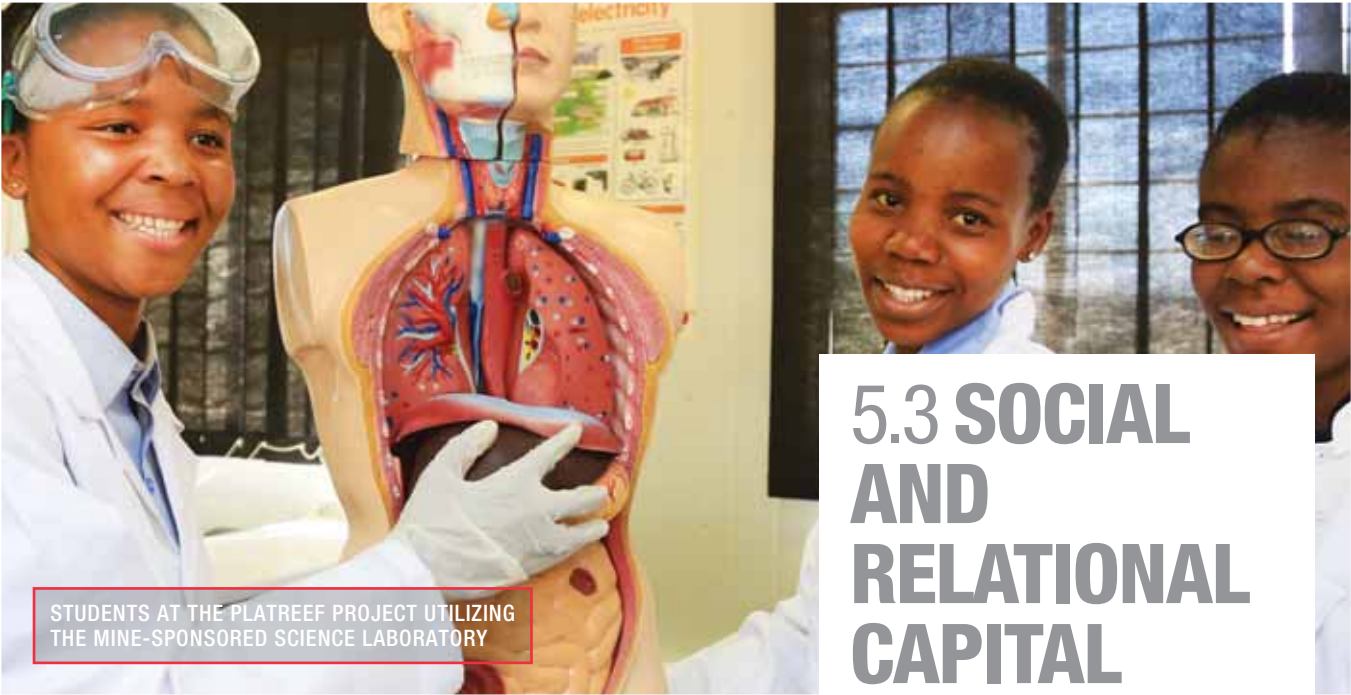


DOLLY MOLEKOA WITH MATOME MAMODUMO AND BENTLY RAFAPA DOING ENVIRONMENTAL FIELDWORK AT THE PLATREEF PROJECT



ALTHEA SESWAHLA MOKGATA AT MOUNT FUJI





STUDENTS AT THE PLATREEF PROJECT UTILIZING THE MINE-SPONSORED SCIENCE LABORATORY

# 5.3 SOCIAL AND RELATIONAL CAPITAL

## Our social and relational capital performance at a glance

1,010

total number of beneficiaries of community skills development initiatives

15,035

total number of stakeholders engaged with during 2018

548,856

total number of beneficiaries of community infrastructure and support projects

24,178

total number of registered users on **MARU A MOKOPANE**

\$153,043

total community income from livelihood project at **KAMO-A-KAKULA**

23,560

total number of beneficiaries of educational infrastructure and support projects

Ivanhoe Mines values the social licence to operate it has obtained from the host communities of its principal projects. To this end, the Company has developed sustainability, corporate social investment (CSI) and community relations policies to ensure that we maintain our social licence to operate, while also creating shared value with our local stakeholders. Social development targets and initiatives are drawn up within the regulatory framework of the host countries and in consultation with affected stakeholder groups. During the reporting year, a group alignment process for socio-economic development initiatives was undertaken to facilitate alignment between community relations project teams and foster a culture of best practice in community development accross the group.



STUDENTS AND TEACHER UTILIZING THE COMPUTER LABORATORY AT KAMO-A-KAKULA

Local socio-economic development focuses mainly on the establishment of local educational and community infrastructure, providing support and training to community structures and initiatives and fostering a diversified local economy to enable, a healthy, thriving community that can be partners in driving socio-economic growth.

At the **Platreef Project**, regulatory requirements pursuant to the South African Mining Charter drive the SLP spending in these critical areas: LED, employee and community skills development, enterprise and supplier development (ESD) and local procurement (see Appendix 7.7, page 94, for more information).

At the **Kamoa-Kakula Project**, a large portion of local socio-economic initiatives are geared towards food security and education as the project is situated in a rural area, historically characterized by extreme poverty and low literacy levels.

At the **Kipushi Project**, existing town infrastructure and the need for potable water drove the decision to invest a significant portion of the socio-economic budget in continuously providing potable water to the town of Kipushi. More recently, educational initiatives such as a bursary scheme for high performing students, and educational infrastructure repair have been added to social initiatives.



KIPUSHI CSR OFFICIALS WITH MIMBULU SCHOOL SCHOLARSHIP BENEFICIARIES AND THEIR PARENTS

The long term, sustainable, social development strategies for Kipushi and Kamoa-Kakula are under review to align with new requirements in the DRC Mining Code and regulations, the regional development plans and technical studies that are being conducted.

### 5.3.1 Community skills development

Ivanhoe's principal projects are situated in emerging economies where discrepancies exist between the skill and educational levels of a significant portion of individuals in the Company's host communities and the skills required for employment at the mine or for establishing and growing a successful local business. The Company invests in adult literacy and education as well as other training interventions to enable community members to improve their socio-economic status through employment or entrepreneurial activities.

Number of community beneficiaries in training interventions

	Platreef	Kamoa-Kakula	Kipushi	Total
Number of community members in adult education and literacy training	136	240	234	610
Number of community beneficiaries in other training interventions	170	180	50	400

At the **Platreef Project**, community skills development is focused on partnering with the Adult Education and Training (AET) program, presented in partnership with the Department of Basic Education. This program is focused on assisting adults in basic literacy skills and also helping those who want to complete their formal secondary schooling. Other community training initiatives include making use of local service providers to train community members in computer skills and partnering with main contractors to provide local workers with basic health and safety training.



PEER EDUCATOR DELIVERING SUBSTANCE ABUSE EDUCATION AT A SCHOOL NEAR THE PLATREEF PROJECT



The **Kamoa-Kakula and Kipushi Projects** partnered with the National Institute for Preparation of Businesses (INPP), a DRC government initiative providing skills training to assist individuals to either apply for employment or launch their own small businesses. At Kamoa-Kakula, community members were trained in auto-electrical skills, masonry and construction. At the Kipushi Project, artisanal miners who produce aggregates from historical waste rock in close proximity to the mine, were supported to attend an INPP program and were trained in brick laying, plumbing, welding, basic electrical wiring and painting. The skills gained from the training are assisting them with diversifying their income to provide a livelihood for their families.



INPP TRAINING AT KIPUSHI



**Kushona sewing centre** was established at the Kipushi Project during the reporting year. The sewing centre provides training in sewing with hand machines as well as industrial sewing machines. The long term vision of the centre is to supply the Kipushi Mine with all uniforms and soft furnishings for guesthouses and offices. There are currently 25 beneficiaries progressing through the sewing course work and the centre is planning an intake of an additional 25 beneficiaries.



FIRST GROUP OF SEWING STUDENTS RECEIVING THEIR CERTIFICATES AT KUSHONA

SPECIAL REPORT

ADULT LITERACY PAVES THE WAY TO EMPOWERMENT

Ivanhoe funds an adult literacy program as part of its community skills development initiatives at the Kipushi and Kamoa-Kakula Projects. The program is a partnership with Alfa Congo, a Kinshasa-based non-profit NGO dedicated to improving literacy levels among vulnerable social groups. The classes include a structured approach to basic functional literacy and numeracy.

An unfortunate reality is that illiteracy can be a major stumbling block for many of the approximately 180,000 people in the two projects' host communities seeking advancement opportunities. Literacy rates are substantially lower among females. International research indicates that changing this imbalance can benefit entire communities, as women more often transfer their acquired skills and knowledge to children.

At the Kipushi Project, three functional literacy training classes are offered at the village of Kipushi and one at the nearby village of Mimbulu. The success of the structured reading and writing program has exceeded expectations, with over 250 participants now enrolled.

At Kamoa-Kakula, beneficiaries of the poultry program find the literacy program particularly useful as it enables them to keep track of business expenses and income and to interact with the bank where the proceeds of the poultry initiative are deposited.



234  
female  
participants  
enrolled

ALFA CONGO LESSON IN PROGRESS AT KIPUSHI PROJECT



SCIENCE LESSON IN PROGRESS AT THE NEWLY-BUILT KAMISANGE SCHOOL AT KAMOA-KAKULA

5.3.2 Educational infrastructure and support

Ivanhoe recognizes that a significant number of the children being raised in its host communities will eventually form part of the workforce of the mines that are being developed by the Company. A well rounded secondary education also provides the basis for success in entrepreneurial endeavours in and around the mines' footprint areas.

The tables below provide an overview of the educational infrastructure and support projects undertaken in the Projects' host communities during the reporting year.

Educational infrastructure refers to structural or material assistance provided to schools, whereas educational support indicates programs where learning was enhanced through direct training interventions with teachers or students.

Educational infrastructure							
	Platreef		Kamoa-Kakula		Kipushi		Group Total
	Number of schools	Number of beneficiaries	Number of schools	Number of beneficiaries	Number of schools	Number of beneficiaries	
Early childhood development centres	2	190	0	0	1	60	
Primary schools	1	500	3	327	0	0	
Secondary schools	5	3,500	1	103	2	1,200	
Special educational needs institutions	1	26	0	0	0	0	
Total number of schools benefitting:	9		4		3		16
Total number of beneficiaries:		4,216		430		1,260	5,906





MINICHESS PROGRAM IN PROGRESS AT MOTSHITSHI PRIMARY SCHOOL AT THE PLATREEF PROJECT

Educational support				
	Platreef	Kamoa-Kakula	Kipushi	Group Total
	Number of beneficiaries	Number of beneficiaries	Number of beneficiaries	
Scholarships (educational support for qualifying school children)	101	165	76	
Bursaries (educational support for qualifying tertiary students from host communities)	4	0	20	
Educational enrichment programmes in early childhood centres in host communities	150	0	0	
Educational enrichment programmes in primary schools in host communities	300	740	0	
Educational enrichment programmes in secondary schools in host communities	2,100	203	76	
Educational enrichment programmes aimed at maths, science and IT	400	203	0	
Educational enrichment programmes aimed at health and/or safety topics	4,000	740	4,000	
Educational consumables support	4,000	300	76	
Total number of beneficiaries:	11,055	2,351	4,248	17,654

## SPECIAL REPORT

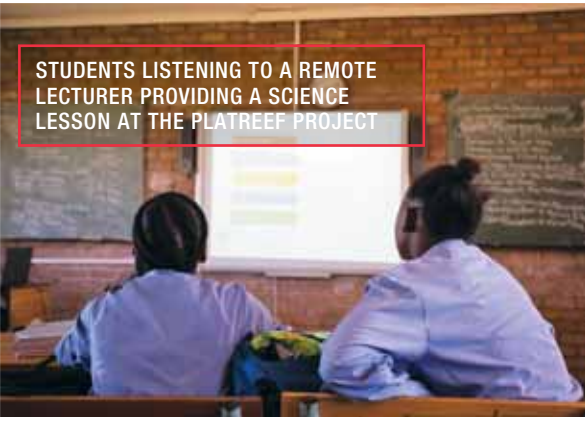
### TEACHING EXCELLENCE THROUGH EDUCATIONAL TECHNOLOGY AT THE PLATREEF PROJECT

Through a partnership between the South African Agency for Technology, the South African Council of Educators and project implementation partner, AMORICOM (a specialist South African technology training company), the Platreef Project team launched an innovative, technology-based skills mentorship and coaching program to teachers in the Platreef Project footprint area. This program focuses on supporting teachers to teach technology, mathematics and science to tertiary school students through using interactive whiteboards installed in classrooms at six schools in Mokopane.

The interactive white boards are powered by cloud-based software whereby students and teachers can gain access to webcasts, webinars, e-learning and remote laboratories from anywhere, provided that they have stable internet access. The Platreef Project provides internet capabilities to these schools as part of this initiative.

Students are able to join live online sessions in real time and interact with their instructors and other students through instant text or voice options for questions and comments. They can also draw and annotate on the whiteboard and view slide shows, take a conducted 'web tour' to view examples or videos that complement the learning sessions.

The program ensures outcomes that enhance staff facilitation skills and the utilization of blended learning methodologies that enhances learner participation in the learning content. This is achieved through learning in interactive virtual classrooms and supported by mentoring and coaching sessions for a 12 month period during which the teachers' skills base is improved. A total of 4,000 local students are benefitting from this initiative.



STUDENTS LISTENING TO A REMOTE LECTURER PROVIDING A SCIENCE LESSON AT THE PLATREEF PROJECT



STUDENTS AT THE PLATREEF PROJECT ATTENDING A LESSON DELIVERED THROUGH THE INTERACTIVE WHITEBOARD SYSTEM, BY A REMOTE SUBJECT EXPERT

4,000  
LOCAL STUDENTS  
BENEFIT FROM THIS  
INITIATIVE

6  
SCHOOLS IN MOKOPANE  
RECEIVED INTERACTIVE  
WHITEBOARDS

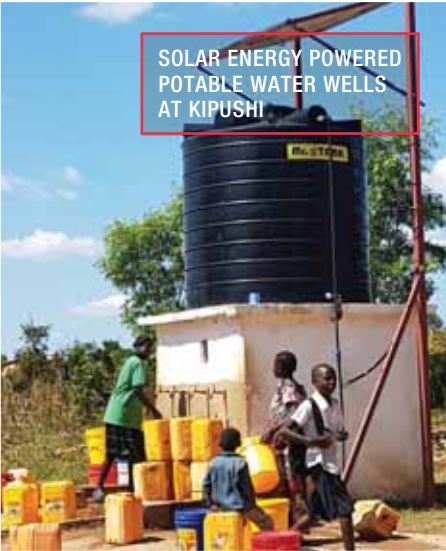


### 5.3.3 Community infrastructure and support

Ivanhoe’s group community development strategy guides our project teams to select community development projects in consultation with community beneficiaries and government-based national and regional development plans. Ensuring broad-based benefit is another strategic consideration when selecting and implementing community development projects. The table below indicates the estimated number of beneficiaries for the various community infrastructure and support projects implemented by the Project teams in 2018.

Community Infrastructure				
	Platreef	Kamoa-Kakula	Kipushi	Group Total
	Estimated number of beneficiaries	Estimated number of beneficiaries	Estimated number of beneficiaries	Estimated number of beneficiaries
Provision of potable water infrastructure	150	4,636	200,000	
Provision of free WiFi	17,079	0	0	
Provision of electricity	0	250	100,000	
Infrastructure support for roads	0	6,933	100,000	
Infrastructure support for community buildings	150	20	0	
Infrastructure support for community sanitation	15,000	4,638	100,000	
Total number of beneficiaries	32,379	16,477	500,000	548,856

At the Platreef project, digital inclusivity reaches most community members and provides an opportunity for people to improve their educational and socio-economic status through free online tools. Potable water and road repair are significant needs of the community of Kipushi and the Company’s efforts in this regard benefits the entire population of Kipushi. At Kamoa-Kakula, which has a smaller community footprint than the other two Projects, potable water and road access to remote communities were prioritized during the reporting year.



SPECIAL REPORT

KAMOA-KAKULA LIVELIHOOD PROJECT

The Livelihood Program at Kamoa-Kakula is growing every year from modest beginnings, into a large-scale operation, with hundreds of beneficiaries growing maize and vegetables and selling poultry and honey. Projects in the scoping phase are: commercial fish ponds, pineapple and banana production. The Livelihood Program has a demonstration garden where environmentally friendly farming practices are tested and adjusted before community members are trained on applying the practices in their own food gardens. The program helps farmers to sell their products to the mine camp kitchens and further afield, process maize into flour and incrementally increase production continually. The farmers are also supported by the Kamoa-Kakula enterprise and supplier development department through business training initiatives. The program is an essential part of the livelihood restoration program undertaken by the Kamoa-Kakula Project for local farmers who lost access to their fields due to mine surface infrastructure development (refer to section 5.3.4 on page 54).

VEGETABLES

445%

Increase in production from 2015 – 2018

253%

Increase in income from 2015 – 2018<sup>1</sup>

11

Number of beneficiary communities

33

Number of families benefitting

\$1,714

Average income of farmer for 2018<sup>2</sup>

MAIZE

36%

Increase in production from 2017 – 2018

36%

Increase in income from 2017 – 2018

14

Number of beneficiary communities

92

Number of families benefitting

\$914

Average income of farmer for 2018<sup>2</sup>

BEE KEEPING

2

Number of beneficiary communities

30

Number of families benefitting

\$614

Average income of farmer for 2018

POULTRY

2

Number of beneficiary communities

253%

Increase in income from 2015 – 2018<sup>1</sup>

26

Number of families benefitting

\$236

Average income of farmer for 2018<sup>2</sup>

<sup>1</sup> variation due to differing values of various vegetable crops  
<sup>2</sup> sales after consumption by household and extended family



5.3.4 Livelihood restoration program

PLATREEF PROJECT

The Company is engaging in a long-term surface lease agreement process and a livelihood restoration process of affected land users. In addition to the first grave relocation process completed successfully in 2017, an additional grave relocation process is also planned in 2019, pending approval of permits.

Long-term surface lease agreement background

- > The surface area on which the Platreef Project is being developed belongs to the local community and is held in trust for their benefit by the national government.
- > The surface rights to this area are distributed as agricultural land by the Traditional Authority in this area.
- > Individual subsistence maize farmers and livestock farmers from three communities have restricted access to their maize and grazing fields due to the development of the project.
- > The project team compensated affected landowners in terms of the temporary surface lease agreements concluded with the affected communities.
- > These temporary agreements are to be replaced with long-term surface lease agreements including a livelihood restoration program for affected individuals.
- > The long-term surface lease compensation will be based on an independent valuation of the land.
- > The following government departments are involved in this process: Department of Rural Development and Land Reform (DRDLR) and the Department of cooperative Governance human Settlements and Traditional Affairs (COGHSTA). The long-term surface lease process is prescribed and directed by the DRDLR.
- > This long-term surface lease agreement constitutes communal compensation for each affected community respectively, as well as individual livelihood restoration for affected subsistence maize and livestock farmers.

Individual livelihood restoration process, high-level timeline and current progress

- > The baseline agricultural survey was completed during 2018 with most affected land users (maize field owners and livestock owners).
- > The data gathered during the baseline surveys informs ongoing investigations into alternative livelihood options.
- > Valuation of assets and a compensation framework based on data gathered during the baseline surveys are in progress.
- > During the reporting year, the Platreef Project captured all livelihood restoration-related data on the Borealis stakeholder management system to ensure best practice governance of the compensation process.
- > Engagement regarding livelihood restoration options with affected individuals will inform formal livelihood restoration agreements to be signed with affected individuals.
- > Individual livelihood restoration plans will be implemented and livelihood restoration support will be provided for an agreed period of time.



Platreef					
Type of relocation	Reason for relocation	Type of economic activity	Number of affected individuals	Number of communities affected	Status
Economic displacement	Mine infrastructure development	Maize farming	296	2	Developing compensation framework
Economic displacement	Mine infrastructure development	Cattle grazing	77	1	Developing compensation framework



### KAMOA-KAKULA PROJECT

Surface infrastructure and access road development at the Kamoa–Kakula Project necessitated economic displacement of small scale farmers and household relocation of families living in the area. The following activities resulted in resettlements:

- > Surface infrastructure for the Kakula Mine.
- > Powerline and bypass road development.
- > Extension of the Kamoa residential camp fence.
- > Airport road development.

The following procedures were followed to manage the economic displacement and household relocation process:

- 1

Identify affected areas, farmers and household owners.
- 2

Create a relocation working group in collaboration with affected people, local traditional authorities, the territorial administrator and local office of the Department of Agriculture.
- 3

Conduct a baseline survey to determine the sizes of farming land, types of crops and types and sizes of structures.
- 4

Agree on a compensation framework for economic displacement and household relocation respectively. In addition, agree on communal compensation for loss of access to communal assets.
- 5

Compensate affected farmers for economic displacement according to the value of their crops and support them to find, clear and plant crops on alternative fields.
- 6

Assist affected people to open bank accounts to safely deposit compensation money.
- 7

For household relocation, negotiate land for new houses with local authorities and build new houses with the agreed specifications.
- 8

Implement communal compensation projects such as school buildings, potable water wells and solar power.



A TYPICAL HAMLET<sup>1</sup> AT KAKULA AFFECTED BY HOUSEHOLD RELOCATION



RELOCATION AT KAMOA-KAKULA. A PROUD FAMILY OUTSIDE THEIR NEW HOUSE



ONE OF THE CLASSROOMS BUILT AS PART OF COMMUNAL COMPENSATION AT KAMOA-KAKULA

The following table provides an overview of the household relocation and economic displacement activities the Kamoa-Kakula team undertook in collaboration with an independent relocation consultant and the relevant DRC government departments:

Kamoa-Kakula					
Type of relocation	Reason for relocation	Type of economic activity/Type of structure	Number of affected families/ farmers	Number of communities affected	Status
Household relocation	Mine surface infrastructure, roads	Traditional homes in small hamlets <sup>1</sup>	58	16 hamlets <sup>1</sup> 3 communities	Completed
Economic displacement	Mine surface infrastructure, roads	Farming	170	16 hamlets 3 communities <sup>1</sup>	95% completed

<sup>1</sup> A hamlet is a small grouping of homes, often consisting of the houses of one extended family

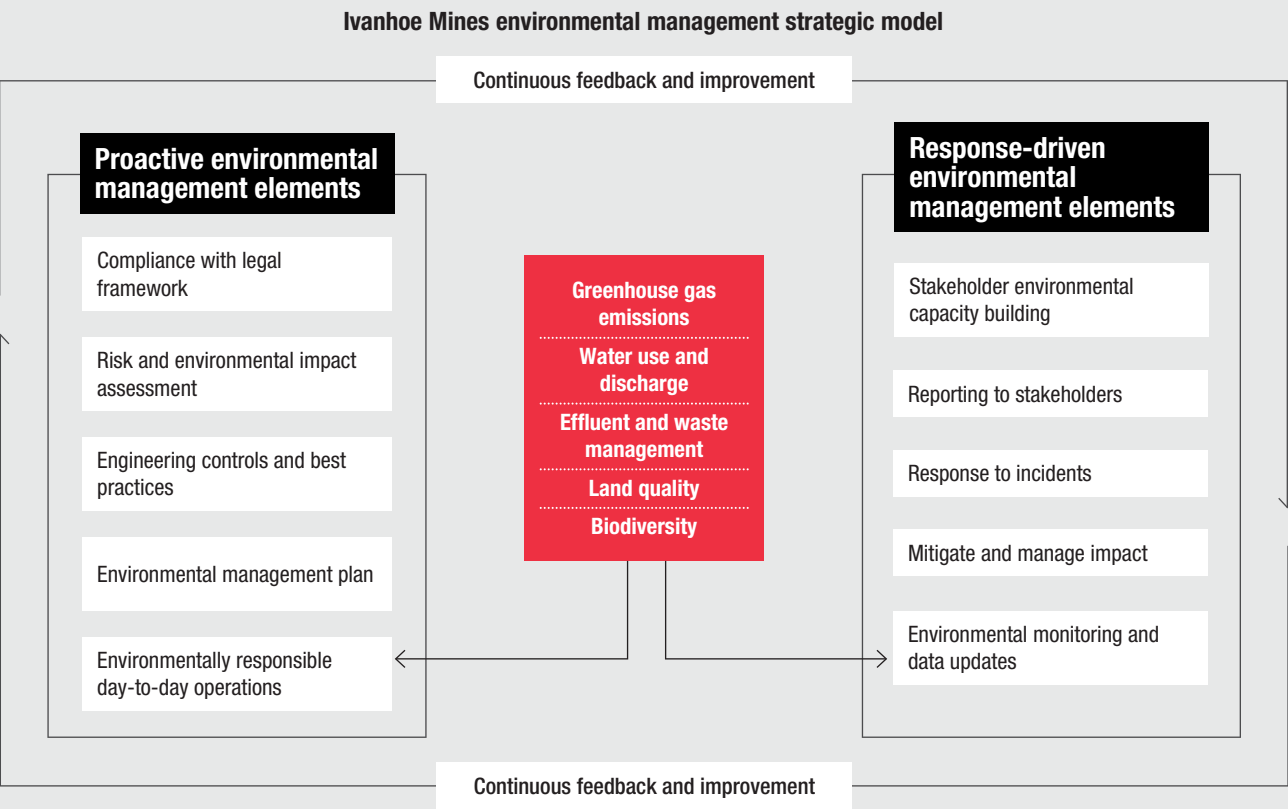




# 5.4 NATURAL CAPITAL

Ivanhoe Mines is committed to responsible stewardship of the natural environment in which we are developing our projects. We have proactive systems in place to limit the impact on the environment and mitigation measures in case of unavoidable environmental impacts.

## 5.4.1 Strategic approach to managing environmental impacts and conserving natural resources



## 5.4.2 Compliance and continuous monitoring

Compliance with local regulations and best practice regarding our potential impact on the surrounding environment is important to us. Environmental Impact Assessments (EIAs) at our principal projects are at various stages of being updated, depending on the study phase of the respective project. The table below provides an overview of progress to date:

Project	Study phase	EIA and compliance status
Platreef	4 Mtpa definitive feasibility study (DFS) completed	<ul style="list-style-type: none"><li>&gt; EIA completed</li><li>&gt; EIA amendment approved, pending outcome of appeal</li><li>&gt; Active Environmental Management Plan (EMP) in place</li><li>&gt; Water Use Licence approved by the Department of Water and Sanitation</li></ul>
Kipushi	<ul style="list-style-type: none"><li>&gt; Pre-feasibility study (PFS) completed.</li><li>&gt; Definitive feasibility study (FS) commenced Q1 2018</li></ul>	<ul style="list-style-type: none"><li>&gt; Full EIA update completed, currently awaiting approval</li><li>&gt; Environmental department audit completed in 2018 and operational environmental management plan updated and implemented.</li></ul>
Kamoa-Kakula	<p>Studies completed in early 2019:</p> <ul style="list-style-type: none"><li>&gt; PFS for stage one Kakula mine development 6 Mtpa.</li><li>&gt; Preliminary economic assessment (PEA) for an integrated 18 Mtpa, three stage development at Kamoa-Kakula.</li></ul>	<ul style="list-style-type: none"><li>&gt; EIA update in progress to include areas in revised combined PEA</li><li>&gt; Active EMPs in place</li><li>&gt; Continued amendments to EIAs to be made as studies progress</li></ul>

Based on the approved Environmental Management Plans (EMP) at Platreef and Kamoa-Kakula and the updated standards of practice at Kipushi, the following environmental monitoring takes place on a continuous basis at the respective projects.





Monitoring practices at Ivanhoe's Projects			
	Platreef	Kamoa-Kakula	Kipushi
Air quality	Yes	As part of ESIA specialist studies <sup>1</sup>	Yes
Surface water	Yes	As part of ESIA specialist studies <sup>1</sup>	Yes
Ground water	Yes	Yes	Yes
Noise	Yes	As part of ESIA specialist studies <sup>1</sup>	As part of ESIA specialist study <sup>1</sup>
Vibration (blasting)	Yes	Yes	To be implemented once mining starts
Weather data	Yes	Yes	Yes
Greenhouse gas emission data	Yes	Yes	Yes
Waste monitoring	Yes	Yes	Yes
Potable water for employee living quarters	Yes	Yes	Yes
Potable water for communities	Yes	Yes	Yes

<sup>1</sup> To be conducted internally pending the completion of the current ESIA update

Monitoring reports are submitted to the respective regulators as per the requirements of the EMPs. There are currently no material impacts identified as a result of mining activities identified from the monitoring data. During the reporting period the following number of environmental incidents occurred at the Projects; mostly due to hydraulic spills:

- > Eleven at the Platreef Project;
- > Five at the Kipushi Project; and
- > Three at the Kamoa-Kakula Project.

All these incidents were mitigated and closed out according to the relevant standard operating procedures, and controls were implemented in the affected areas to prevent similar incidents.

Compliance with environmental regulations, licences and EMPs is managed from a central cloud-based compliance tracking procedure at the Platreef Project with system implementation in progress at Kamoa-Kakaula and Kipushi. Annual independent audits are conducted at all three projects, in compliance with regulatory requirements.



WATER FLOW MONITORING ASSESSMENT AT KAMOA-KAKULA

### 5.4.3 Environmental targets and initiatives

The environmental targets for the respective projects are stipulated in the EMP of each project and include the following categories: incident prevention and management; continuous environmental risk assessment; environmental induction for all site staff and contractors; and staff and community capacity building on environmental topics. Environmental initiatives at each project are summarized below.

Initiatives	Platreef	Kipushi	Kamoa-Kakula
Incident prevention and continuous risk management	Regular environmental audits in collaboration with site management		
Number of environmental inductions delivered	1,082	149	1,365
Staff capacity building	<ul style="list-style-type: none"> <li>&gt; Waste management</li> <li>&gt; Monthly environmental talk topics</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Spill kit demonstration</li> <li>&gt; Monthly environmental talk topics</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Monthly environmental talk topics</li> </ul>
Community capacity building	<ul style="list-style-type: none"> <li>&gt; Arbor Day school visits and annual environmental innovation competition</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Community environmental clean-up campaign in main access road</li> </ul>	<ul style="list-style-type: none"> <li>&gt; Community environmental clean-up campaign in two communities</li> </ul>

### SPECIAL REPORT

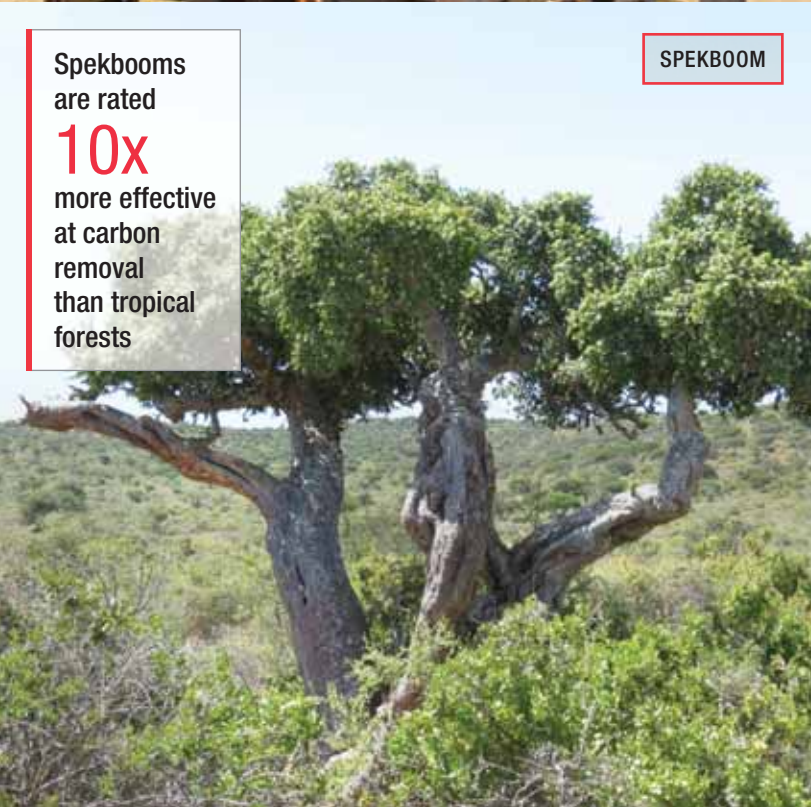
#### MOKOPANE YOUTH DRIVES ENVIRONMENTAL INNOVATION

The environmental department at the Platreef Project started an annual science competition in 2018. The aim of this competition is to encourage students to explore and develop creative ideas that could help to address environmental issues such as air and water quality, renewable energy and solid-waste recycling.

Seven teams from secondary schools in local Mokopane communities near the Platreef Project presented their concepts to a panel of judges from governmental departments. The team from Nkakabidi Secondary School was voted the winner from among several outstanding presentations. Nkakabidi students demonstrated how the Spekboom, a succulent tree native to South Africa, is extremely effective at removing carbon dioxide from the atmosphere. Spekbooms, also called Elephant Food, are rated 10 times more effective than tropical forests, hectare for hectare, at carbon removal. They could be a very significant tool in combatting climate change. The Nkakabidi School received R10,000 in prize money and each member of the team received a tablet for their innovative thinking.



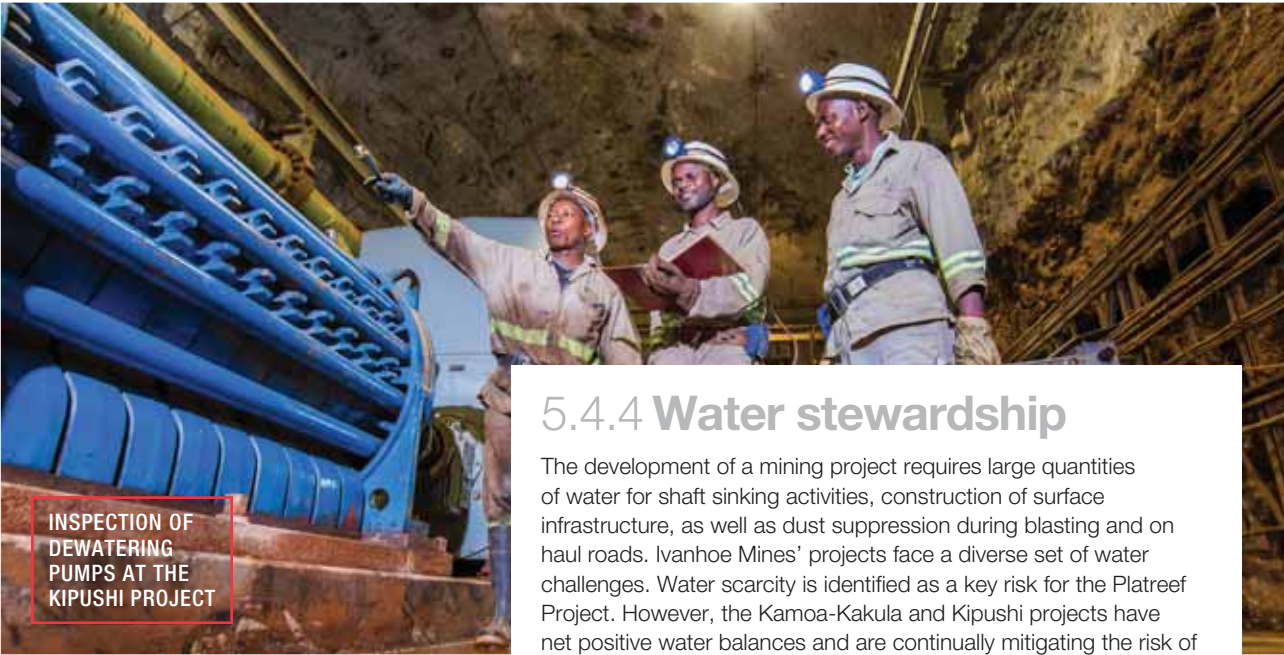
THE WINNING TEAM OF THE ANNUAL SCIENCE COMPETITION WITH THE IVANPLATS ENVIRONMENTAL TEAM



Spekbooms are rated **10x** more effective at carbon removal than tropical forests

SPEKBOOM





### 5.4.4 Water stewardship

The development of a mining project requires large quantities of water for shaft sinking activities, construction of surface infrastructure, as well as dust suppression during blasting and on haul roads. Ivanhoe Mines’ projects face a diverse set of water challenges. Water scarcity is identified as a key risk for the Platreef Project. However, the Kamoa-Kakula and Kipushi projects have net positive water balances and are continually mitigating the risk of flooding to safeguard the development operations.

#### A. Our key water metrics

The following tables provide an overview of the key metrics of the water stewardship at our principal projects:

Ivanhoe Mines site-level water accounting (megalitres per year)								
	GROUP		PLATREEF		KIPUSHI		KAMOA-KAKULA	
	2017	2018	2017	2018	2017	2018	2017	2018
Withdrawals	26,735	24,357	10,4	9	25,404	23,391	1,321	957
Discharge	18,969	17,637	1,6	0	17,520	16,732	1,174	905
Consumption	8,040	6,720	8,8	9	7,884	6,659	147	52

The largest single quantity of groundwater (approximately 2,000 megalitres per year) currently being extracted is at the Kipushi Project for the potable water station which provides potable water to the town of Kipushi (180,000 people) as part of the social development initiatives. The Kipushi Mine has an excess of groundwater which is being pumped to the surface to enable underground activities. Continuous pumping contributes to the Kipushi Project’s high water withdrawal metrics.

The group average water consumption is 20% lower for this reporting period than the 2017 reporting year. The lower water consumption in spite of increased activities at Kamoa-Kakula and Platreef and continuous dewatering activities at Kipushi can be ascribed to improved water management and more accurate measurements from the installation of flow meters at critical measurement points.

Water withdrawal sources by project			
Water sources	Platreef	Kipushi	Kamoa-Kakula
Groundwater – renewable	✓	✓	✓
Groundwater – non-renewable		✓	✓
Process water	✓		



#### B. Our response to water risk

While water sources are abundant in the DRC and investigations to date indicate that there are multiple potential sources of water supply for the Kipushi and Kamoa-Kakula projects, both projects are continually at risk of underground flooding. Risk management strategies include primary dewatering systems, backup systems in case of failure and flooding emergency response plans.

The Platreef Project is in a water scarce area therefore securing sufficient sources and quantities of water poses a challenge. To mitigate this risk, the Platreef Project team needs to secure an interest in or access rights to forthcoming water development projects. The means of such access include securing commercial entitlement to the water source, developing the infrastructure to transport water to the Platreef Project and obtaining necessary government and regulatory permits. Currently, the Platreef Project team engages in the following activities to mitigate this risk:

- > Engagement with public policy makers;
- > Engagement with other stakeholders in the river basin;
- > Public water infrastructure investment;
- > Public water infrastructure maintenance; and

- > Strengthening links with local communities through provision of potable water and a community water tank for a previously informal settlement.

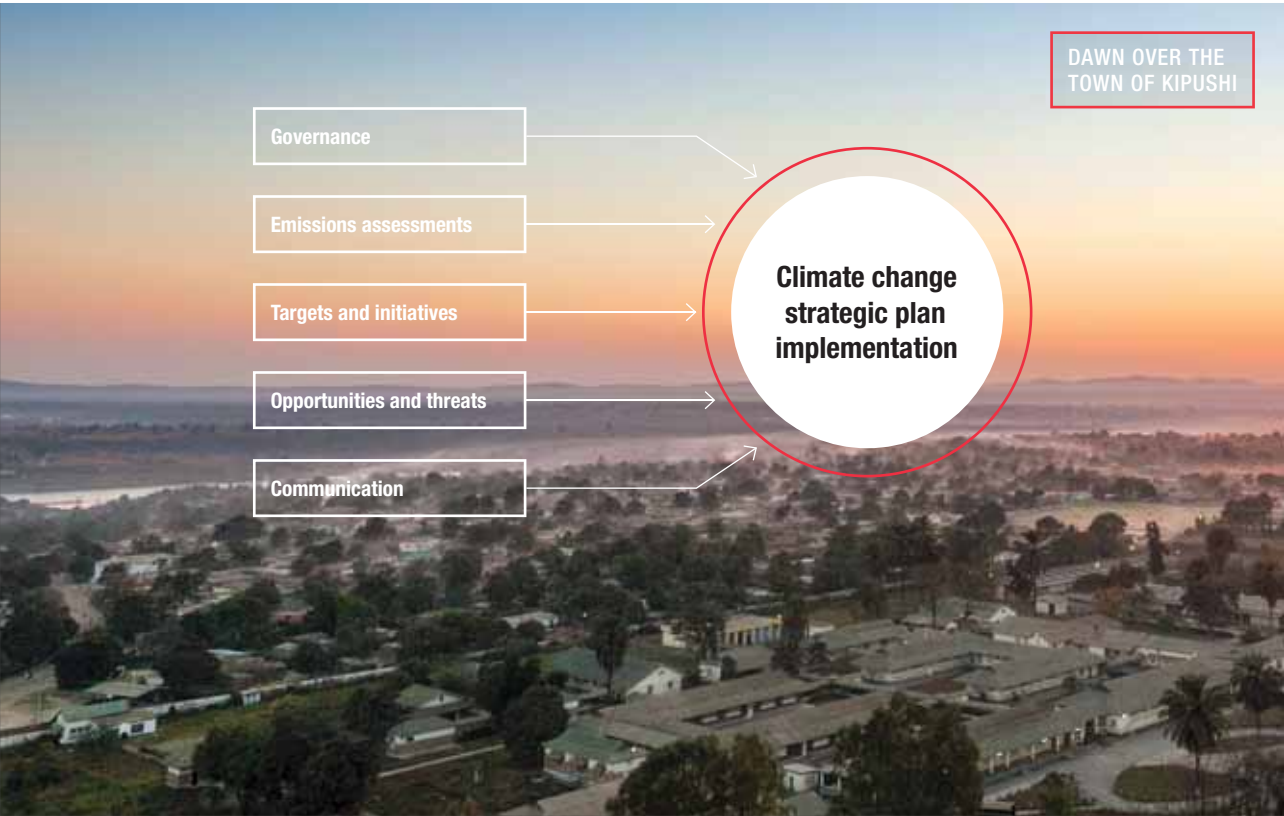
On May 7, 2018, Ivanhoe announced the signing of a new agreement to receive local, treated water to supply most of the bulk water needed for the first phase of production at Platreef. The Mogalakwena Local Municipality has agreed to supply a minimum of five million litres of treated water a day for 32 years, beginning in 2022, from the town of Mokopane’s new Masodi Treatment Works. Initial supply will be used in Platreef’s ongoing underground mine development and surface infrastructure construction.

Under terms of the agreement, which is subject to certain suspensive conditions, Ivanplats will provide financial assistance to the municipality for certified costs of up to a maximum of R248 million (approximately \$19.6 million) to complete the Masodi treatment plant. Ivanplats will purchase the treated wastewater at a reduced rate of R5 per thousand litres for the first 10 ML/day to offset a portion of the initial capital contributed.

Ivanplats received its Integrated Water Use Licence in January 2019, which is valid for 30 years and enables the Platreef Project to make use of water as planned in the DFS.

### 5.4.5 Climate change and energy

Ivanhoe Mines’ principal projects are exposed to physical and policy implications of a changing climate. We are acutely aware of the potential social, environmental, infrastructure and financial impacts that the effects of climate change have on our developing projects. Our climate change strategy is summarized in the following figure:





During the reporting year, Ivanhoe submitted its first public climate change CDP response. Highlights from the CDP response are presented in the table below:

Element	Description	Progress
Governance	<div>&gt; Align company policies with overall climate change strategy</div> <div>&gt; Appoint responsible persons in operational teams</div>	<div>&gt; Affected policies updated and pending approval</div> <div>&gt; Projects' environmental managers appointed as responsible persons</div>
Emissions assessments	<div>&gt; Capture climate change related data and calculate greenhouse gas emissions factors</div>	<div>&gt; All three projects submitted greenhouse gas datasets during the reporting year (see table below)</div>
Targets and initiatives	<div>&gt; Set science-based targets and initiatives stipulating how greenhouse gas emissions can be reduced/minimized</div>	<div>&gt; As all three of our projects are still in development and are likely to ramp up construction activity before steady-state production is reached</div> <div>&gt; Targets and initiatives are aimed at planning for energy efficiency when the mines are in production</div>
Opportunities and threats	<div>&gt; Identify opportunities to reduce greenhouse gas emissions and the effects of climate change</div>	<div>&gt; At the site level, opportunities and threats are addressed through energy efficiency initiatives including alternative energy strategies in project planning</div>
Communication	<div>&gt; Implement a communication plan to raise awareness of climate change with various stakeholder groups</div>	<div>&gt; Climate change awareness campaigns were conducted with employees at the site level</div> <div>&gt; Employees completed a commuting questionnaire</div>

Ivanhoe Mines emissions factors per project		
	Scope 1 (Metric tonnes CO <sub>2</sub> e)	Scope 2 (Metric tonnes CO <sub>2</sub> e)
Group	3,963	7,324
Platreef	237	6,953
Kamoa-Kakula	3,270	218
Kipushi	429	153

The Kamoa-Kakula and Kipushi projects' Scope 2 emissions factors are low as electricity provision for these two projects are from environmentally friendly hydropower. The relative vast distances employees are required to travel by company bus at the Kamoa-Kakula Project contribute to its high Scope 1 emissions factor in comparison with the other two projects. The 2018 data serves as baseline data from which the Projects' greenhouse gas emissions will be monitored.



### 5.4.6 Biodiversity and land use

The development of mining operations has a direct impact on the physical environment, and such activities can impact the natural environment in their vicinities. Ensuring that we understand the biodiversity in the environments in which we operate is an important aspect of the EIA processes that we undertake at our projects. Furthermore, ensuring that our EMP provides for safeguarding the biodiversity in the areas in which we operate is prioritised in our environmental management strategy.



The table below provides an overview of our progress in biodiversity management at the respective projects.

PLATREEF	KIPUSHI	KAMOA-KAKULA
<div>&gt; A Biodiversity Management Plan and database been developed for the entire fenced project area onsite.</div> <div>&gt; Efforts are underway to capture fauna species onsite for relocation to nature reserves.</div>	<div>&gt; Biodiversity management plan submitted as part of the EMP.</div> <div>&gt; Approved EMP (including biodiversity management) awaited after recent submission of the ESIA report to authorities.</div>	<div>&gt; Active indigenous reforestation program in place.</div> <div>&gt; Saplings grown locally to use in the reforestation program.</div> <div>&gt; Continuous drill site inspection and rehabilitation in place.</div> <div>&gt; Emphasis on community agroforestry farming techniques in the livelihoods program.</div>

Legislative and regulatory developments as well as continuous engagement with different stakeholder groups guide the land-use planning at the respective projects, in addition to baseline information provided by the studies currently in place.

No heritage impact has been identified in the Kamoa-Kakula or Kipushi ESIA processes. As reported in 2017 at the Platreef Project, three archaeological sites (Stone Age (2) and Iron Age (1)) have been identified. Of the three sites, two required mitigation which has been completed by two archeologists in accordance with statutory processes. No new heritage sites have been identified at the Platreef Project.



### 5.4.7 Waste management

At an operational level, Ivanhoe Mines focuses on reducing the amount of waste produced at each of our projects. Waste material is recycled where possible, including paper, organic materials and oil. In addition to managing our activities to reduce waste, we ensure compliance with relevant waste legislation to minimize our impact on the natural environment and surrounding communities.

Our waste management approach is informed, at the operational level, by the relevant laws, regulations and licences applicable to the project. At all of our projects, procedures for waste management are also prescribed in the respective EMPs.

Waste inventories are being put in place at all three sites. These describe the source, volume and type of waste generated by each process at the project as well as the disposal method. Domestic waste is disposed of in licenced landfills and hazardous waste such as oil is recycled through specialist service providers or disposed of through facilities with safe-disposal certificates.

At the Platreef and Kamo-a-Kakula Projects, waste rock dumps are managed according to specified dimensions and are vegetated to prevent dust and erosion.



AERIAL VIEW OF KAKULA DEVELOPMENT

## SPECIAL REPORT

### SAFETY PRIORITY: TAILINGS STORAGE FACILITY

Ivanhoe Mines prides itself in its safe, modern and innovative approach to mine design and development. We prioritize the safety of our workers and host communities through careful consideration of the impact of our Projects on our stakeholders.

Our mine design team works closely with international experts while designing tailings storage facilities for each of our three principal Projects, taking factors such as geological, hydrogeological, environmental and social conditions into careful consideration. These designs are subject to stringent internal and external review requirements to ensure that all possible risks have been accounted for and appropriate mitigation measures are planned, implemented and monitored.

Our TSF plans provide for returning 60 – 80% of the tailings underground as backfill. Consequently our tailings footprints will be relatively small compared to other operations. Following the latest upstream TSF design incident at Vale’s Brumadinho iron ore mine in Brazil, the Board has commissioned an independent review of all TSF designs across the Group.

Design overview of our tailings storage facilities

DESIGN CRITERIA	PLATREEF	KAMOA-KAKULA	KIPUSHI
Type	Upstream design (under review) feasible for South African conditions due to low seismic loading conditions and high-nett evaporation	Downstream with engineered earth-filled walls	Downstream with engineered earth-filled walls
Deposition methodology	100 metre wide hybrid paddock deposition	Spigotting, behind the engineered wall	Open-ends, behind the engineered wall
Drainage system	Chimney draining system	Curtain drain system	Curtain drain system (If liner is required, else additional drainage required)
Containment berm	Downstream as additional safety feature	None required	To be considered
Lining	Approved high-density polyethylene liner	High-density polyethylene liner	Liner requirement to be confirmed
Used as mine backfill	Yes, 60% via a pastefill plant and pumped back underground to backfill the completed mine stopes	Yes, 55% via a pastefill plant and pumped back underground to backfill the completed mine stopes	Tailings are not used to backfill but DMS discard is, 23% of the ROM reports to the tailings dam
Approvals	South African Department of Water and Sanitation	DRC Directorate for the Protection of the Mining Environment (DPEM)	DRC Directorate for the Protection of the Mining Environment (DPEM)
External review conducted	> OreWin, MSA and MDM as part of Technical Report filing > IBIS consulting and Chlumsky, Armbrust and Meyer, LLC (USA) as part of the lender due diligence process	OreWin, MSA and MDM as part of Technical Report filing	OreWin, MSA and MDM as part of Technical Report filing <sup>1</sup>
Additional international independent review by Peter Lighthall and John A Wates (Consulting Geotechnical Engineers)	In progress	In progress	In progress

<sup>1</sup> Refer to [www.ivanhoemines.com](http://www.ivanhoemines.com) and [www.sedar.com](http://www.sedar.com) for all technical reports





TEAM MEETING AT PLATREEF

## 5.5 INTELLECTUAL CAPITAL

Ivanhoe Mines defines intellectual capital as knowledge that can be used to produce wealth. This knowledge is encapsulated in the human capital of the Company and carefully considered in our recruitment and retention strategies. The structures supporting employees in their work, such as information management systems are also considered as an important part of our intellectual capital.

Intellectual capital within Ivanhoe Mines is built up through the participation of our employees in training and mentoring initiatives and the collective learning that takes place when projects are implemented successfully, through sharing best practices and developing innovative solutions across our projects. Our intellectual capital gives the Company its competitive advantage while developing our three principal projects.

### Resource development

Ivanhoe Mines prides itself in the discovery and development of three highly unique mineral deposits. Our geological experts come from varied backgrounds with experience in a wide range of environments and deposit styles. This broad base of experience provides a distinct competitive advantage that is used to support

mineral resource development within the Company. This experience base is supplemented by consultants that are considered to be the best in their field, and by significant involvement of academia (individuals and academic institutions) which further enhances the intellectual capital of the Company. This wealth of knowledge is being passed on to local employees at our projects, through skills transfer programs and on-the-job training.



KAMOA-KAKULA  
GEOLOGISTS LOGGING  
CORE SAMPLES

Significant volumes of data are collected using a variety of techniques to provide insights into the geological controls. Employees are driven to understand these controls, and exploration is guided with great success by the insights obtained. Natural systems are very difficult to understand and model and are harder still to predict. Our executive management's willingness to support mineral resource development, and to take the necessary risks, has allowed the Company to realize the wealth inherent in its intellectual capital, through the investment in resource development.

Our newest exploration success in the Western Foreland at Kamoa-Kakula is a testimony to our proprietary exploration model. In a February 2019 research report published by analysts at Bernstein Research, Kamoa-Kakula was described as:

“ The most important and exciting mining project in the world today. ”

### Information management systems

Ivanhoe Mines places a premium on the integrity and security of the information that comprises its intellectual capital. To this end, the Company has procured comprehensive specialist data management systems to enable employees to apply advanced techniques and analytics on a variety of subject areas such as resource modelling, mine planning, health, safety and environmental management and stakeholder management. These systems provide employees with the tools to gain insight into different areas of operation at the Company's principal projects and enables a culture of innovative thinking.



A RIG AT THE WESTERN  
FORELAND EXPLORATION AREA



## 5.6 INFRASTRUCTURE CAPITAL

Developing mining projects in emerging economies poses a unique set of challenges such as ensuring a consistent supply of electricity and access to export ports. Ivanhoe Mines has positioned itself as a leader in public-private partnerships for infrastructure in Africa.



REFURBISHMENT OF  
POWERLINES AT THE  
KIPUSHI PROJECT

### 5.6.1 Bulk power

At the Platreef Project, our management team negotiated partnerships with ESKOM, the public electricity utility in South Africa, as well as with local government and communities to bring a five mega volt amp (MVA) powerline to the mine development site to provide electricity during the construction of the mine. In addition, the team has secured 70 MVA permanent electricity through negotiating a self-build option, through which the Company will build the required powerline infrastructure.

Energy efficient design and planning was applied throughout the DFS to ensure efficient use of resources. The possibility of joining in a third party Independent Power Provider (IPP) 100 MVA solar project in the region was also investigated during the DFS.

Kamoa-Kakula and Kipushi already are using hydropower generated electricity and we are looking at ways to incorporate solar power at all our operations. At Kipushi, a 120kw dual supply line has been installed to remove the risk of power failure.

Ivanhoe Mines is a key partner in an initiative focusing on upgrading work at the Mwadingusha hydropower plant in the DRC. This initiative has shown significant progress with the delivery of major equipment on site. The power station was shut down to replace sections of penstocks that were found to be in an advanced stage of corrosion. The progressive re-commissioning of the turbines, fully refurbished and modernized with state-of-the-art control and instrumentation will start in 2019 and be completed in Q3 2020. The refurbished plant will deliver an output increased by 10% to a capacity of approximately 72 megawatts (MW) of clean hydropower.

The work at Mwadingusha, part of a program to eventually overhaul and boost output from three hydropower plants, is being conducted by engineering firm Stucky of Lausanne, Switzerland, under the direction of Ivanhoe Mines and Zijin, in conjunction with the DRC's state-owned power company, SNEL. Once fully reconditioned, the three plants will have a combined installed capacity of approximately 200 MW of electricity for the national grid, which is expected to be more than sufficient for the Kamoa-Kakula Project.

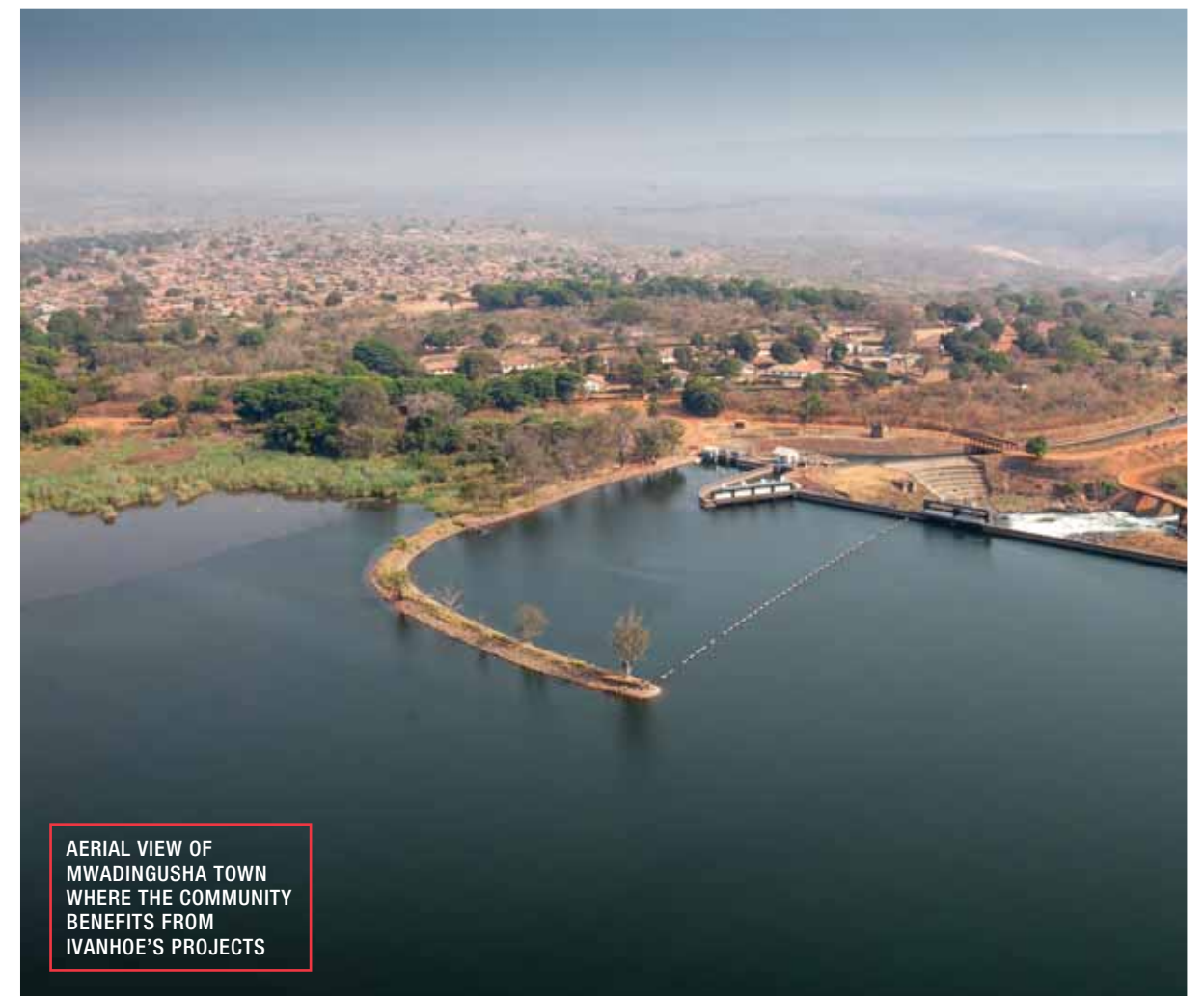
The Kansoko Mine, Kakula Mine and Kamoa camp have been connected to the national hydroelectric power grid since the completion of a 12-kilometre, 120-kilovolt, dual-circuit power line between Kansoko and Kakula in December 2017. The design of permanent, 11-kilovolt reticulation to the vent shafts and mine has started, which includes substations, overhead lines and surface cables.

## SPECIAL REPORT

### BUILDING COMMUNITIES THROUGH COLLABORATIVE PARTNERSHIPS

The main activities in the Ivanhoe Mines, Zijin and SNEL hydropower partnership are centred on the Mwadingusha and Nzilo power stations. As part of the agreement, and in the spirit of cooperative partnership, Ivanhoe agreed to invest in corporate social investment initiatives at these two sites. The initiatives are aimed at improving the living and working conditions of the SNEL employees working with the Ivanhoe teams to refurbish the power stations. The following corporate social investment initiatives were completed as part of the Ivanhoe and SNEL hydropower partnership:

- > Emergency repair of SNEL employee accommodation at Nzilo after severe storm damage
- > Donation of a 60 seater bus for SNEL employees living in Mwadingusha town
- > Repair of 80 km of road from Likasi to Mwadingusha
- > Construction of 5 new houses and refurbishment of 10 old houses in Mwadingusha town for SNEL employees
- > Installation of Mwadingusha town minisubstation (500 kVA - 6.6/0.4 kV) for electricity provision to residents
- > Installation of a potable water station for Mwadingusha town
- > Refurbishment of the Mwadingusha hospital and donation of hospital equipment



AERIAL VIEW OF  
MWADINGUSHA TOWN  
WHERE THE COMMUNITY  
BENEFITS FROM  
IVANHOE'S PROJECTS



### 5.6.2 Access infrastructure

The provision of reliable and safe infrastructure to the mining development areas is essential for efficient development work. Ivanhoe Mines’ operational teams have active partnerships with the relevant authorities in their areas of operation to ensure that employees and contractors can access their workplace easily and safely. In addition, ongoing engagements and collaboration with strategic partners will help enable efficient haulage of minerals when the mines go into production. The following table provides an overview of progress regarding access infrastructure development at the respective sites:



PLATREEF	KIPUSHI	KAMOA-KAKULA
Ongoing engagement with the South African National Roads Agency Limited (SANRAL) to upgrade the national road (N11).	In October 2017, a Memorandum of Understanding (MOU) was signed between Ivanhoe Mines and the Société Nationale des Chemins de Fers du Congo (SNCC) for the reinstatement of the rail spur between Kipushi Mine and the town of Munama connecting into the main rail network. The main rail network and the Lubumbashi-Sakania link is part of the North South Corridor connecting the copper belt to the port of Durban; this corridor is the most prominent rail corridor in sub Saharan Africa. Upon signature of the MOU with SNCC, Ivanhoe has commissioned a feasibility study for the engineering required for the spur. Further investigation of options for transporting zinc concentrate is ongoing.	<p>A network of roads has been developed and maintained connecting Kamoa-Kakula to Kolwezi and the residential camps to the two development sites.</p> <p>Planning and negotiations for a direct road between the Kolwezi airport and Kamoa-Kakula is well underway in partnership with the DRC government and other companies in the area.</p>

# 6. CONCLUSION

Ivanhoe Mines is committed to adhering to international best practice guidelines with regards to taking care of its people, addressing stakeholder interests and minimizing the environmental impact of its exploration, development and operating activities in the areas in which it operates.

We encourage all our stakeholders to share their views on Ivanhoe’s activities related to delivering on our strategic commitment to minimize negative impact and to promote meaningful social and economic growth.





# 7. APPENDICES

## 7.1 Qualified Person's statement

Disclosures of a scientific or technical nature in this Sustainability report have been reviewed and approved by Stephen Torr, who is considered, by virtue of his education, experience and professional association, a Qualified Person under the terms of NI 43-101. Mr Torr is not considered independent under NI 43-101 as he is the Vice President, Project Geology and Evaluation. Mr. Torr has verified the technical data disclosed in this report.

Ivanhoe has prepared a current, independent, NI 43-101-compliant technical report for each of the Platreef Project, the Kipushi Project and the Kamoa-Kakula Project, which are available under the company's SEDAR profile at [www.sedar.com](http://www.sedar.com):

- > The Kamoa-Kakula Integrated Development Plan 2019 dated March 18, 2019, prepared by OreWin Pty Ltd., Amec Foster Wheeler E&C Services Inc. (a division of Wood PLC), SRK Consulting Inc., KGHM Cuprum R&D Centre Ltd., Stantec Consulting International LLC, DRA Global, Golders Associates, and Epoch Resources (Pty) Ltd., covering the company's Kamoa-Kakula Project;
- > The Platreef 2017 Feasibility Study Technical Report dated September 4, 2017, prepared by DRA Global, OreWin Pty. Ltd., Amec Foster Wheeler, Stantec Consulting, Murray & Roberts Cementation, SRK Consulting, Golder Associates and Digby Wells Environmental, covering the company's Platreef Project; and
- > The Kipushi 2019 Resource Update dated March 28, 2019, prepared by OreWin Pty Ltd., MSA Group (Pty) Ltd., SRK Consulting (South Africa) (Pty) Ltd., and MDM (Technical) Africa (Pty) Ltd. covering the Company's Kipushi Project.

These technical reports include relevant information regarding the effective dates and the assumptions, parameters and methods of the mineral resource estimates on the Platreef Project, the Kipushi Project and the Kamoa-Kakula Project cited in this report, as well as information regarding data verification, exploration procedures and other matters relevant to the scientific and technical disclosure contained in this report in respect of the Platreef Project, Kipushi Project and Kamoa-Kakula Project.

## 7.2 Cautionary statement on forward-looking information

Certain statements in this Sustainability Report constitute "forward-looking statements" or "forward-looking information" within the meaning of applicable securities laws. Such statements and information involve known and unknown risks, uncertainties and other factors that may cause the actual results, performance or achievements of the Company, its projects, or industry results, to be materially different from any future results, performance or achievements expressed or implied by such forward-looking statements or information. Such statements can be identified by the use of words such as "may", "would", "could", "will", "intend", "expect", "believe", "plan", "anticipate", "estimate", "scheduled", "forecast", "predict" and other similar terminology, or state that certain actions, events or results "may", "could", "would", "might" or "will" be taken, occur or be achieved. These statements reflect the Company's current expectations regarding future events, performance and results and speak only as of the date of this Sustainability Report.

Such statements include without limitation, the timing and results of: (i) statements that one more station will be developed at a mine-working depth of 950 metres at Shaft 1; (ii) statements regarding Shaft 1 reaching the planned, final depth at 982 metres below surface in early 2020; (iii) statements regarding the timing of Shaft 2 development; (iv) statements regarding the operational and technical capacity of Shaft 1; (v) statements regarding the internal diameter and hoisting capacity of Shaft 2; (vi) statements regarding the Company's plans to develop the Platreef Mine in three phases: an initial annual rate of four million tonnes per annum (Mtpa) to establish an operating platform to support future expansions; followed by a doubling of production to eight Mtpa; and then a third expansion phase to a steady-state 12 Mtpa; (vii) statements regarding the planned underground mining methods of the Platreef Project including long-hole stoping and drift-and-fill mining; (viii) statements regarding supply of treated water from the town of Mookopane's new Masodi treatment plant including that it will supply 5 million litres of treated water a day for 32 years; (ix) statements regarding the development of a single decline on the south side of the Kakula deposit to provide bottom access to Ventilation Shaft 2 enabling this shaft to be constructed by raise boring and the use of this decline as a second means of egress from the mine; (x) statements regarding the timing and completion of a definitive feasibility study at the Kipushi Project in Q3 2019; (xi) statements regarding the progressive re-commissioning of the turbines, fully refurbished and modernized with state-of-the art control and instrumentation at Mwadingusha power station, will start in 2019 and be completed in Q3 2020 with an output increased to a capacity of approximately 72 MW of power; (xii) statements regarding Platreef projecting it to be Africa's lowest cost producer of platinum-group metals; (xiii) statements regarding the construction of a 1,050-metre-level-dam at the Kakula deposit to be commissioned in mid-2019; (xiv) statements regarding having a fully independently assured Sustainability Report in 2020; and (xv) completion of an independent review of TSF designs.

As well, all of the results of the pre-feasibility study for the Kakula copper mine and the updated and expanded Kamoa-Kakula Project preliminary economic assessment, the feasibility study of the Platreef Project and the pre-feasibility study of the Kipushi Project, constitute forward-looking statements or information, and include future estimates of internal rates of return, net present value, future production, estimates of cash cost, proposed mining plans and methods, mine life estimates,

cash flow forecasts, metal recoveries, estimates of capital and operating costs and the size and timing of phased development of the projects. Furthermore, with respect to this specific forward-looking information concerning the development of the Kamoa-Kakula, Platreef and Kipushi Projects, the Company has based its assumptions and analysis on certain factors that are inherently uncertain. Uncertainties include: (i) the adequacy of infrastructure; (ii) geological characteristics; (iii) metallurgical characteristics of the mineralization; (iv) the ability to develop adequate processing capacity; (v) the price of copper, nickel, zinc, platinum, palladium, rhodium and gold; (vi) the availability of equipment and facilities necessary to complete development; (vii) the cost of consumables and mining and processing equipment; (viii) unforeseen technological and engineering problems; (ix) accidents or acts of sabotage or terrorism; (x) currency fluctuations; (xi) changes in regulations; (xii) the compliance by joint venture partners with terms of agreements, (xiii) the availability and productivity of skilled labour; (xiv) the regulation of the mining industry by various governmental agencies; (xv) the ability to raise sufficient capital to develop such projects; and (xvi) political factors.

This Sustainability Report also contains references to estimates of Mineral Resources and Mineral Reserves. The estimation of Mineral Resources is inherently uncertain and involves subjective judgments about many relevant factors. Estimates of Mineral Reserves provide more certainty but still involve similar subjective judgments. Mineral Resources that are not Mineral Reserves do not have demonstrated economic viability. The accuracy of any such estimates is a function of the quantity and quality of available data, and of the assumptions made and judgments used in engineering and geological interpretation (including estimated future production from the Company's projects, the anticipated tonnages and grades that will be mined and the estimated level of recovery that will be realized), which may prove to be unreliable and depend, to a certain extent, upon the analysis of drilling results and statistical inferences that ultimately may prove to be inaccurate. Mineral Resource or Mineral Reserve estimates may have to be re-estimated based on: (i) fluctuations in copper, nickel, zinc, platinum group elements (PGE), gold or other mineral prices; (ii) results of drilling; (iii) metallurgical testing and other studies; (iv) proposed mining operations, including dilution; (v) the evaluation of mine plans subsequent to the date of any estimates and/or changes in mine plans; (vi) the possible failure to receive required permits, approvals and licences; and (vii) changes in law or regulation.

Forward-looking statements and information involve significant risks and uncertainties, should not be read as guarantees of future performance or results and will not necessarily be accurate indicators of whether or not such results will be achieved. A number of factors could cause actual results to differ materially from the results discussed in the forward-looking statements or information, including, but not limited to, the factors discussed below and under "Material Matters", as well as unexpected changes in laws, rules or regulations, or their enforcement by applicable authorities; the failure of parties to contracts with the Company to perform as agreed; social or labour unrest; changes in commodity prices; and the failure of exploration programs or studies to deliver anticipated results or results that would justify and support continued exploration, studies, development or operations.

Although the forward-looking statements contained in this Sustainability Report are based upon what management of the Company believes are reasonable assumptions, the Company cannot assure investors that actual results will be consistent with these forward-looking statements. These forward-looking statements are made as of the date of this Sustainability Report and are expressly qualified in their entirety by this cautionary statement. Subject to applicable securities laws, the Company does not assume any obligation to update or revise the forward-looking statements contained herein to reflect events or circumstances occurring after the date of this Sustainability Report.



7.3 Global Reporting Initiative Standards Index for the Ivanhoe Mines Sustainability Report 2018

General Standard Disclosures

Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
Organizational profile				
102-1	Name of the organization		2.1 Who we are p.10	
102-2	Activities, brands, products, and services	The reporting organization shall report the following information: a. A description of the organization's activities. b. Primary brands, products, and services, including an explanation of any products or services that are banned in certain markets.	2. Our business at a glance p.10	
102-3	Location of headquarters		Appendix 7.11 p.100	
102-4	Location of operations	The reporting organization shall report the following information: a. Number of countries where the organization operates, and the names of countries where it has significant operations and/or that are relevant to the topics covered in the report.	2.2 Our principal projects p.11	
102-5	Ownership and legal form		2.2 Our principal projects p.11	Annual Information Form available on <a href="http://www.ivanhoemines.com">www.ivanhoemines.com</a>
102-6	Markets served	Markets served, including: a. geographic locations where products and services are offered; b. sectors served; c. types of customers and beneficiaries served.	2.2 Our principal projects p.11 4. Our stakeholders p.22	
102-7	Scale of the organization	Scale of the organization, including: a. total number of employees; b. total number of operations; c. net sales (for private sector organizations) or net revenues (for public sector organizations); d. total capitalization (for private sector organizations) broken down in terms of debt and equity; e. quantity of products or services provided.	1.4 Report scope p.1 2.2 Our principal projects p.11	iv. Total capitalisation is disclosed in the 2018 Financial Statements available at <a href="https://www.ivanhoemines.com/investors/financial-statements/consolidated-financial-statements-as-at-december-31-2018/">https://www.ivanhoemines.com/investors/financial-statements/consolidated-financial-statements-as-at-december-31-2018/</a> iii. Net sales not applicable as our principal projects are in development phase; v. quantity of products or services provided not applicable

Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
102-8	Information on employees and other workers	The reporting organization shall report the following information: a. Total number of employees by employment contract (permanent and temporary), by gender. b. Total number of employees by employment contract (permanent and temporary), by region. c. Total number of employees by employment type (full-time and part-time), by gender. d. Whether a significant portion of the organization's activities are performed by workers who are not employees. If applicable, a description of the nature and scale of work performed by workers who are not employees. e. Any significant variations in the numbers reported in Disclosures 102-8-a, 102-8-b, and 102-8-c (such as seasonal variations in the tourism or agricultural industries). f. An explanation of how the data have been compiled, including any assumptions made.	5.2 Human capital p.36	d. Not applicable e. Not applicable f. The data was compiled by the Human Resources departments of the relevant projects using the Company's payroll system as authoritative source of employee information.
102-9	Supply chain	The reporting organization shall report the following information: a. A description of the organization's supply chain, including its main elements as they relate to the organization's activities, primary brands, products, and services.	5.1 Economic capital p.29	The supply chain of the Company's principal projects primarily includes mining consultants, mining construction companies, social and environmental consultants and suppliers of goods and services appropriate to the development phase of a mine.



Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
Organizational profile <i>continued</i>				
102-10	Significant changes to the organization's size, structure, ownership, or supply chain	Significant changes to the organization's size, structure, ownership, or supply chain, including: a. Changes in the location of, or changes in, operations, including facility openings, closings, and expansions; b. Changes in the share capital structure and other capital formation, maintenance, and alteration operations (for private sector organizations); c. Changes in the location of suppliers, the structure of the supply chain, or relationships with suppliers, including selection and termination.	2.3 Progressing our projects p.12	b. On September 19, 2018, Ivanhoe announced the completion of a major strategic equity investment totalling C\$723 million (\$555 million) in Ivanhoe Mines by CITIC Metal Africa, a direct subsidiary of CITIC Metal Co., Ltd. (CITIC Metal), one of China's leading international resources companies. Ivanhoe Mines issued 196,602,037 common shares to CITIC Metal Africa through a private placement at a price of C\$3.68 per share. Zijin exercised its anti-dilution rights, generating additional proceeds for Ivanhoe of C\$78 million (\$60 million). The exercise by Zijin of its anti-dilution rights also was at a price of C\$3.68 per share. c. There were no significant changes in the location of suppliers, the structure of the supply chain or relationships with suppliers during the reporting period.
102-11	Precautionary Principle or approach	Whether and how the organization applies the Precautionary Principle or approach.	5.2.1 Health and safety performance p.36	
102-12	External initiatives	The reporting organization shall report the following information: a. A list of externally-developed economic, environmental and social charters, principles, or other initiatives to which the organization subscribes, or which it endorses.		> We are a member of the National Business Initiative (NBI) South Africa > Annual CDP water disclosure
102-13	Membership of associations	The reporting organization shall report the following information: a. A list of the main memberships of industry or other associations, and national or international advocacy organizations.		> Minerals Council of South Africa > The South African Institute of Mining and Metallurgy

Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
Strategy				
102-14	Statement from senior decision-maker	The reporting organization shall report the following information: a. A statement from the most senior decision- maker of the organization (such as CEO, chair, or equivalent senior position) about the relevance of sustainability to the organization and its strategy for addressing sustainability.	1.5 Message from our Co-chairmen p.2 1.6 Message from our President and Chief Executive Officer p.6 1.7 Message from the Chair of the Sustainability Committee p.8	
Ethics and integrity				
102-16	Values, principles, standards, and norms of behavior	The reporting organization shall report the following information: a. A description of the organization's values, principles, standards, and norms of behaviour.	2.1 Who we are p.10 2.4 Governance and management approach p.18	
Governance				
102-18	Governance structure	The reporting organization shall report the following information: a. Governance structure of the organization, including committees of the highest governance body. b. Committees responsible for decision-making on economic, environmental, and social topics.	2.4 Governance and management approach p.18	
Stakeholder engagement				
102-40	List of stakeholder groups	The reporting organization shall report the following information: a. A list of stakeholder groups engaged by the organization.	4. Our stakeholders p.22	
102-41	Collective bargaining agreements	The reporting organization shall report the following information: a. Percentage of total employees covered by collective bargaining agreements.		100%
102-42	Identifying and selecting stakeholders	The reporting organization shall report the following information: a. The basis for identifying and selecting stakeholders with whom to engage.	4. Our stakeholders p.22	
102-43	Approach to stakeholder engagement	The reporting organization shall report the following information: a. The organization's approach to stakeholder engagement, including frequency of engagement by type and by stakeholder group, and an indication of whether any of the engagement was undertaken specifically as part of the report preparation process.	4.2 Engagement p.24	



Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
Stakeholder engagement <i>continued</i>				
102-44	Key topics and concerns raised	The reporting organization shall report the following information: a. Key topics and concerns that have been raised through stakeholder engagement, including: i. how the organization has responded to those key topics and concerns, including through its reporting; ii. the stakeholder groups that raised each of the key topics and concerns.	3. Our most material matters p. 20 4.2 Engagement p.24	
Reporting practice				
102-45	Entities included in the consolidated financial statements	The reporting organization shall report the following information: a. A list of all entities included in the organization's consolidated financial statements or equivalent documents. b. Whether any entity included in the organization's consolidated financial statements or equivalent documents is not covered by the report.	1. Our approach to sustainability and reporting p.1	
102-46	Defining report content and topic Boundaries	The reporting organization shall report the following information: a. An explanation of the process for defining the report content and the topic Boundaries. b. An explanation of how the organization has implemented the Reporting Principles for defining report content.	1. Our approach to sustainability and reporting p.1	
102-47	List of material topics	The reporting organization shall report the following information: a. A list of the material topics identified in the process for defining report content.	3. Our most material matters p.20	
102-48	Restatements of information	The reporting organization shall report the following information: a. The effect of any restatements of information given in previous reports, and the reasons for such restatements.		Information from 2017 was restated to provide an overview of trends.
102-49	Changes in reporting	The reporting organization shall report the following information: a. Significant changes from previous reporting periods in the list of material topics and topic Boundaries.		None.
102-50	Reporting period	The reporting organization shall report the following information: a. Reporting period for the information provided.	1.1 About this report p.1	
102-51	Date of most recent report	The reporting organization shall report the following information: a. If applicable, the date of the most recent previous report.		January, 1 to December, 31 2017

Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
Reporting practice <i>continued</i>				
102-52	Reporting cycle	The reporting organization shall report the following information: a. Reporting cycle.	1. Our approach to sustainability and reporting p.1	
102-53	Contact point for questions regarding the report	The reporting organization shall report the following information: a. The contact point for questions regarding the report or its contents.	Appendix 7.11 p.100	
102-54	Claims of reporting in accordance with the GRI Standards	The claim made by the organization, if it has prepared a report in accordance with the GRI Standards, either: i. 'This report has been prepared in accordance with the GRI Standards: Core option'; ii. 'This report has been prepared in accordance with the GRI Standards: Comprehensive option'.	1.1 About this report p.1	
102-55	GRI content index	The reporting organization shall report the following information: a. The GRI content index, which specifies each of the GRI Standards used and lists all disclosures included in the report. b. For each disclosure, the content index shall include: i. the number of the disclosure (for disclosures covered by the GRI Standards); iii. the page number(s) or URL(s) where the information can be found, either within the report or in other published materials; iii. if applicable, and where permitted, the reason(s) for omission when a required disclosure cannot be made.	Appendix 7.3 p.77	
102-54	Claims of reporting in accordance with the GRI Standards	The claim made by the organization, if it has prepared a report in accordance with the GRI Standards, either: i. 'This report has been prepared in accordance with the GRI Standards: Core option'; ii. 'This report has been prepared in accordance with the GRI Standards: Comprehensive option'.	1.1 About this report p.1	



Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
Reporting practice <i>continued</i>				
102-55	GRI content index	The reporting organization shall report the following information: a. The GRI content index, which specifies each of the GRI Standards used and lists all disclosures included in the report. b. For each disclosure, the content index shall include: i. the number of the disclosure (for disclosures covered by the GRI Standards); iii. the page number(s) or URL(s) where the information can be found, either within the report or in other published materials; iii. if applicable, and where permitted, the reason(s) for omission when a required disclosure cannot be made.	Appendix 7.3 p.77	
102-56	External assurance	The reporting organization shall report the following information: a. A description of the organization's policy and current practice with regard to seeking external assurance for the report. b. If the report has been externally assured: i. A reference to the external assurance report, statements, or opinions. If not included in the assurance report accompanying the sustainability report, a description of what has and what has not been assured and on what basis, including the assurance standards used, the level of assurance obtained, and any limitations of the assurance process; ii. The relationship between the organization and the assurance provider; iii. Whether and how the highest governance body or senior executives are involved in seeking external assurance for the organization's sustainability report.	1.1 About this report p.1	

Management approach and material topics

Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
The Company must develop significant infrastructure (power, rail and water availability) at its projects in order to commence development and mining operations				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary	For each material topic, the reporting organization shall report the following information: a. An explanation of why the topic is material. b. The Boundary for the material topic, which includes a description of: i. where the impacts occur; ii. the organization's involvement with the impacts. For example, whether the organization has caused or contributed to the impacts, or is directly linked to the impacts through its business relationships. c. Any specific limitation regarding the topic Boundary.	5.6 Infrastructure capital p.70	The location of the Company's principal projects in countries with emerging economies requires additional investment to support local infrastructure development.
GRI 103: Management Approach	103-2 The management approach and its components	For each material topic, the reporting organization shall report the following information: a. An explanation of how the organization manages the topic. b. A statement of the purpose of the management approach. c. A description of the following, if the management approach includes that component: i. Policies ii. Commitments iii. Goals and targets iv. Responsibilities v. Resources vi. Grievance mechanisms vii. Specific actions, such as processes, projects, programs and initiatives	5.6 Infrastructure capital p.70 c. vi 4. Our Stakeholders	
	103-3 Evaluation of the management approach	For each material topic, the reporting organization shall report the following information: a. An explanation of how the organization evaluates the management approach, including: i. the mechanisms for evaluating the effectiveness of the management approach; ii. the results of the evaluation of the management approach; iii. any related adjustments to the management approach.	5.6 Infrastructure capital p.70	



Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
The Company must develop significant infrastructure (power, rail and water availability) at its projects in order to commence development and mining operations <i>continued</i>				
GRI 203: Indirect economic impacts	203-1 Infrastructure investments and services supported	The reporting organization shall report the following information: a. Extent of development of significant infrastructure investments and services supported. b. Current or expected impacts on communities and local economies, including positive and negative impacts where relevant. c. Whether these investments and services are commercial, in-kind, or pro bono engagements.	5.6 Infrastructure capital p.70	
	203-2 Significant indirect economic impacts	The reporting organization shall report the following information: a. Examples of significant identified indirect economic impacts of the organization, including positive and negative impacts. b. Significance of the indirect economic impacts in the context of external benchmarks and stakeholder priorities, such as national and international standards, protocols, and policy agendas.	5.1 Economic capital p.29	
GRI 303: Water	303-1 Water withdrawal by source	The reporting organization shall report the following information: a. Total volume of water withdrawn, with a breakdown by the following sources: i. Surface water, including water from wetlands, rivers, lakes, and oceans; ii. Ground water; iii. Rainwater collected directly and stored by the organization; iv. Waste water from another organization; v. Municipal water supplies or other public or private water utilities. b. Standards, methodologies, and assumptions used.	5.4.4 Water stewardship p.62	
	303-3 Water recycled and reused	The reporting organization shall report the following information: a. Total volume of water recycled and reused by the organization. b. Total volume of water recycled and reused as a percentage of the total water withdrawal specified in Disclosure 303-1. c. Standards, methodologies, and assumptions used.	5.4.4 Water stewardship p.62	

Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
Social expectations of our local stakeholders due to projects being situated in emerging economies				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary	For each material topic, the reporting organization shall report the following information: a. An explanation of why the topic is material. b. The Boundary for the material topic, which includes a description of: i. where the impacts occur; ii. the organization's involvement with the impacts. For example, whether the organization has caused or contributed to the impacts, or is directly linked to the impacts through its business relationships. c. Any specific limitation regarding the topic Boundary.	4. Our stakeholders p.22 5.3 Social and relational capital p.46 5.4.2 Compliance and continuous monitoring p.59	
	103-2 The management approach and its components	For each material topic, the reporting organization shall report the following information: a. An explanation of how the organization manages the topic. b. A statement of the purpose of the management approach. c. A description of the following, if the management approach includes that component: i. Policies ii. Commitments iii. Goals and targets iv. Responsibilities v. Resources vi. Grievance mechanisms vii. Specific actions, such as processes, projects, programs and initiatives	4. Our stakeholders p.22 5.2 Social and relational capital p.36 5.4.2 Compliance and continuous monitoring p.59	
	103-3 Evaluation of the management approach	For each material topic, the reporting organization shall report the following information: a. An explanation of how the organization evaluates the management approach, including: i. the mechanisms for evaluating the effectiveness of the management approach; ii. the results of the evaluation of the management approach; iii. any related adjustments to the management approach.	4. Our stakeholders p.22 5.3 Social and relational capital p.46 5.4.2 Compliance and continuous monitoring p.59	



Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
Social expectations of our local stakeholders due to projects being situated in emerging economies <i>continued</i>				
GRI 413: Local communities	413-1 Operations with local community engagement, impact assessments, and development programs	The reporting organization shall report the following information: a. Percentage of operations with implemented local community engagement, impact assessments, and/or development programs, including the use of: i. social impact assessments, including gender impact assessments, based on participatory processes; ii. environmental impact assessments and ongoing monitoring; iii. public disclosure of results of environmental and social impact assessments; iv. local community development programs based on local communities' needs; v. stakeholder engagement plans based on stakeholder mapping; vi. broad based local community consultation committees and processes that include vulnerable groups; vii. works councils, occupational health and safety committees and other worker representation bodies to deal with impacts; viii. formal local community grievance processes.	4. Our stakeholders p.22	
			5.3 Social and relational capital p.46	
			5.4.2 Compliance and continuous monitoring p.59	
GRI 203: Indirect economic impacts	203-1 Infrastructure investments and services supported	The reporting organization shall report the following information: a. Extent of development of significant infrastructure investments and services supported. b. Current or expected impacts on communities and local economies, including positive and negative impacts where relevant. c. Whether these investments and services are commercial, in-kind, or pro bono engagements.	5.1 Economic capital p.29	
			5.3 Social and relational capital p.46	
			5.6 Infrastructure capital p.70	
GRI 203: Indirect economic impacts	203-2 Significant indirect economic impacts	The reporting organization shall report the following information: a. Examples of significant identified indirect economic impacts of the organization, including positive and negative impacts. b. Significance of the indirect economic impacts in the context of external benchmarks and stakeholder priorities, such as national and international standards, protocols, and policy agendas.	5.5 Intellectual capital p.68	
			5.1 Economic capital p.29	
			5.3 Social and relational capital p.46	

Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
Social expectations of our local stakeholders due to projects being situated in emerging economies <i>continued</i>				
GRI Guidelines: Mining and Metals Sector Supplement	MM4: Number of strikes and lock-outs exceeding one week's duration, by country			None
	MM9: Sites where resettlements took place, the number of households resettled in each, and how their livelihoods were affected in the process		5.3.3 Relocation and livelihood restoration program p.52	
Recruiting and retaining qualified staff to work on Projects situated in remote areas and instituting training programmes to train local staff to international standards				
GRI 103: Management Approach	103-1 Explanation of the material topic and its Boundary	For each material topic, the reporting organization shall report the following information: a. An explanation of why the topic is material. b. The Boundary for the material topic, which includes a description of: i. where the impacts occur; ii. the organization's involvement with the impacts. For example, whether the organization has caused or contributed to the impacts, or is directly linked to the impacts through its business relationships. c. Any specific limitation regarding the topic Boundary.	5.2 Human capital p.36 5.5 Intellectual capital p.68	



Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Further explanation where relevant and/or reason for omission
Recruiting and retaining qualified staff to work on Projects situated in remote areas and instituting training programmes to train local staff to international standards <i>continued</i>				
	103-2 The management approach and its components	For each material topic, the reporting organization shall report the following information: a. An explanation of how the organization manages the topic. b. A statement of the purpose of the management approach. c. A description of the following, if the management approach includes that component: i. Policies ii. Commitments iii. Goals and targets iv. Responsibilities v. Resources vi. Grievance mechanisms vii. Specific actions, such as processes, projects, programs and initiatives	5.2 Human capital p.36 5.5 Intellectual capital p.68	
GRI 103: Management Approach	103-3 Evaluation of the management approach	For each material topic, the reporting organization shall report the following information: a. An explanation of how the organization evaluates the management approach, including: i. the mechanisms for evaluating the effectiveness of the management approach; ii. the results of the evaluation of the management approach; iii. any related adjustments to the management approach.	5.2 Human capital p.36	
GRI 103: Management Approach	404-2 Programs for upgrading employee skills and transition assistance programs	The reporting organization shall report the following information: a. Type and scope of programs implemented and assistance provided to upgrade employee skills. b. Transition assistance programs provided to facilitate continued employability and the management of career endings resulting from retirement or termination of employment.	5.2.2 Human resource development p.38 5.5 Intellectual capital p.68	
	404-3 Percentage of employees receiving regular performance and career development reviews	The reporting organization shall report the following information: a. Percentage of total employees by gender and by employee category who received a regular performance and career development review during the reporting period.	5.2.2 Human resource development p.38 5.5 Intellectual capital p.68	

Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Additional Comments
The company must ensure responsible stewardship of its natural resources				
GRI 303: Water	103-1 Explanation of the material topic and its Boundary	For each material topic, the reporting organization shall report the following information: a. An explanation of why the topic is material. b. The Boundary for the material topic, which includes a description of: i. where the impacts occur; ii. the organization's involvement with the impacts. For example, whether the organization has caused or contributed to the impacts, or is directly linked to the impacts through its business relationships. c. Any specific limitation regarding the topic Boundary.	5.4 Natural Capital	
	103-2 The management approach and its components	For each material topic, the reporting organization shall report the following information: a. An explanation of how the organization manages the topic. b. A statement of the purpose of the management approach. c. A description of the following, if the management approach includes that component: i. Policies ii. Commitments iii. Goals and targets iv. Responsibilities v. Resources vi. Grievance mechanisms vii. Specific actions, such as processes, projects, programs and initiatives	5.4 Natural Capital 4. Our Stakeholders	
	103-3 Evaluation of the management approach	For each material topic, the reporting organization shall report the following information: a. An explanation of how the organization evaluates the management approach, including: i. the mechanisms for evaluating the effectiveness of the management approach; ii. the results of the evaluation of the management approach; iii. any related adjustments to the management approach.	5.4 Natural Capital	
	303-1 Water withdrawal by source	The reporting organization shall report the following information: a. Total volume of water withdrawn with a breakdown by the following sources: i. Surface water, including water from wetlands, rivers, lakes, and oceans; ii. Ground water; iii. Rainwater collected directly and stored by the organization; iv. Waste water from another organization; v. Municipal water supplies or other public or private water utilities. b. Standards, methodologies, and assumptions used.	5.4 Natural Capital p.62 – 63	



Material topics				
General Standard Disclosure	Disclosure description	Disclosure detail	Reference	Additional Comments
The company must ensure responsible stewardship of its natural resources <i>continued</i>				
	<b>303-2 Water sources significantly affected by withdrawal of water</b>	The reporting organization shall report the following information: a. Total number of water sources significantly affected by withdrawal by type: i. Size of the water source; ii. Whether the source is designated as a nationally or internationally protected area; iii. Biodiversity value (such as species diversity and endemism, and total number of protected species); iv. Value or importance of the water source to local communities and indigenous peoples. b. Standards, methodologies, and assumptions used.	5.4 Natural Capital p.62 – 63	
	<b>303-3 Water recycled and reused</b>	The reporting organization shall report the following information: a. Total volume of water recycled and reused by the organization. b. Total volume of water recycled and reused as a percentage of the total water withdrawal as specified in Disclosure 303-1. c. Standards, methodologies, and assumptions used.	5.4 Natural Capital p.62 – 63	

### 7.4 Local procurement reporting mechanism alignment for the Ivanhoe Mines Sustainability Report 2018

LPRM disclosure standard number	Disclosure description	Disclosure detail	Page reference	Further explanation
LPRM 100	Context	Description of project and area of operation	2.2 Our principal projects p.11	
LPRM 200	Procurement system	Disclosure 201: Policy on local suppliers	5.1 Economic capital p.29	
		Disclosure 202: Accountability on local suppliers	5.1 Economic capital p.29	
LPRM 300	Local procurement spending	Disclosure 301: Categories of local suppliers. Defining local	5.1 Economic capital p.29	
		Disclosure 302: Breakdown of procurement spend	5.1 Economic capital p.29	
LPRM 400	Local procurement due diligence	Disclosure 401: Local supplier grievances	5.1 Economic capital p.29	
		Disclosure 402: Anti-corruption policy	2.4 Governance and management approach p.18	
		Disclosure 403: Training and guidance for suppliers	5.1 Economic capital p.29	
LPRM 500	Methods to incentivize local procurement	Disclosure 501: Commitments (targets)	5.1 Economic capital p.29 App 7.7 South African Mining Charter Performance p.95	
		Disclosure 502: Preference in scoring of bids	5.1 Economic capital p.29	
LPRM 500	Methods to incentivize local procurement	Disclosure 503: Other methods to incentivize local purchasing	5.1 Economic capital p.29	
		Disclosure 504: Supporting local suppliers to understand the bidding process	5.1 Economic capital p.29	
		Disclosure 505: Special payment procedures for local suppliers	5.1 Economic capital p.29	
LPRM 600	External obligations and commitments	Disclosure 601: Compliance with local regulations	App 7.7 South African Mining Charter Performance p.95	



7.5 ICMM alignment

10 Principles of Sustainable Development

Our sustainable development initiatives align with the ICMM Sustainable Development Framework and the ten principles of the ICMM. The table below references where further detail on how we implement the principles can be found in this report.

ICMM Sustainable Development Principles	Section
1. Implement and maintain ethical business practice and sound systems of corporate governance.	2.4 Governance and management p.18
2. Integrate sustainable development considerations within the corporate decision-making process.	3. Our most material matters p.20 1.5 Message from our Co-Chairmen p.2 1.6 Message from our CEO p.8
3. Uphold fundamental human rights and respect cultures, customs and values in dealings with employees and others who are affected by our activities.	Appendix 7.6 United Nations Global Compact p.77 2.4 Governance and management p.18 5.2 Human capital p.36 5.3 Social and relational capital p.46
4. Implement risk management strategies based on valid data and sound science.	2.4 Governance and management approach p.18 3. Our most material matters p.20
5. Seek continual improvement of our health and safety performance.	5.2.1 Health and safety performance p.36
6. Seek continual improvement of our environmental performance.	5.4 Natural capital p.58
7. Contribute to conservation of biodiversity and integrated approaches to land-use planning.	5.4 Natural capital p.58 5.3 Social and relational capital p.46
8. Facilitate and encourage responsible product design, use, re-use, recycling and disposal of our products.	5.4 Natural capital p.58
9. Contribute to the social, economic and institutional development of the communities in which we operate.	5.2 Human capital p.36 5.3 Social and relational capital p.46
10. Implement effective and transparent engagement, communication and independently verified reporting arrangements with our stakeholders.	4. Our stakeholders p.22

7.6 The United Nations Global Compact (UNGC)

Ivanhoe Mines is committed to uphold the ten principles of the UNGC. The table below references where further detail is provided on how we implement these principles.

United Nations Global Compact		Section
Human Rights		
Principle 1	Businesses should support and respect the protection of internationally proclaimed human rights.	2.4 Governance and management p.18 5.3 Social and relational capital p.46
Principle 2	Businesses should make sure that they are not complicit in human rights abuses.	2.4 Governance and management p.18
Labour		
Principle 3	Businesses should uphold the freedom of association of the effective recognition of the right to collective bargaining.	5.2 Human capital p.36
Principle 4	Businesses should uphold the elimination of all forms of forced and compulsory labour.	2.4 Governance and management p.18
Principle 5	Businesses should uphold the effective abolition of child labour.	2.4 Governance and management p.18
Principle 6	Businesses should uphold the elimination of discrimination in respect of employment and occupation.	2.4 Governance and management p.18 5.2 Human capital p.36
Environment		
Principle 7	Businesses should support a precautionary approach to environmental challenges.	5.4 Natural capital p.58
Principle 8	Businesses should undertake initiatives to promote greater environmental responsibility.	5.4 Natural capital p.58
Principle 9	Businesses should encourage the development and diffusion of environmentally friendly technologies.	5.4 Natural capital p.58 5.6 Infrastructure capital p.70
Anti-corruption		
Principle 10	Businesses should work against corruption in all its forms, including extortion and bribery.	2.4 Governance and management p.18



Platreef Project – Mining Charter 2016 performance and 2017 progress								
Element	Description	Measure		Target	2017	Progress 2018	Weighting	Achieved Score
Reporting	Has the company complied with reporting requirements	Documentary proof of receipt from Department of Mineral Resources		Annual	Yes	Yes	No	Yes
Ownership	Minimum target for effective HDSA ownership	Meaningful economic participation					No	Yes
		Full shareholder rights		26%	26%	26%	No	Yes
Housing and living conditions	Conversion and upgrading of hostels to attain the occupancy rate of one person per room	Percentage reduction of occupancy rate towards 2014 target		Occupancy rate of one person per room		Occupancy of one person per room	Yes	NA
	Conversion and upgrading of hostels into family units	Percentage conversion of hostels into family units		Family units established		Family units established	Yes	NA
Procurement and enterprise development	Procurement spent from BEE entities	Capital goods		40%	99,93%	100,00%	5%	Yes
		Services		70%	47%	50%	5%	Yes
		Consumables		50%	91,57%	98,00%	2%	Yes
	Multinational suppliers' contribution to social fund	Annual spend on procurement from multinational suppliers		0.5% of procurement value	0%	0%	3%	No
Employment equity	Diversification of the workforce to reflect the country's demographics to attain competitiveness	Top management (Board)		40%	64%	100%	3%	Yes
		Senior management (Exco)		40%	50%	57%	4%	Yes
		Middle management		40%	54%	61%	3%	Yes
		Junior management		40%	97%	94%	1%	Yes
		Core skills		40%	100%	100%	5%	Yes
Human resources development	Development of requisite skills, including support for South African-based R&D initiatives intended to develop solutions in exploration, mining, processing, technology efficiency (energy and water use in mining) beneficiation as well as environmental conservation	HRD spend as percentage of total annual payroll (excluding mandatory skills development levy)		5%	7,10%	5,05%	25%	Yes
Mine community development	Conduct ethnographic community consultative and collaborative processes to delineate community needs analysis	Implement approved community projects		1%	47732,50%	4225911,00%	15%	Yes
Sustainable development and growth	Improvement of the industry's environmental management	Implementation of approved EMP's		100%	95%	94%	12%	See Natural Capital p.58
	Improvement of the industry's mine health and safety performance	Implementation of the tripartite action plan on health and safety		100%	In progress	In progress	12%	See Human Capital p.36
	Utilisation of South African-based research facilities for analysis of samples across the mining value	Percentage of samples in South African facilities		100%	100%	100%	5%	
Beneficiation	Contribution of mining company towards beneficiation (this measure effective from 2012)	Additional volume contributory to local value addition beyond the baseline		Section 26 of the MPRDA (percentage above baseline)			No	N/A
Total score							100%	



7.8 B-BBEE Scorecard – Platreef Project



Broad Based Black Economic Empowerment Verification Certificate

Issued to

Ivanplats (Pty) Ltd

Level 2 Contributor

Measured Entity			
Company Name	Ivanplats (Pty) Ltd		
Registration Number	1988 /000334/ 07		
VAT Number	4090202880		
Address	7 2nd Street Trimpark Mokopane 0601		
B-BBEE Status			
B-BBEE Status Level	Level 2		
Element Points Obtained	EO: 20.47 points; MC: 13.77 points; SD: 18.17 points; ESD: 38.26 points; SED: 5 points		
Discounting Principle Applied	No	Measurement Period Year End	31/12/2018
Empowering Supplier	Yes		
<i>*Black Owned: &gt;=51% and full points for Net Value</i>		<i>*Black Women Owned: &gt;=30% and full points for Net Value</i>	
Black Voting Rights	26.00%	Black Women Voting Rights	1.27%
Black Economic Interest	26.00%	Black Women Economic Interest	1.27%
51% Black Owned *	No	30% Black Women Owned *	No
Black Designated Groups	23.08%	Normal Flow Through Principle Applied	
Issue Date	05/06/2019		
Expiry Date	04/06/2020		
Certificate Number	ELC8611RGENBB		
Version	Final		
Applicable Scorecard	Amended Codes - Generic		
Applicable BBEE Codes	Amended Generic Codes Gazetted on 11 October 2013		

BEE Procurement Recognition Levels		
Level	Qualification	%
1	≥ 100 Points	135%
2	≥ 95 but < 100	125%
3	≥ 90 but < 95	110%
4	≥ 80 but < 90	100%
5	≥ 75 but < 80	80%
6	≥ 70 but < 75	60%
7	≥ 55 but < 70	50%
8	≥ 40 but < 55	10%
Non Compliant	<40	0%
Enquiries		
Tel:		
086 111 4003		
Fax:		



This certificate supersedes any previous certificates issued to the Measured entity. This certificate is the result of an independent and impartial verification of the BBBEE status of the measured entity measured against the Codes of Good Practice on Broad Based Black Economic Empowerment. This certificate has been issued in accordance with the EmpowerLogic Verification Certificate Policy. EmpowerLogic uses the Law Trust advanced electronic signature system (AeSign) which is compliant with the Electronic Communications and Transactions Act no 25 of 2002. The validity of the certificate is ensured as long as the digital signature details corresponds with the Technical Signatory's details as displayed on the certificate.

7.9 Abbreviations and Glossary

ABBREVIATION	DEFINITION	ABBREVIATION	DEFINITION
3PE+Au	Platinum, palladium, rhodium and gold	GRI	Global Reporting Initiative
AET	Adult Education Training	GST	Garantie Sociale des Travailleurs
AIDS	Acquired Immune Deficiency Syndrome	HAART	Highly Active Antiretroviral Therapy
AIF	Annual Information Form	HRD	Human Resource Development
ASLIC	Alternative Syndicale pour L'industrie au Congo	HDSA	Historically disadvantaged South African
ATAC	Alliance des Travailleurs Avertis et Consciencieux	HIV	Human immunodeficiency virus
B-BBEE	Broad-based black economic empowerment	HSE	Health, Safety and Environment
CDP	Carbon Disclosure Project	ICMM	International Council on Mining and Metals
CDP	Career Development Program	IDP	Individual Development Plan
CGTC	Centrale Generale des Travailleurs du Congo	IFC	International Finance Corporation
CIM	Canadian Institute of Mining	IIRC	International Integrated Reporting Council
CITIC	CITIC Metal Group	IMLAs	Initial Mandated Lead Arrangers
CMG	Citic Metal Group	INPP	DRC National Training Institution
CMP	Conservation Management Plan	IPP	Independent Power Provider
COGSTA	Co-Operative Governance, Human Settlements and Traditional Affairs	IRR	Internal rate of return
CSC	Confederation Syndicale du Congo	JICA	Japan International Cooperation Agency
CSI	Corporate social investment	KPA	Key Performance Area
CSR	Corporate social responsibility	KPI	Key Performance Indicator
CTP	Conscience des Travailleurs et Paysans	LB	Pound
DAFF	Department of Agriculture, Fisheries and Forestry	LED	Local Economic Development
DMR	Department of Mineral Resources	LHD	Load haul & dump machine
DRC	Democratic Republic of Congo	LPRM	Local Procurement Reporting Mechanism
DRDLR	Department of Rural Development and Land Reform	LTI	Lost time injury
DTI	Department of Trade and Industry	LTIF	Lost time injury free
EIA	Environmental Impact Assessments	LTIFR	Lost time injury frequency rate
EMP	Environmental Management Plan	MD&A	Management's discussion and analysis
ESD	Enterprise and Supplier Development	MDG	Millennium development goals
ESIA	Environmental and Social Impact Assessment	MLM	Mogalakwena Local Municipality
ESKOM	South African electricity provider	MPRDA	Mineral and Petroleum Resources Development Act
EVG&D	Economic value generated and distributed	MSc	Master of Science
FORCES	Force Ouvriere pour la Renaissance de la l'Ethique Syndicate	MTI	Medical treatment injury
FS	Feasibility study	Mtpa	Million-tonne-per annum
GPS	Global positioning system	MVA	Mega Volt Ampere
		NBI	National Business Initiative
		NGO	Non-governmental organizations
		NPV	Net present value
		NUM	National Union of Mineworkers



Glossary

ABBREVIATION	DEFINITION
OHADA	Organization for the Harmonization of Corporate Law in Africa
PEA	Preliminary Economic Assessment
PFS	Pre-feasibility Study
PGE	Platinum group elements
PGI	Platinum Guild International
PGeo	Professional Geoscience
PGM	Platinum group metals
PhD	Doctor of Philosophy
PPE	Personal protective equipment
RWG	Relocation Working Group
RWI	Restricted working injury
SAHRA	South African Heritage Resource Agency
SANRAL	South African National Road Agency Limited
SEDAR	System for Electronic Document Analysis and Retrieval
SLAM	Stop Look Assess and Manage
SLO	Social Licence to Operate
SLP	Social and Labour Plan
SMME	Small, micro and medium enterprise
SNCC	Société Nationale des Chemins de Fer du Congo
SNEL	La Société Nationale d'Electricite
SOE	State Owned Enterprise
SPV	Special Purpose Vehicle
TAC	Trust advisory council
TB	Tuberculosis
TRIFR	Total recordable injury frequency rate
TSF	Tailings storage facility
TSX	Toronto Stock Exchange
TUMEC	Travailleurs Unis des Mines
UL-LU	University of Limpopo and Laurentian University Partnership
UNDHR	United Nation Declaration of Human Rights
UNGC	United Nations Global Compact
UNISA	University of South Africa
USD	US Dollars
UNWHO	United Nations World Health Organization
VAT	Value Added Tax
WWTP	Waste Water Treatment Plant
YTD	Year to date
ZAR	South African Rand

The Company	Ivanhoe Mines Ltd.
Maru a Mokopane	The Clouds of Mokopane (in Sepedi)
The Trust	Bonego Communities Trust

7.10 Stakeholder feedback form

We encourage all stakeholders to share their views on Ivanhoe Mines’ performance related to delivering on its strategic commitment to create shared value for the Company and its stakeholders and to minimize the impact the Company’s activities has on the environment.

Your opinion matters. Please share your views with us.

Which stakeholder group do you belong to? (You may tick more than one)					
Employee		Shareholder		Investor	
Analyst		Supplier		Community	
Other					
Does the report address issues of greatest interest to you?					
Comprehensively		Partially		Not at all	
Please identify any additional matters that you think should be reported on:					
What was your overall impression of the report in terms of:					
	Excellent	Good	Fair	Poor	
Content and scope					
Design and layout					
Do you have any additional comments on the report – or on Ivanhoe Mines’ performance in general?					
Your name, e-mail address and other contact details:					

Contact details:

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## 7.11 Contact details and other information

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OTCQX Best Market: IVPF

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PricewaterhouseCoopers Inc.

### Directors

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William Hayden  
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BACK COVER PICTURE:  
AYAKSHA MBONGONYA, PLATREEF'S  
GEOTECHNICAL ENGINEER AT  
SHAFT 1'S 450-METRE-LEVEL STATION



