



**MINERA ALUMBRERA  
YMAU - UTE**

A GLENCORE MANAGED COMPANY

# Sustainability Report 2017



**We have  
managed  
a sustainable  
business with  
a focus on  
the future**

#### Concerns and comments

This has been designed to report our progress to you and will appreciate your feedback in line with our continuous improvement process.

Please e-mail your input to:  
[informe2017@glencore.com.ar](mailto:informe2017@glencore.com.ar)  
[www.alumbrera.com.ar](http://www.alumbrera.com.ar)

Minera Alumbrera social networking



@mineraalumbrera



[www.infoalumbrera.com.ar](http://www.infoalumbrera.com.ar)



[www.linkedin.com/company/minera-alumbrera](http://www.linkedin.com/company/minera-alumbrera)



[www.youtube.com/infoalumbrera](http://www.youtube.com/infoalumbrera)



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## Chapter 1

# Sustainability Management

We are committed to foster sustainable mining management practices based on our responsible mining vision.

## A word from our General Manager

We seek to make a positive contribution to society with the value of our products and by sharing the benefits emerging from our joint day-to-day work.



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## Key Sustainability Data

Social, economic and environmental performance for the past three years.



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## About Minera Alumbra

Bajo de la Alumbra is a copper, gold and molybdenum surface mine situated in Northwestern Catamarca, Argentina.



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## Our commitment to sustainable development

We prioritise sustainability integration into our business and we focus on operational efficiency, while protecting people and their environment.



**Read more**  
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## Governance and Compliance

We seek to maintain a culture of ethical behaviour and compliance throughout our site that exceeds the legal and regulatory requirements.



**Read more**  
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# A word from our General Manager



I am highly pleased to present Minera Alumbraera's 14<sup>th</sup> Sustainability Report, listing the actions taken during 2017 as part of our sustainable development accountability."

We seek to make a positive contribution to society with the value of our products and by sharing the benefits emerging from our joint daily work.

Through a materiality assessment, topics that are material for our stakeholders have been identified and efforts are made to ensure the continuous achievement of our goals.

The actions undertaken are contained in the commitments embodied in our values and work standards under our Code of Conduct as well as the corporate health, safety, human rights and anti-corruption policies.

Following the best international practices on sustainability guidelines, this year we used the new GRI (Global Reporting Initiative) Standards and we have met the "core" «in accordance» criteria.

Our endorsement to the United Nations Global Compact (GC) has been maintained since 2004. It is a voluntary initiative that promotes 10 universal principles to foster organisational responsibility. With this report, we submit our Communication on Progress, reporting on our endorsement to the GC's Ten Labour, Human Rights, Environment and Anti-Corruption Principles, including our progress during the reporting period, in line with the advanced level criteria.



## Background

Facing the future, an announcement has been made that Minera Alumbraera's open pit operations will be closed down by mid-2018 due to the depletion of the mineral resources in the deposit, which may be mined using a different method, as planned. However, following some long-lasting geological studies, the feasibility was confirmed to mine the remaining ore phases through an underground operation.

Once the required infrastructure works are developed during an

18-month period, the mine life will be extended for an additional term of 10 years. The production level of the operation will be small, which changes the project scale.

For this reason, over the last years, we have been working on the Mine Closure Plan from the social and environmental perspectives. Thus, we have prepared ourselves for this stage by enhancing employee training to face the new challenges through our education programme, which has been in place for 7 years. During 2017, the schedule was completed with workshops on

specific trades, entrepreneurship and finance, as well as the progress gained in our environmental revegetation and capping programmes.

### Health and safety

We are committed to the achievement of leading practices in the mining industry associated to the Health and Safety of our people. Thanks to our day-to-day efforts, long-term planning and the commitment of our leaders, we have reduced incidents by 25% relative to 2016 levels, when a disabling injury incident was reported. Our successful safety management efforts are reflected in our safety rates, such as the incidents involving lost time injuries (DIFR) which were down to 0.21, as a result of the joint efforts of our people.

### Commitment to communities

We are committed with local communities through development programmes that ensure added value in our area of influence. Likewise, ongoing mutually-beneficial engagement efforts are made, including personal meetings, site visits or roundtables.

### Creating value

Alumbrera production value for 2017 totalled \$400,175,691. This was 34.9% below the previous year level. Despite the proportionally reduced exports, Alumbrera shippings accounted for 77.4% of Catamarca exports, 11.4% of exports from

Northwestern Argentina and 12.8% of the exports from the Argentine mining industry.

Over the past three years, Alumbrera's contribution to the Argentine economy amounted to \$1.3 billion, as fiscal revenues, locally sourced goods and services and salaries.

### Our environment

The environmental activities associated to the Mine Closure Plan remain unchanged over the project extension. Changes are limited to the development schedule by late 2029. However, it is subject to review and approval by the competent regulators.

Our germplasm bank includes native species gathered from the Bajo la Alumbrera mining site and from neighbouring locations. Following the direct sowing trials at the tailings dam and waste dumps, the final revegetation design will consist in planting native species grown at the nursery.

### Future outlook

Alumbrera's contribution to the regional economic development involves not only additional jobs, locally sourced goods and services and foreign currency inflows and fiscal revenues, but also sustainable development expenditure in infrastructure works and intangible assets for the community.

Over the past two decades, Minera Alumbrera has added value on a sustained basis and has provided business opportunities to local businesses and quality jobs to thousands of workers. However, we are highly satisfied for having built a legacy based on values such as team work, care for co-workers, safety as a priority, efficiency, transparency, ongoing training, engagement and environmental protection. These intangible values will grow as positive cultural traits in the local people, beyond the geological life of the deposit.



**Raúl Mentz**

Minera Alumbrera  
General Manager





Andean tree frog -*Hypsiboas riojanus*- found from northern Bolivia to the south in Catamarca and La Rioja provinces. Its colour can vary and change, depending on the season and temperature.

# Key sustainability data 2017

ECONOMIC CONTRIBUTION <sup>1</sup>			
	2015	2016	2017
Division revenue	283,475,554	613,450,627	400,175,691
Division EBIT <sup>2</sup>	(192,745,116)	116,598,070	55,871,516
Employee salaries and benefits	32,100,005	45,659,260	59,077,557
Royalties and taxes	92,932,905	53,090,375	89,320,325
Corporate Social Involvement	1,369,850	314,538	259,913

CORPORATE GOVERNANCE AND ETHICS			
Total value of financial and in-kind contributions to political parties	0	0	0
Percentage of security personnel trained in human rights	100%	100%	100%
Percentage of suppliers and contractors screened on human rights	0	0	0

OUR PEOPLE			
Total workforce	1,953	1,850	1,621
Permanent employees	1,252	1,154	967
Full-time contractors	701	696	654
Total employees under collective agreements	875	785	669
Percentage of employees hired from local area	52.53	51.30	52.60
Fatalities	0	0	0
Total Recordable Injury Frequency Rate (TRIFR)	1.69	0.88	0.72
Lost Time Injury Frequency Rate (LTIFR)	0.75	0.22	0.24
Disabling Injury Severity Rate (DISR)	67.65	34.21	21.5
Health and safety prosecutions	0	0	0
Health and safety fines	0	0	0
Occupational illnesses	0	0	0
Average hours of training per employee	118	54	29

OUR COMMUNITY			
Community complaints	0	0	0
Community resettlement	0	0	0

ENVIRONMENT			
Direct energy requirements (kWh)	852,427,903	875,296,970	857,908,200
Total energy requirements (kWh)	855,631,393	876,642,410	886,116,100
Total water requirements (m³)	22,588,089	21,317,842	24,402,694
Total water recycling and reutilisation (m³)	59,040,298	57,826,534	54,371,000
Direct greenhouse gas emissions (CO <sub>2</sub> equivalent per million tonnes moved)	1.92	2.30	2.78
Total greenhouse gas emissions (CO <sub>2</sub> equivalent per million tonnes)	Not reported	Not reported	Not reported
Sulphur dioxide stack emissions	Not reported	Not reported	Not reported
Land disturbed (ha)	45.59	33.89	41.66
Land rehabilitated (ha)	6.42	12.13	6.11
Category 3 incidents	0	0	0
Category 4 incidents	0	0	0
Category 5 incidents	0	0	0
Prosecutions	0	0	0
Fines	0	0	0

<sup>1</sup> Central Bank of Argentina's average annual exchange rate 2017 = AR\$/US\$16,5567

<sup>2</sup> The amount for 2016 reported in the 2016 Sustainability Report has been revised in accordance with the 2016 Balance Sheet.



Overview of Minera  
Alumbrera facilities





# About Minera Alumbra



## Mining operations in Catamarca

20 years,  
from 1997 to 2017



## Bajo de la Alumbra deposit

- Ores mined: copper, gold and molybdenum
- Mining method: Surface operations
- Location: Northwestern Catamarca, Argentina
- Altitude: 2600 metres above sea level
- Production started in 1997 through 2018



## Shareholders

Swiss Glencore plc, having a  
**50%** interest and project operator

Canadian Goldcorp, having a  
**37.5%** share

Canadian Yamana, having a  
**12.5%** share



## Project manager

Minera Alumbra



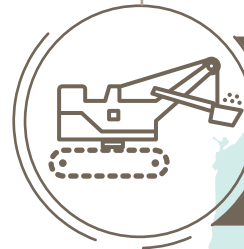
## Partner

Yacimientos Mineros de Aguas de Dionisio, an interstate corporation that owns the deposit

## SUSTAINABLE DEVELOPMENT GOALS



Sustainably manage forests, mitigate desertification, and halt and reverse land degradation and halt biodiversity loss.



**ORE MINING**

3  
shovels



**HAULAGE**

heavy equipment fleet  
composed of **38** units



**CONCENTRATOR**

**34** million tonnes of  
rock processed per year



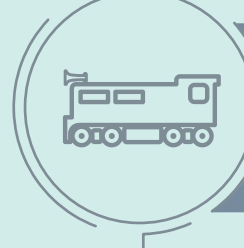
**SLURRY PIPELINE**

Gold and copper  
concentrate



**FILTER PLANT**

**7%** concentrate  
moisture level prior to  
rail freight



**RAILWAY**

**181**  
rail cars



**PUERTO GENERAL  
SAN MARTÍN**

**1-2**  
vessel(s) per month

**GLENCORE COMMODITIES  
AROUND THE WORLD**

- Metals and minerals
- Energy Products
- Agricultural Products
- Corporate Offices
- Marketing

**MINERA ALUMBRERA  
OPERATIONS**

- Operations
- Provinces
- BAJO DE LA ALUMBRERA**
- Open pit / Processing plant
- Powerline
- Slurry pipeline
- Filter plant
- Province of Tucumán
- Province of Catamarca
- Province of Santa Fe
- Railway line
- Puerto General San Martín port facilities
- Buenos Aires



Ore is mined from the open pit using three electric shovels and is hauled to the Concentrator Plant using a fleet of thirty-eight 220-tonne haul trucks. The concentrate slurry containing copper, gold and silver is pumped using water through a 317 km long and 175 mm diameter slurry pipeline to the Filter Plant in Tucumán.

Electricity is supplied from El Bracho power station situated in Tucumán using a 220 kW, 200 km long powerline to the mine site in Catamarca.

At the Filter Plant, concentrate is dewatered to obtain a drier product having 7% moisture level. Then, it is railed along Nuevo Central Argentino railway using Minera Alumbrera trains to our port facilities in Puerto General San Martín, Santa Fe. Concentrate is then shipped to international markets.

Minera Alumbrera's molybdenum facility was commissioned in 2008 and such product is trucked from the mine site and exported to Chile.

Gold is recovered both in concentrate and as dore gold using physical gravitational methods through centrifugal concentrators. Then, it is refined in international facilities to obtain a final product. Due to the geology of the deposit, ore is segregated from waste rock through a physical and chemical process, by introducing air as small bubbles, alcohol and frothers. Copper ores gather on the air bubbles and then overflow from large vessels on an ongoing basis.

No cyanide, mercury, chromium, arsenic or lead is used for or involved in ore processing at our operations. Our concentrates are sought in international markets for its chemistry free from the above substances. Although cyanide is not used in Minera Alumbrera process, it may be used in an environmentally-responsible way, as in other industries (i.e. pharmaceutical, plastics, chemical) safely for human health.



The archaeological sites reported during the various stages of the mining Project are annually monitored, in particular along the powerline and slurry pipeline routes.

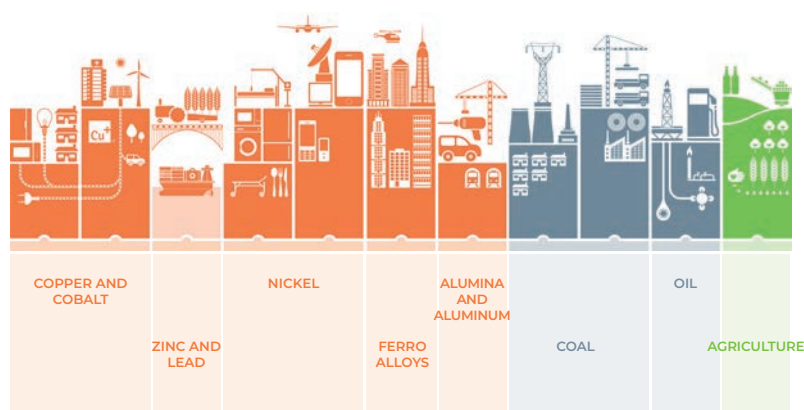
## About Glencore

Glencore is one of the world's largest globally diversified natural resource companies and is a major producer and marketer of more than 90 commodities. Glencore group operations comprise around 150 mining and metallurgical sites, oil production assets and agricultural facilities.

With a strong position in developed and emerging natural resources markets, Glencore industrial and trading operations are supported by a global network of more than 90 offices situated in over 50 countries.

Glencore products are used among other sectors by steel-makers, vehicle manufacturers, power companies as well as the oil and food industries. Glencore also provides financing, logistics and other services to commodity producers and consumers. The Glencore group companies employ around 155,000 people, including contractors.

Glencore is proud of being a member of the Voluntary Principles on Security and Human Rights under the International Council on Mining and Metals. It is an active member of the Extractive Industries Transparency Initiative.





# Governance and compliance

We seek to maintain a culture of ethical behaviour and compliance throughout our site that exceeds the legal and regulatory requirements. We are based on a regulatory framework that supports and monitors compliance with the guidelines by all our employees and contractors.



## Compliance

Our goal is to maintain a culture of ethical behaviour and compliance and ensure compliance with the laws and regulations.



## Transparency

Glencore is a signatory to the "Extractive Industries Transparency Initiative".



## Bribery and corruption

Our Global Anti-Corruption Policy sets out rules and guidelines which relate to the prevention of bribes and other forms of corruption.



## Corporate governance

Our corporate governance management processes take into consideration our Principles and Values, based on ethics and corporate responsibility.



## Public policy

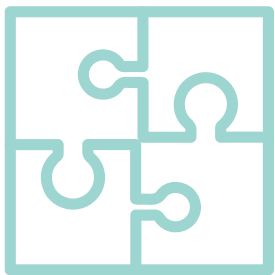
We engage in public discussion and participate in shaping legislative bills concerning areas that may affect our operations under the highest ethical standards.





Minera Alumbra owns three payloaders to mine rocks.





## Management team

Minera Alumbra is a privately owned company mainly funded and operated by the Glencore Group, having a 50% interest, as well as Canadian Goldcorp and Yamana Resources, having a 37.5% and 12.5% interest, respectively.

Minera Alumbra is managed by a Board composed of four regular members, executives of the shareholder companies, one of them being the chairperson, who is an executive at Glencore.

The Board sets out the company strategic guidelines and holds at least four meetings annually with all shareholders.



Operators performing maintenance works at the Concentrator plant.





## Directors receive no financial compensation directly from Minera Alumbrera.

Alumbrera. Therefore, they are regarded as interested parties in any agreement to be entered into between Minera Alumbrera and the parent company or any of its affiliates.

In 1994, Minera Alumbrera entered into an Unincorporated Joint Venture (UTE) agreement with Yacimientos Mineros de Aguas de Dionisio (YMAD) to mine the Bajo de la Alumbrera deposit. YMAD, which owns the mining rights, is made up of the Catamarca provincial administration, the National University of Tucumán, and the central government. YMAD's chairperson is appointed by the Federal Executive Branch.

The UTE management committee consists of eight members, three appointed by YMAD and five appointed by Minera Alumbrera, and is presided over by a chairperson. During YMAD meetings, this management committee approves Minera Alumbrera's annual plan and budget and follows up its actions.

*1 Information about royalties, taxes or other payments to governments made by Minera Alumbrera in 2017 is available in the "Creating Shared Value" chapter in this report. In addition, Glencore reports its payments to governments from individual countries on its website at [www.glencore.com/sustainability/our-progress/reports/](http://www.glencore.com/sustainability/our-progress/reports/)*

## Corporate governance

Our corporate management processes in place take into consideration Glencore's Principles and Values, based on ethics and corporate responsibility through compliance with the highest transparency standards.

We are committed to achieving the highest corporate governance standards, which are vital to obtain shareholder value and essential to ensure compliance with our values and Code of Conduct.

The Board of Directors is Glencore's highest governing body. It is led by seven directors, out of which six are non-executive directors.

Glencore has separate Board committees responsible for overseeing our audit, compensation and appointment practices as well as the health, safety, environment and community (HSEC) activities and reviewing the overall sustainability performance of our business. Individual committees review the results of independent audits of sustainability performance and the management strategies and action plans.

## Transparency

A través de Glencore apoyamos la "Iniciativa de Transparencia para Industrias de Extracción" (EITI, por sus siglas en inglés) que busca aumentar la transparencia en materia de pagos del sector privado extractivo a los gobiernos<sup>1</sup>.



Concentrate thickeners are used to obtain 65% solids before concentrate is pumped through the slurry pipeline.

## Bribery and corruption

Glencore has a Global Anti-Corruption Policy in place that sets out the rules and guidelines for the prevention of bribery and other forms of corruption. It applies to all employees, business partners and associates.

We constantly monitor corruption risks through internal audits.

Finance employees receive induction and ongoing training on disciplinary action, bribery and corruption, money laundering, confidential information and conflicts of interest.

At Minera Alumbrera, we comply with the Argentine laws and regulations. Since the onset of the mining project, no suspicious

activities or significant monitoring weaknesses were identified that could facilitate fraud or cause it to go undetected.

## Raising concerns

Employees must promptly raise with a supervisor or manager any situations in which the Code, its policies or the law are violated. Any concerns can be raised with the appropriate manager in Human Resources, Legal, Corporate Affairs, and Sustainability or senior management, or with the local compliance contact.

Where a concern cannot be solved through local channels, it can be referred to other corporate

channels via e-mail to [CodeofConduct@glencore.com](mailto:CodeofConduct@glencore.com) or raised anonymously via the 'Raising Concerns' form available at [www.glencore.com/raising-concerns](http://www.glencore.com/raising-concerns).

Since not everyone has access to the Internet, telephone numbers to raise concerns are made known to our people via notice boards. Calls are free and routed to a regional compliance contact who speaks the local language. The concern may be raised anonymously.

All queries raised via these Raising Concerns channels are reviewed and assessed promptly.

No concerns were raised through these channels during 2017.

2 Disponible en <http://www.alumbrera.com.ar/files/alumbrera-politica-anticorrupcion-global.pdf>





## External commitments

Human rights	International Labour Organisation (ILO) Declaration of Fundamental Principles and Labour Rights
	United Nations Guiding Principles on Business and Human Rights
	Universal Declaration of Human Rights
	Voluntary Principles on Security and Human Rights
Transparency	Extractive Industry Transparency Initiative (EITI)
	Global Reporting Initiative (GRI)
Progress on social, economic, environmental, and health and safety initiatives	International Council on Mining and Metals (ICMM)
	United Nations Global Compact



# Commitment to Sustainable Development



## Approach

Create economic and social value, while protecting the environment that we live in.



## Corporate policies

It embodies Values, the Code of Conduct and Health, Safety, Environment and Community Policies.



## Commitment to SDGs

Contribute with the United Nations 2030 Agenda.



## Dialogue

We seek to build meaningful and long-term relationships with our stakeholders in an open and transparent manner.



## Engagement with stakeholders

219 meetings  
564 attendees  
165 site visits

## SUSTAINABLE DEVELOPMENT GOALS



Stop poverty in all its forms everywhere.



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



Ensure inclusive and equitable quality education and promote life-long learning opportunities for all.



Ensure availability and sustainable management of water and sanitation for all.

Environment employees conducting water monitoring activities at the mine site.



**7 AFFORDABLE AND CLEAN ENERGY**  
Ensure access to affordable, reliable, sustainable, and modern energy for all.



**8 DECENT WORK AND ECONOMIC GROWTH**  
Promote inclusive and sustainable economic growth, employment and decent work for all.



**13 CLIMATE ACTION**  
Take urgent action to mitigate climate change and its impacts.



**15 LIFE ON LAND**  
Sustainably manage forests, mitigate desertification, and halt and reverse land degradation and halt biodiversity loss.

## Our approach

We prioritise sustainability integration into our business and we focus on operational efficiency, while protecting people and their environment.

Our management efforts are strongly committed to creating economic, environmental and social value in order to ensure the long-

term viability of our operations and well-being of our host communities.

We are committed to create value for all our stakeholders in a manner that is sustainable in the long term, with ethics, transparency and respect for the rights of all.

Our sustainable management approach extends across all areas of the production process. To this end, we have defined corporate guidelines, which today are part of Alumbra's culture. This sustainable development culture created in the workplace has gone beyond our activities to be incorporated into the social life of workers and their families.

## Sustainability Strategy

Our goal is to achieve business growth in line with a responsible mining approach, generating positive contributions for the society.

Our strategy is based on four pillars that include goals, targets and priorities. We work based on international standards, manage the risks associated to our business and

maintain our license to operate. It is annually reviewed by the Health, Safety, Environment and Community (HSEC) committee.



### Health

Be leaders in the protection of our people, while contributing to the well-being of communities.



### Safety

Maintain our leadership in workplace safety, eliminating fatalities and injuries.



### Environment

Investigate and implement the best environmental practices, minimising any environmental impacts from our operations.



### Community and human rights

Foster community growth through programmes that improve the economic, social and professional skills of the local people.

Respect and protect human rights in the area of corporate influence.

Support employee inclusion and diversity.

Our strategy is based on our corporate values, Code of Conduct<sup>1</sup>, and Health, Safety, Environment and Community (HSEC)<sup>2</sup> policies. Compliance is determined through performance monitoring and assurance.

This regulatory framework represents our commitment to support good corporate practices, implement appropriate

standards and policies in our activities and meet or exceed any applicable external guidelines.

All Alumbra employees were evaluated on their acquaintance and compliance with the Code of Conduct policies in 2017, through an electronic platform.





Flamingos annually visit the tailings dam during their migration.



<sup>1</sup> The Code sets out the behaviour expected from all our employees to conduct business and to file claims, while defining management priorities, the respect for

human rights, engagement with stakeholders, and regulatory compliance. <http://www.alumbrera.com.ar/files/alumbrera-codigo-de-conducta.pdf>

<sup>2</sup> <http://www.alumbrera.com.ar/quienes-somos/marco-normativo/politicas/>

## Commitment to the United Nations Sustainable Development Goals





In September 2015, the 2030 Agenda for Sustainable Development that contains the Sustainable Development Goals (SDGs) was approved by the United Nations (UN). The 17 SDGs and 169 targets show the importance of this challenging global agenda, which seeks to address the main

social, environmental and economic challenges that are a priority for the world today.

Companies, like ours, can facilitate the process by incorporating the SDGs into the core of the business. Social inclusion, protection of the environment, and economic development are some of the

priority goals on which mining companies can focus their efforts.

At Minera Alumbra, many of our social and environmental programmes are aligned with SDGs. Our sustainable management efforts are more focused on the following goals:

<ul style="list-style-type: none"> <li>▶ Create jobs in the region where the deposit is situated. 1.1, 1.4</li> <li>▶ Generate fiscal revenues for Catamarca. 1.1, 1.4</li> <li>▶ Implement the Local Supplier Development Programme. 1.1, 1.4</li> </ul>	<ul style="list-style-type: none"> <li>▶ Prevent occupational diseases and protect the health of our employees. 3.3, 3.4, 3.5, 3.8, 3.9</li> <li>▶ Raise awareness among employees about healthy habits (fitness and proper eating habits). 3.3, 3.4, 3.5</li> <li>▶ Implement the annual risk monitoring programme. 3.4, 3.8, 3.9</li> </ul>	<ul style="list-style-type: none"> <li>▶ Improve employee skills and capabilities through site-based formal education programmes under which professional degrees are granted. 4.3, 4.4, 4.7</li> <li>▶ Implement the 2006-2015 education improvement plan for Catamarca teachers by partnering with UNTREF. 4.1, 4.2, 4.5, 4.6, 4.7</li> </ul>	<ul style="list-style-type: none"> <li>▶ Reuse freshwater in the production process. 6.3, 6.4, 6.6</li> <li>▶ Use water as permitted by local authorities. 6.3, 6.4</li> <li>▶ Treat water at a lab prior to discharging it. 6.3, 6.4, 6.6</li> <li>▶ Implement Master Water Plan for communities. 6.4</li> </ul>
 <p><b>1 NO POVERTY</b></p>	 <p><b>3 HEALTH AND WELL-BEING</b></p>	 <p><b>4 QUALITY EDUCATION</b></p>	 <p><b>6 CLEAN WATER AND SANITATION</b></p>

### Alumbra's contribution to SDGs

 <ul style="list-style-type: none"> <li>▶ Improve energy efficiency. 7.2, 7.3</li> <li>▶ Use of Alumbra's powerline by communities in the vicinity of the powerline route. 7.1</li> </ul>	 <ul style="list-style-type: none"> <li>▶ Promote employee diversity and social inclusion. 8.3, 8.5, 8.8</li> <li>▶ Offer equal employment opportunities. 8.5, 8.6</li> <li>▶ Align economic growth with local development. 8.2, 8.3, 8.5</li> <li>▶ Provide training to young technicians through internships. 8.5, 8.6</li> <li>▶ Train local suppliers to improve work standards in our value chain. 8.3, 8.7</li> </ul>	 <ul style="list-style-type: none"> <li>▶ Mitigate GHG emissions and increase the use of energy from renewable sources. 13.1</li> <li>▶ Implement the mobile equipment fleet maintenance programme to reduce fuel transport. 13.1</li> <li>▶ Add weather stations to monitor environmental indicators and record the potential impacts of climate change. 13.1</li> <li>▶ Prepare an emission inventory every two years. 13.1</li> <li>▶ Set up 8 stations to monitor air quality at the deposit and in neighbouring communities. 13.1</li> </ul>	 <ul style="list-style-type: none"> <li>▶ Monitor vegetation and wildlife diversity in the mine site area. 15.1, 15.3, 15.4, 15.5</li> <li>▶ Plant carob trees in towns to ensure wealthier forests in nearby areas. 15.1, 15.2, 15.4, 15.5</li> <li>▶ Implement a revegetation programme in areas disturbed by mining activities. 15.1, 15.2, 15.3, 15.4, 15.5</li> <li>▶ Develop a site-based germplasm bank with a great variety of local native vegetation seeds. 15.1, 15.2, 15.3, 15.4, 15.5, 15.6</li> <li>▶ Publish two educational guides: "A Guide to Bajo de la Alumbra Native Vegetation" and "A Guide to Bajo de la Alumbra Vertebrates", available online and also distributed to local schools in the area of influence. 15.1, 15.2, 15.4, 15.5</li> </ul>
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### Health, Safety, Environment and Community (HSEC) Committee

Glencore's HSEC Committee sets the strategic direction for sustainability activities and oversees the development and implementation of strategic programmes related to health, environment and communities.

The committee is composed of four managers, including our Chairman and Chief Executive Officer (CEO) and is chaired by a nonexecutive director. It gathers during Board meetings to review the progress in the delivery of Group HSEC strategy, key performance indicators (KPIs), material HSEC risks, and examine major or catastrophic incidents.

In the event of a fatality or major incident, the committee receives detailed reports from the relevant site management on the nature of the event, the actions taken and subsequent investigations.

## Sustainability team

The Group sustainability team provides guidance and leadership. It develops and implements HSEC policies and improvement programmes, and establishes HSEC assurance processes. It also reviews the sustainability aspects of our Code of Conduct and revises them as necessary and records and reports progress against Key Performance Indicators.

Ultimate supervisory responsibility for our HSEC strategy and its implementation across the Group rests with our senior management team.

The performance of all Alumbraera employees, including their sustainability goals were evaluated during 2017.

Risk management is integrated into our business planning and decision-making process at every level of the Group. We maintain a register of risks and management plans and continually monitor performance against those plans.

We review our corporate Health, Safety, Environment and Community policies at least once every three years to check that they continue supporting our business requirements as well as reflecting policies within the International Council on Mining and Metals (ICMM).

One of the key functions of the Health, Safety, Environment and Community Committee is to evaluate and oversee sustainability risks associated to our operations. The main focus of auditing is catastrophic hazards. At Minera Alumbraera, we have protocols in place to deal with hazards that may lead to fatalities.

Since 2015, we have implemented the Safe Life Protocol under the "Safe Work" Programme focused on fatal risks and the identification of catastrophic hazards as part of the Group's HSEC assurance process.

## Sustainability risk management framework

Glencore's sustainability risk management framework is used to identify, assess, address and oversee risks associated to our operations, and thus develop plans to eliminate or mitigate the related risks.

### Minera Alumbraera's Sustainable Development (SD) Organisational Structure



3 Additional information available in the "Health and Safety" chapter.





Following the issuance of our 13th Sustainability Report, a round table was held in Catamarca.

## Engagement with stakeholders

### Communication

We engage with our stakeholders to build significant and long-term relationships. We engage in constructive and timely communication, which supports our decision-making process.

We communicate regularly, openly and transparently with our employees, contractors, customers, suppliers, investors, associations, governments, and neighbouring communities, among others.

We seek to gather their concerns and provide timely solutions. We also receive community concerns and take them into account to develop community projects.

### At Minera Alumbrera, we undertake the following commitments with each of our stakeholders:

GRUPOS DE INTERÉS	COMPROMISOS
INVESTORS	Maximise the return on investment, prioritising the copper industry. We are committed to open corporate management practices.
CUSTOMERS	Deliver our products, which are essential for progress, in a reliable and continuous manner.
EMPLOYEES	Promote a respectful, flexible and efficient organisation through professional development and the fulfilment of mutual duties.
SUPPLIERS	Promote a fair selection process that reflects our values and policies.
GOVERNMENT	Strictly adhere to and enforce the laws and support the professional management of efficient regulatory agencies to accomplish their mission.
TRADE UNIONS	Support responsible organisations that strive for employee welfare.
COMMUNITIES	Provide growth opportunities through training, employment and health, production and education improvement programmes.
MINING CHAMBERS AND INDUSTRY ASSOCIATIONS	Support their actions so that they represent and act on the needs of the entire mining industry.
NGOS AND RELATED ORGANISATIONS	Liaise with organisations that strive for improved social, technical and institutional development at the regional and country-wide levels.
MEDIA	Provide accurate and thorough information, through ongoing regular discussions.
UNIVERSITIES	Encourage valuable exchange for students in courses directly or indirectly related to the mining industry and promote academic studies that may provide reliable data to the community.



*We have been creating opportunities with environmentalist groups from Tucumán for 5 years.*

### Engagement with Concepción residents

After being approached by a group of local residents and environmentalists from Concepción, in Tucumán, we established respectful liaison to report on the activities and the socio-economic impact of Alumbraera operations.

Since 2012, supported by Fundación EcoConciencia, we have addressed various topics of interest for the community, such as water quality, urban waste treatment, slurry pipeline operation and maintenance, economic benefits of mining operations, tailings dam construction, and the mine closure approach.

Trust is fundamental to human relationships and it has helped strengthen the bond between local residents and Minera Alumbraera. During each meeting, pre-established specific issues are addressed in a separate scenario or during field or site visits.

Fundación EcoCiencia uses the Community Transparency System, a social management tool that allows for enhanced engagement among businesses, the government and communities to improve their negotiation skills.

During 2017, four meetings were held to discuss the social and environmental issues associated to Alumbraera mine closure, the underground mining project, and the Argentine Mining Chamber's "Towards Sustainable Mining" programme, among other topics.

The experience of the Community Transparency System developed by Fundación EcoConciencia for the mitigation of socio-environmental conflicts will be used as a reference for United Nations Development Programme (UNDP) Environmental Governance for Sustainable Natural Resource Management Programme.

The Concepción Follow-up and Auditing Committee, which is part of the "Concepción Sustentable" movement -composed of local groups from Tucumán- implemented this tool in connection with Minera Alumbraera operations and will be an integral part of a case study that gathers good practices from environmental monitoring participatory committees.

With this initiative, the UNDP and its associates will be able to reinforce the participation of communities in the environmental monitoring of mining operations, which will consequently improve mining governance.

4 Stakeholders are those directly or indirectly associated to our operations by reason of accountability, influence and closeness to Alumbraera.

### Engagement with stakeholders

During the reporting period, meetings were held with local residents, Irrigation Boards, product manufacturers, farmers, municipal representatives, NGOs members, social organisations, school teachers and principals, health officials, the media, and suppliers, among others.

### Meetings with stakeholders in 2017

TOWN	Meetings	People
ANDALGALÁ	88	224
BELÉN	30	105
SANTA MARÍA	21	75
TUCUMÁN	80	160
TOTAL	219	564

### Roundtable

Over the last 7 years, we have invited our stakeholders to round tables in order to gather their opinions, feedback and expectations about our Sustainability Report. These meetings are attended by our key stakeholder representatives, Minera Alumbrera leaders and an external facilitator. In November 2017, at the Round table held in Catamarca, we discussed our stakeholders' expectations and also had the chance to learn about their specific concerns about various issues.

## COMMUNICATION MANAGEMENT

In order to engage with society, we use different communication tools, including face-to-face conversations with local residents, and join the initiatives of local representative organisations.

### Site visits

As part of our open-door policy, we received visitors from various institutions year round. The goal of the visits around the main operational areas is to allow anyone interested to learn about the mining process as well as our environmental protection and employee safety management efforts.

Visits are tailored according to the place of origin and the concerns of each group. It should be noted that the technicians who work at these areas escort the group of visitors explaining the process and responding to their questions.

Institution	Province	Party
Argentina Mining and Geological Service (SEGEMAR) and the Japanese Geological Service	Buenos Aires	5
United States Embassy	USA	2
National University of Catamarca Air and water monitoring activities.	Catamarca	12
Santa María City Council	Santa María, Catamarca	40
School of Technology and Applied Sciences National University of Catamarca	Catamarca	5
School of Mines National University of Jujuy	Jujuy	28
Ecology students School of Natural Sciences of Tucumán	Tucumán	20
Bachelor in Geology students National University of Catamarca	Catamarca	20
Geology students National University of Tucumán	Tucumán	3





### Interpersonal communication

Alumbra representatives settled in Andalgalá, Belén, Santa María, San Fernando del Valle de Catamarca as well as in Tucumán. Local residents can submit their projects, raise concerns and engage with community leaders at such offices.

A system is in place to record, follow up and settle complaints raised by the community. We address the enquiries and complaints raised by our stakeholders through fair and equitable dispute and grievance resolution processes. We have not received any formal complaints from the community over the last few years.



### Website

Our website, [www.alumbra.com.ar](http://www.alumbra.com.ar) provides truthful and timely information and encourages interaction via enquiries posted there.

### Social networks

Since 2010, we have been using social networks to engage in the dynamic far-reaching conversations facilitated by this computer tool through the following main channels:



[www.twitter/mineraalumbra](https://www.twitter/mineraalumbra)



[www.infoalumbra.com.ar](http://www.infoalumbra.com.ar)



[www.linkedin.com/company/minera-alumbra](https://www.linkedin.com/company/minera-alumbra)



[www.youtube.com/infoalumbra](https://www.youtube.com/infoalumbra)

<sup>5</sup> Additional information about this topic available in the "About this report" chapter.

## Product stewardship

Through product distribution, Glencore seeks to supply commodities at competitive prices that meet stakeholders' needs and add value globally, while reducing any risk associated to their use.

Therefore, Glencore is fully committed to ensure that customers understand the features of individual products and works with regulators to encourage safe practices and the efficient use of products and technologies around the world.

Our products have material safety data sheets that provide relevant information on product chemistry, toxicology relating to human health and the environment, handling, storage and exposure as well as recommendations to manage product spills and disposal.

In addition, we inform our stakeholders about the recommended product handling practices.

No environmental incidents associated to concentrate or dore gold transport have occurred in 2017. No fines have been imposed for non-compliance with the laws or regulations concerning the supply and use of our products.

Minera Alumbra's shipments are strictly monitored by AFIP (the Argentine Tax Authority) through the Customs House. In addition, individual shipments are regularly tested to determine concentrate chemistry in order to identify potential changes to ore content. Our product is in very high demand by international markets, given its metal purity.



## Chapter 2

# Relevant business topics

A materiality assessment is conducted every two years to identify the material topics of our sustainability strategy.

## Commitment to health and safety

The health and safety of the people working at Alumbra are a priority and a strong corporate commitment.



[Read more](#)  
Page 34



## Respect for human rights

We uphold the human rights, dignity and fundamental freedom of our employees, contractors and the communities in which we live.



[Read more](#)  
Page 30



## Our work team

We foster personal growth, accountability for safe work practices and entrepreneurialism in our workforce.



[Read more](#)  
Page 40



## Environmental protection

We are focused on the protection of the environment and we work responsibly to protect the natural environment.



**Read more**  
Page 48



## Commitment to the community

Based on our sustainable development approach, we seek to create growth opportunities in the region.



**Read more**  
Page 70



## Creating shared value

For 20 years, Minera Alumbrera has supported the creation of quality jobs and business opportunities.



**Read more**  
Page 62



## Social and environmental management for mine closure

Mine closure planning is a complex comprehensive process measured in decades.



**Read more**  
Page 76





# Human rights

We uphold the human rights, dignity and fundamental freedom of our employees, contractors and the communities in which we live and work and others affected by.



## Commitment

We do not tolerate any form of discrimination.



## Respect

Respect for fundamental freedom and human rights.



## Child labour

We do not tolerate any form of child, forced or compulsory labour in our workplace.



## Diversity

We seek to reflect the diversity of the communities in which we operate in our workforce.



## Freedom

We respect the freedom of association and collective bargaining.



## Training

Adherimos a los Principios Voluntarios de Seguridad y Derechos Humanos que reforzamos con evaluación de riesgos y la capacitación del personal de seguridad.

## SUSTAINABLE DEVELOPMENT GOALS



Ensure inclusive and equitable quality education and promote life-long learning opportunities for all.



Promote inclusive and sustainable economic growth, employment and decent work for all.



Revegetation trials using native species were conducted, prioritising native species.







Each employee receives an average of 29 hours of training annually.

## SDG 8

### Our approach

We do not tolerate any form of workplace discrimination, harassment or physical assault, or any form of child, forced, or compulsory labour. We seek to reflect the diversity of the communities in which we operate in our workforce. We respect the rights of our employees and contractors, including the freedom of association and collective bargaining.

Throughout our operations, we ensure to avoid complicity in human rights abuses, and to uphold relevant international standards. To this end, we operate grievance mechanisms for our stakeholders.

Mining operations can potentially impact on the rights of our workforce or neighbouring communities. We know that our duty is to provide fair solutions to

anyone affected by our operations. In addition, we seek to continue strengthening the mechanisms in place to address complaints in a fair and transparent manner.

Our commitment to respect human rights is explained in the Code of Conduct and Glencore Group's Human Rights Policy, which was developed in accordance with the Universal Declaration of Human Rights, the International Labour Organisation (ILO) Declaration of Fundamental Principles and Rights at Work, the Equator Principles, and the United Nations (UN) Guiding Principles on Business and Human Rights.

As stipulated in our Code of Conduct, we uphold the dignity, fundamental freedoms and human rights of our employees, contractors and the communities in which we

live and work and others affected by our activities. We ensure that key human rights impacts are embedded in our internal risk assessment processes.

We do not tolerate any form of workplace discrimination, harassment or physical assault, or any form of child, forced, or compulsory labour. We seek to reflect the diversity of the communities in which we operate in our workforce.

We respect the rights of our employees and contractors, including the freedom of association and collective bargaining.

At all our assets, regardless of their location or function, we expect our employees to avoid complicity in human rights abuses, and to uphold relevant international standards. We operate grievance mechanisms that are also accessible to our stakeholders.

Potential human rights incidents, including complaints or grievances, are reported to the Health, Safety, Environment and Community (HSEC) Committee, which examines the case and takes corrective action.

No human right violations were reported through formal grievance mechanisms or other channels at Minera Alumbra.

1 <http://www.alumbra.com.ar/files/alumbra-codigo-de-conducta.pdf>

2 <http://www.glencore.com/assets/who-we-are/doc/Human-Rights-Policy-2015-Sp.pdf>

3 For additional information, please refer to the "Commitment to Sustainable Development" chapter.

4 International tripartite engagement initiative established among governments, extractive sector companies and NGOs that serve as guidance for companies to maintain the safety of their operations, while respecting human rights and fundamental freedoms. Glencore joined this initiative in March 2015.

At Minera Alumbra, we consider that the following are the key human rights issues to be considered:



### Labour

- ▶ Right of our employees and contractors to fair compensation and equal pay for equal work.
- ▶ Freedom of association
- ▶ A safe and healthy workplace.
- ▶ A discrimination-free workplace.



### Safety

- ▶ The security service providers that protect our people and assets.
- ▶ The law enforcement agencies that operate within our area of influence performing their duties.



### Communities

- ▶ The potential impact of our operations on communities.
- ▶ The arrival of migrant workers.
- ▶ The impact on culturally sensitive resources.
- ▶ Access to resources and economic benefits.

#### SDG 4

### Training

It is crucial that we ensure the protection of our people and assets. We recognise the potential human rights risks in connection with security practices, especially in conflictive environments. Therefore, our security procedures are aligned with the Voluntary Principles on Security and Human Rights. These procedures are underpinned by risk assessments and incident reporting mechanisms, as well as training for our security staff and contractors.

100% of our Asset Security staff received training on Human Rights. Both Asset Security employees and contractors have completed the course in 2017, which was delivered by trainers of the Catamarca Police Academy. Training topics include the origin of human rights, the Argentine Constitution, equality of rights, the basics of International Law and Criminal Procedural Law, labour relations principles, indigenous peoples as well as the duties, bans and powers of security staff.

#### SDG 8

### Value chain

All procurement contracts between Minera Alumbra and our contractors working at site include terms and conditions under which each contractor agrees to submit proof of their employment arrangements.

At Minera Alumbra, we ensure that contractors pay in a timely and proper manner the correct amounts of salaries, social security contributions and Workers' Compensation Insurance (ART) charges, that employees do not work longer than the permitted working hours, and that they receive basic safety training.

No report was filed in 2017 regarding third parties or contractors under investigation for human rights violations.

# 100%

of our security staff was trained on the corporate policies relating to human rights aspects associated to mining operations, our Code of Conduct and Harassment Policy.de Acoso.

### Child and forced labour

We do not tolerate any form of child, forced or compulsory labour.

We comply with local regulations regarding legal work age. During 2017, our youngest employee was aged 21.



Environment Officer Edgard Oscar Alderete testing samples at the Filter Plant laboratory, in the province of Tucumán.



# Commitment to health and safety



## Management System

A system based on prevention, safety equipment, training and self-care.



## Occupational Health

Compliance with the Annual Risk Agent Monitoring Programme across all areas.



## Emergency Practices

Lab and field training rescue drills were performed in an underground mine.



## Performance

25% reduction in incidents relative to 2016, when there was a disabling injury.



## Risk Management

The implementation of a sustained process of continuous improvement in Health Management, Safety and Risk Management continued during 2017.



## Training

Workers were trained to attain the "0 incident" goal.

## Safety Indexes

	2015	2016	2017
DIFR	0.75	0.22	0.24
DISR	67.65	34.21	21.5
TRIFR	1.69	0.88	0.72



## Joint Health and Safety Committee

A committee made up of union and Alumbra members.

## SUSTAINABLE DEVELOPMENT GOALS

### 3 HEALTH AND WELL-BEING



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





Consultants Sergio Díaz, Ariel Juárez, Juan Aybar, Ariel Arroyos, Enzo Faeeda and Sergio Romero with an external industrial hygienist following industrial health training on the evaluation of health hazards in the work environment.

#### SDG 3

### Our approach

We are committed to achieving leading practices in the mining industry in terms of the Health and Safety of our people.

Our priority is to ensure that all the people working at Minera Alumbrera – regardless of their work place and activity – return home safe and free from injuries. We believe that all occupational accidents and diseases can be avoided.

For this reason, we work on a daily basis to meet or even exceed the statutory requirements.

At Minera Alumbrera, health and safety practices are ruled by compulsory policies, standards and procedures which apply to all employees and contractors. The team leaders are responsible for the implementation of these standards and procedures.

Our Health and Safety goals are established throughout the company and performance is monitored, measured and reported. The improvement opportunities identified during reviews are also implemented.

Our employees and contractors have committed themselves to following safety procedures and promptly reporting any circumstance which might pose a risk to themselves, other people, the environment, our assets or neighbouring communities.

Workers are trained on proactive tools to ensure “zero-incident” safety management, including daily meetings before the start of the work day, risk analysis and observations.

During 2007, there have been no penalties or sanctions for failure to comply with the Argentine laws as well as with health and safety regulations.

### Our performance

During 2017, incidents were reduced by 25% relative to 2016, when a disabling injury incident took place<sup>1</sup>.

#### Safety Measurement Rates<sup>2</sup>



##### Disabling Injury Frequency Rate (DIFR)

Incidents resulting in fatalities and occupational injuries or diseases that cause lost time per million hours worked.



##### Disabling Injury Severity Rate (DISR)

The days lost due to incidents resulting in fatalities and occupational injuries or diseases that cause lost time per million hours worked.



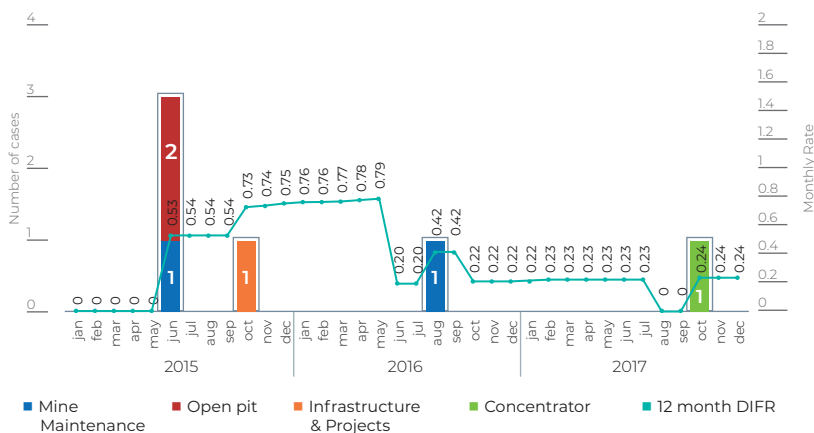
##### Total Recordable Injury Frequency Rate (TRIFR)

Incidents resulting in fatalities and occupational injuries or diseases that cause lost time per million hours worked.

<sup>1</sup> An employee of the electrical maintenance sector was using a wireless drill when the bit got stuck in the piece being drilled. The tool turned suddenly and hit the worker's right hand thus fracturing one of his fingers. The corrective action involved training in manual electrical tools and specific procedures for this type of machinery were implemented.

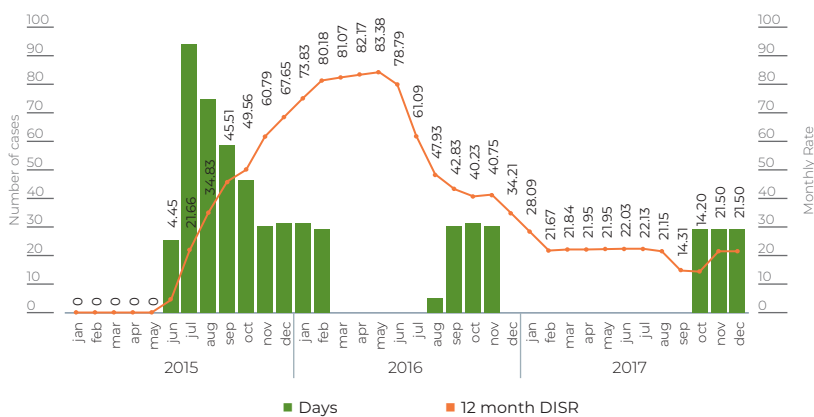
<sup>2</sup> Classification based on the British Occupational Safety and Health Administration (OSHA).

## DIFR - 2015-2017



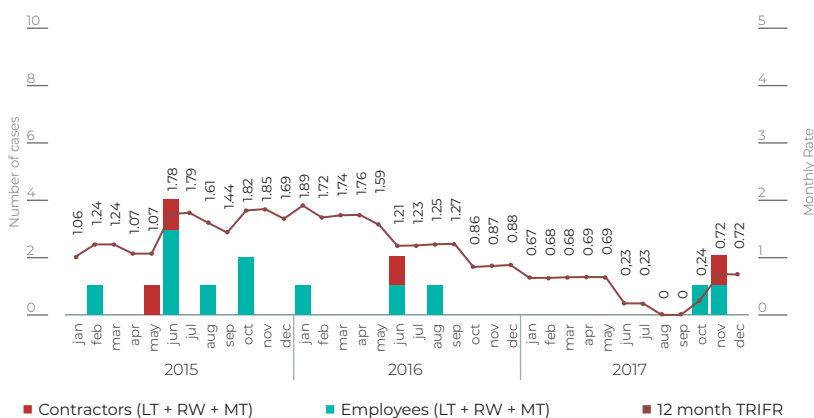
Our DIFR was **0.24** during 2017 versus 0.22 during 2016.

## DISR - 2015-2017



Our DISR was **21,5** during 2017, 7% below 2016 levels. The disabling injury incident -previously described- has had an impact on our performance assessment.

## TRIFR - 2015-2017



These incident classifications, assessments, communicational processes and statistical charts are based on the guidelines of:

- ▶ The International Council of Mining and Metals (ICMM),
- ▶ The European Agency for Safety and Health at the Workplace,
- ▶ Glencore's HSEC Incident Reporting Investigation Guidelines.
- ▶ The Argentine Labour Risks Superintendency,





*Minera Alumbra rescue team members are trained on an ongoing basis.*

#### SDG 3

### Risk management

The implementation of our sustained process of Health, Safety and Risk Management continuous improvement continued during 2017.

In addition to managing our own risks in Minera Alumbra operational areas, our participation in various assurance reviews conducted in other Glencore copper business units was particularly relevant in 2017.

This participatory process took place in a suitable atmosphere where experiences were exchanged by Health and Safety experts who work in various mining and smelting operations.

The extent of implementation of Glencore's Lifesaving Protocols (SAFEWORK) was monitored in order to perform these review processes.

Regarding local Risk Management, some of the most relevant aspects developed during 2017 were the following:

- Work with the employees involved in internal and external reviews of assurance processes at site.
- Full implementation of Glencore's Corporate Framework for Minera Alumbra Risk Management.
- Review and update of business and critical risk records.
- Monthly review of HPRI at various operations together with representatives from the various Glencore copper operations in South America.







Workers performing safety work at heights in line with our corporate standards and policies.

SDG 3

## Occupational health

The Health and Safety area provides assistance to management in connection with the Risk Agents in the work environment, the associated occupational diseases and control techniques to ensure healthy a work place.

During 2017, our safety consultants were trained on industrial health related to risk agent measurements at the work place.

Health is monitored to detect exposure to noise, silica and metal fumes.

No occupational disease has been reported. Regarding prevention measures, we have implemented a health programme which includes the determination of present risks and agent monitoring practices. The results of campaigns to take control actions are reviewed and regular medical examinations are performed to ensure efficiency.

SDG 3

## Joint Safety Committee

In line with the provisions of Executive Order 249/07 (Health and Safety Regulations for the Mining Industry) and the Collective Bargaining Agreement, we have an advisory Joint Health and Safety Committee made up of:



**4 male union representatives**  
(aged from 30 to 41 years old)



**4 male Minera Alumbra representatives**  
(aged from 42 to 50 years old)

Monthly meetings are held where miscellaneous safety and health issues affecting our employees are discussed.

## Emergency practices

Our rescue and fire brigade teams were lab and field trained on rescue practices in an underground mine. This 5-day session took place at Altos de Punitaqui deposit, Chile.



# Our team



## Origin

52,6%  
regular employees are  
from Catamarca

40,9%  
come from Northwestern  
Argentina

6,5%  
come from other provinces



## Gender

6,5%  
workers are female

71,4%  
female workers are from  
Catamarcas

28,6%  
come from Northwestern  
Argentina



## Training

29 hours  
Average 29 training hours/  
year per employee

\$1.245.743  
Expenditure on training



## Employment

Direct employees  
and contractors:

1.621  
direct employees



## Salaries

Net salaries and  
employee benefits:

\$978 million

## SUSTAINABLE DEVELOPMENT GOALS



Promote inclusive  
and sustainable  
economic growth,  
employment and  
decent work for all.



Reduced inequality  
in and among  
countries





The number of female employees at Alumbraera is slightly above the average female rate for the metal mining industry in Argentina (i.e. 6.5%)





· Ongoing safety training is provided to ensure compliance with the highest standards and at the same time to prevent accidents.

## Approach

Employee development is a priority to Alumbra Human Resources management. In this way, our training programmes have brought professional growth opportunities.

We encourage employee development, safe work accountability and entrepreneurship. Our employees are hired based on their skills and experience for each particular role, with no discrimination.

We seek to be recognised as a leading and attractive mining company to retain high-potential talent. In addition to teamwork in a healthy and safe work place and subject to competitive salaries, work positions at Alumbra are highly valued and sustained over time.

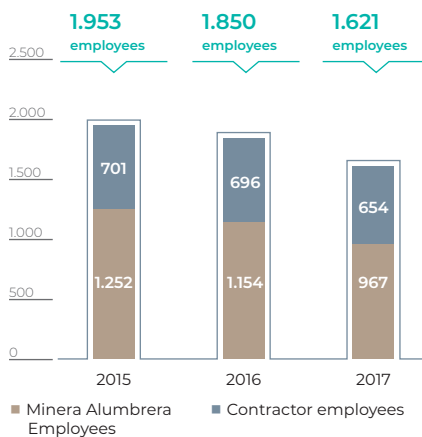
We kept our commitment to the development of the local people by ensuring employment, which has had a strong impact on the local economy, in terms of jobs, salaries and professional career development. This entailed ongoing expenditure on human capital.

ODS 1, 8

## Employment

During 2017 Minera Alumbra workforce totalled 1621 people including 967 regular employees and 654 contractor employees. Out of the total payroll, 669 workers are unionized at AOMA (the Mining Union) and 298 are clerical staff.

### Direct total jobs for the 2015-2017 period



Source: Minera Alumbra

The number of employees was reduced by 16.2% due to the voluntary termination of employment of 187 people (including 19 female and 168 male workers).

Minera Alumbra's recruitment policy is in line with the United Nation's Universal Declaration of Human Rights, in compliance with the Argentine laws in force.

We uphold the freedom of association as well as the trade union rights such as collective bargaining, the absence of all forms of child, forced or compulsory labour. Based on international principles and the standards of the International Labour Organisation, we endorse the fundamental principle of non-discrimination during our recruitment processes on the grounds of age, gender, belief, origin among others.

## 2017

no incident of discrimination or violation of human rights was recorded by Alumbra or contractor employees.



Our recreation room includes a cinema, video games, table tennis and snooker facilities.

### Impact on employment levels in Catamarca

During 2017, the 380 employees from Andalgalá, Belén and Santa María accounted for 39.3% of the total manpower for the plant.

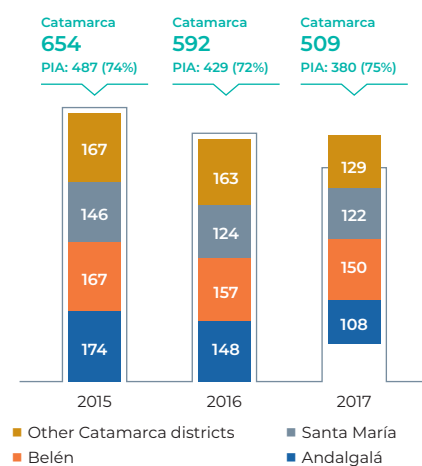
## Geographic breakdown ODS 1

Alumbrera manpower breakdown per gender and province.  
Number of workers.

PROVINCE	2015			2016			2017		
	M	F	Total	M	F	Total	M	F	Total
Catamarca	595	59	654	538	54	592	464	45	509
Tucumán	435	26	461	411	24	435	341	15	346
Salta	32	2	34	28	2	30	21	2	23
Jujuy	19	1	20	17	1	18	15	1	16
Other provinces	82	1	83	78	1	79	63	0	63
<b>Total</b>	<b>1.163</b>	<b>89</b>	<b>1.252</b>	<b>1.072</b>	<b>82</b>	<b>1.154</b>	<b>904</b>	<b>63</b>	<b>967</b>

Source: Minera Alumbrera

Breakdown of Catamarcan employees per district (in number of employees and percentage) for the 2015-2017 period.



Source: Minera Alumbrera  
PIA: Primary Impact Area

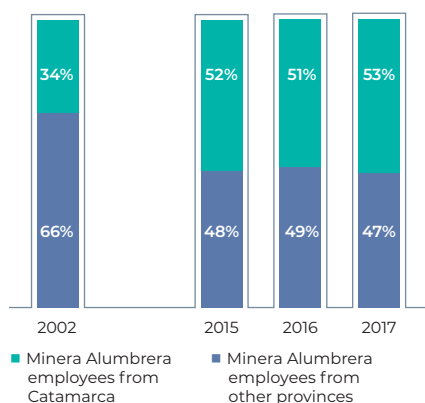
# 52,6%

Out of the aggregate, 52.6% are now from Catamarca vs. 34% in 2002.

# 93,5%

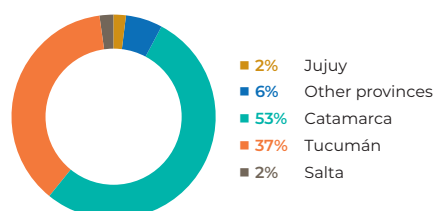
Out of the aggregate, 93.5% are from Northwestern Argentina.

Number of Catamarcan employees for 2002 and for the 2015-2017 periods.



Source: Minera Alumbrera

Breakdown of Minera Alumbrera employees per province for 2017.



Total: 967 employees

Source: Minera Alumbrera

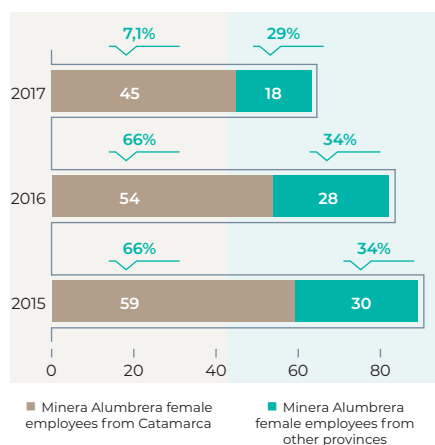
Out of the 83 Catamarcan employees who voluntarily terminated their employment contract last year, 49 came from the primary impact area (i.e. 40 from Andalgalá, 7 from Belén and 2 from Santa María).





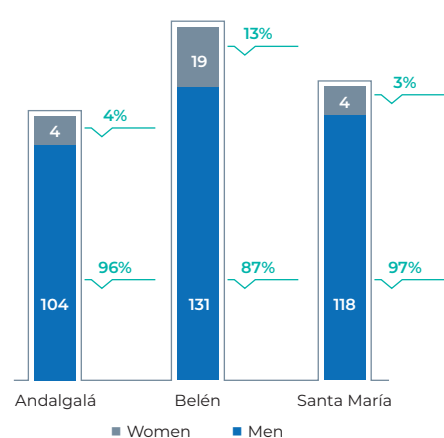
Entrepreneurship training session for our employees under the Social Programme for Mine Closure.

### Number and percentage of female employees from Catamarca in Minera Alumbra workforce for the 2015-2017



Source: Minera Alumbra

### Breakdown of Minera Alumbra workforce from the Primary Impact Area per gender and district for 2017

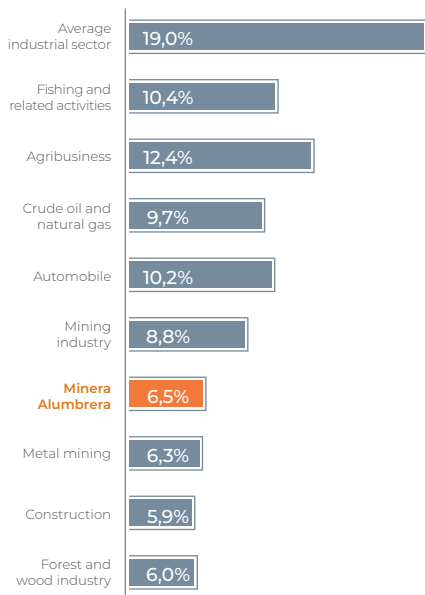


Source: Minera Alumbra

## Women in the workforce ODS 8

The 967 payroll for 2017 included 63 female and 904 male workers. Thus, women in the workforce accounted for 6.5%.

### Women in the workforce, per industry and at Minera Alumbra. 2017<sup>1</sup>

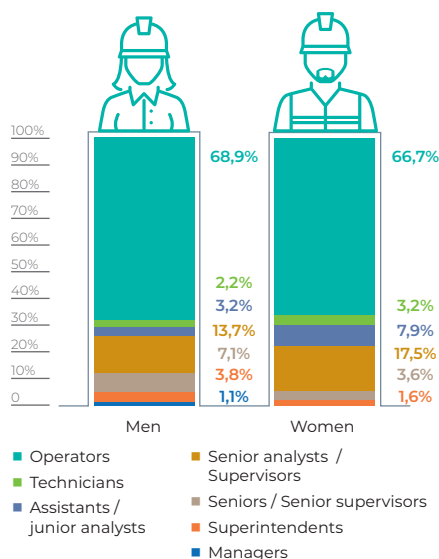


Source: Minera Alumbra and Employment and Business Dynamics Observatory under the Argentine Department of Labour, Employment and Social Security

All female workers come from Northwestern Argentina and 45 out of them are from Catamarca.

The rate of female workers is relatively higher among assistants and junior analysts with 3.2% out of the total male employees working as assistants or junior analysts vs. 7.9% out of the total female workers. The number of female supervisors and analysts is relatively higher with 13.7% of the total male employees in these roles vs. 17.5% of the total female workers

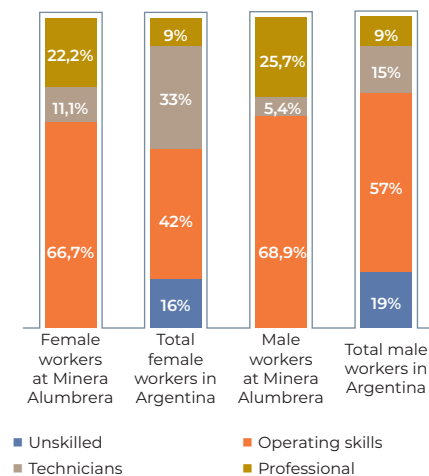
### Breakdown of Minera Alumbra workforce per gender and role for 2017



Source: Minera Alumbra

A breakdown of Minera Alumbra manpower based on employee qualification for the role shows that Minera Alumbra employees are relatively more skilled than the average in the Argentine economy. The percentage of male and female professional employees at Minera Alumbra is above the standard for the Argentine economy.

### Breakdown of employee qualification for the role, comparison per gender at Minera Alumbra for 2017 as well as in the Argentine economy for the 2nd quarter of 2014)



Minera Alumbra and Employment and Business Dynamics Observatory under the Argentine Department of Labour, Employment and Social Security



Female mine workers come from Northwestern Argentina. The number of female analysts and supervisors is higher than male workers in that role.



## Women in the mining industry ODS 8

Minera Alumbrera is an active member of the Female Committee under the Mining Development Foundation (FUNDAMIN), which seeks to strengthen the involvement and development of women in the mining industry by leading the way, facilitating and implementing actions that enable an equitable workplace, through exchange and the implementation of good practices.

It is intended to foster ongoing exchange through a federal Forum of Female Workers in the Mining Industry to exchange experience and materials that strengthen the role of women in the mining industry.

## 2010

Since then, a forum has been organized on an annual basis, associated to its goals –i.e. strengthening the identity and leadership of women at work, improving the standard of living for women at the workplace, generating a nation-wide exchange on the role of women in the mining industry.

1 Minera Alumbrera data for 2017. Data for September 2017, as provided by the Employment and Business Dynamics Observatory under the Argentine Department of Labour, Employment and Social Security.

2 Minera Alumbrera data for 2017. Data for the second quarter of 2014, as provided by the Employment and Business Dynamics Observatory under the Argentine Department of Labour, Employment and Social Security.





Taking into account the forthcoming mine closure, a workshop has been organised for 133 attendees to ensure improved employment conditions for our people.

## Salaries ODS 1, 8

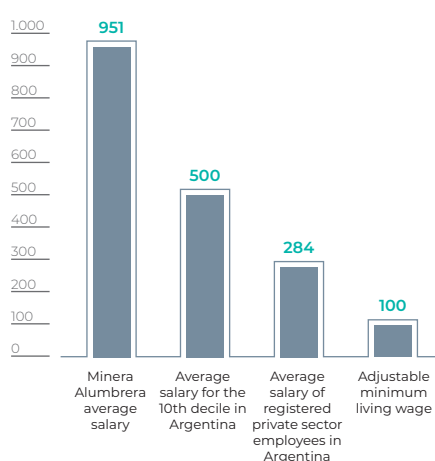
We guarantee a fair compensation system, where equal salaries are paid regardless of gender, origin or age, ensuring equal pay for equal work.

During 2017, ≈\$1,41 billion were paid by Minera Alumbraera to employees as gross salaries and employee entitlements (including social security payments, payroll taxes and severance payments).

Minera Alumbraera compensation level ranks among the highest salaries in the Argentine economy, as a result of various work conditions such as the remote worksite, the work rosters as well as the skills required to perform their jobs. The average gross salary for 2017 (including employee entitlements) was 4.8 times the average gross salary of registered private sector workers in the Argentine economy.<sup>3</sup>

The average gross salary for 2017, including other entitlements of Alumbraera employees was 2.7 times higher than the average salary of the 10th decile -a set of 1.6 million employees earning the highest salaries in Argentina.

### Comparison of Alumbraera salaries vs. other salary measurements for 2017



Base: adjustable minimum living wage = 100.  
Source: Argentine Statistics Bureau – EPH, Argentine Department of Labour, Employment and Social Security, Minera Alumbraera. Data provided by the Argentine Statistics Bureau (salaries in the 10th decile) for the second quarter of 2017, the private sector salary and the minimum salary as of September 2017.

<sup>3</sup> The average gross salary of registered private sector workers for September 2017 was \$8,860 per month, according to the Argentine Department of Labour, Employment and Social Security.

## Labour relations

We respect the relationship established between the trade union and our employees. We are also committed to maintaining effective, honest and ongoing communication and mutual trust between Alumbraera and union representatives. The union and Minera Alumbraera are committed to ensure social peace in the resolution of conflicts and to communicate appropriately in order to address matters of mutual interest.

## 2017

There were no strikes at our site during 2017.

In the event of significant changes occurring in the organisation that could affect our employees and their representatives, we are committed to communicating such changes with sufficient time in advance to ensure a smooth transition. The minimum notice term varies in line with operational requirements and, in some cases, it has been established in the relevant Collective Bargaining Agreement.

ODS 4, 8

## Education and training

Throughout Alumbra's two decades of operations, our employee development and management actions have been focused on the following three aspects:

### 1 EDUCATION

Ensure that employees are qualified and have the skills required to perform their job successfully.

### 2 EMPLOYABILITY

Develop skills and competences in order to ensure professional qualification to facilitate outplacement into the labour market.

### 3 PERSONAL DEVELOPMENT

Ensure personal growth.

#### Alumbra in-house training programmes developed throughout the mine life:

- Site-based secondary-school programme ICE (2010-11): **108 diplomados.**
- Site-based higher education programme (2012-2016) including a technical degree on mining and a technical degree on food: **102 diplomados.**
- In-house English lessons.
- Employee-triggered Education Policy.
- Apprenticeship Programme – Agreement with technical schools from the primary impact area
- Internship programme for young graduates

In late 2016 a voluntary and anonymous survey was undertaken on our employees' favourite training topics to identify the overall training needs and the specific requirements of our people, with a focus on mine closure. This programme is aimed at strengthening the employability of our people and provide them with the necessary tools to develop their future career.

## 808

respondents

#### Top five training topics:

1. Entrepreneurship
2. Technical (welding, metal working) skills
3. Finance and administration
4. Tips for work interviews
5. Miscellanea (tourism, production activities, bakery)

Survey results are embedded into the existing training programme.

This model was based on strengthening innovation and production skills in line with entrepreneurship. This workshop started with a discussion to identify the participants' needs and requirements for trouble-shooting.

At the end of the workshop, several participants said that they had grasped "entrepreneurship" as a proactive attitude to expand their horizons and find a common path further. They became more self-confident to ensure agreement and joint work.

#### Courses:

- **Entrepreneurship:**
  - **Objective:** provide the tools required to start a small business.
  - **Trainer:** CRESCA Consultants from Andalgala.
  - **Participants:** 133 employees and contractors
  - **Venue:** site
  - **Date:** February – July 2017
- **Employability**
  - **Objective:** provide the tools to find a job
  - **Trainer:** Sánchez Asociados Consultants
  - **Participants:** 133 employees and contractors
  - **Venue:** site – filter plant – port facilities
  - **Date:** September – December 2017

During the first half of 2018, specific training courses have been organized in line with employee requirements including food (bakery and preserved food), technical (welding and metal working) and personal finance workshops. The employability courses will also be pursued.

## 100%

Performance reviews of 100% of non-unionised employees have been completed.

During 2017 there were no part-time roles.



# Environmental protection



## Biodiversity

We aim at mitigating any potential impacts on biodiversity.

### Environmental Programme:

The design of the revegetation model using native species has been defined.



## Water

Consumption: 785 l/s

Level permitted by authorities: 800 l/s

**Reclaimed water used in the process: 70%**

**Extraction:** Campo del Arenal basin, Santa María district, Catamarca.



## Energy

Direct use:  
857,908,200 kWh

Milled tonnes:  
30,606,000



## Climate change

Through our programmes, we seek to contribute to the global goal of reducing emissions and increasing production efficiency.



## Air

-We have 8 monitoring stations

**-PM10 concentration:** lower than reference value of 150 ug/m<sup>3</sup> set out by Law 24,585.

**-Lead concentration:** well below reference value of 1.5 ug/m<sup>3</sup>.



## Waste

Total waste generated in 2017 was 3,500 tonnes.

**USW:** 1.9kg/day/person

## SUSTAINABLE DEVELOPMENT GOALS



Ensure availability and sustainable management of water and sanitation for all.



Ensure access to affordable, reliable, sustainable, and modern energy for all.




Take urgent action to mitigate climate change and its impacts.



Sustainably manage forests, mitigate desertification, and halt and reverse land degradation and halt biodiversity loss.



A full-page photograph showing two people in safety gear (hard hats, orange high-visibility shirts, blue gloves) crouching by a small stream in a rocky, vegetated canyon. The person in the foreground is using a handheld electronic device to analyze a water sample. The person in the background is also working with a sample. The scene is outdoors with natural light and greenery.

Environment officer Sergio Olea taking water samples at Vis Vis Canyon.



Our daily commitment to the environment relies on the efficient use of natural resources, the mitigation of any impacts caused by our operation which could affect the environment, biodiversity preservation, waste reduction, land rehabilitation and mine closure planning.

Our monitoring of different indicators that are relevant to our operation show specific results, enabling us to work based on consistent results, in line with the highest environmental management standards.

Our environmental management system is certified under ISO 14001-2015<sup>1</sup> at the mine site, Filter Plant, slurry pipeline and port facilities, in the three provinces where we operate.

## Certification

We had our Quality Management System recertified under the new ISO 9001-2015. The scope of certification includes "on-site pre-analytical and analytical processes for surface and groundwater sampling."

With this international standard, we seek to ensure the quality of our monitoring activities, while minimising any potential sampling deviation. This certification significantly supports Alumbra's environmental management efforts and external controls by third parties.

<sup>1</sup> The Environmental Management System recertification was obtained by early 2018. It will be valid until late 2020 and includes one external audit annually.

## Controls completed:

### ► Air quality SDG 13

We have 8 monitoring stations -5 at the mine site and 3 in the neighbouring towns. Based on the particle dispersion model, our conclusion is that no PM10 and TSPM are emitted to neighbouring communities.

### ► Water quality SDG 6

Physico-chemical, isotopic and trace metal controls are completed and flows are measured. These activities can be completed at Campo del Arenal, the mine site and nearby rivers (Los Nacimientos, Santa María, Vis Vis basin), PS2 and PS3, rivers crossing the slurry pipeline, the Filter Plant, water discharged into DP2 canal and the Alumbra port facilities.

### ► Biodiversity monitoring SDG 15

It consists in searching for, identifying

and surveying mammals, amphibians, reptiles, birds, limnology, fish, arthropods, and native vegetation to obtain indexes of abundance and richness. Monitoring activities are conducted at 83 sites located at the Alumbra site, rivers crossing the slurry pipeline and DP2 canal.

### ► Archaeological heritage monitoring

Any potential archaeological evidence appearing on the surface due to anthropogenic and natural agents is identified, recorded and documented. More than 40 sites are monitored in the slurry pipeline and high-voltage powerline areas to preserve sites as cultural heritage.

The Catamarca Mining Department –the provincial enforcement authority– is in charge of monitoring all our environmental standards.

## Environmental leaders

Environmental leaders are part of a work team made up of employees from different site areas. They provide environmental support by communicating sustainable practices, solving everyday problems, managing environmental risks and verifying compliance with environmental observations.

Environmental observations are proactive tools that help prevent environmental incidents. The

greater the number of observations identified, the lower the potential risk of serious incidents.

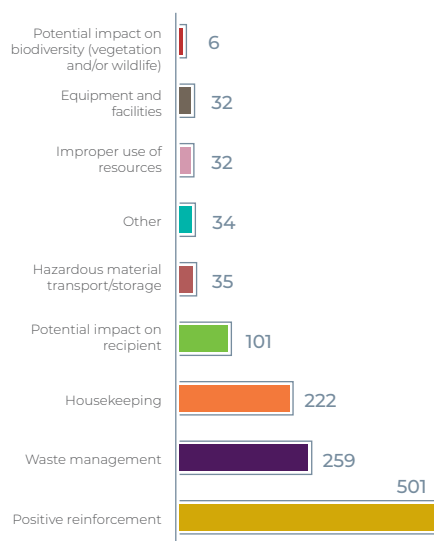
**1,217**  
observations related  
to environmental  
protection were made  
in 2017.

## Proactive indicators in 2017



Source: Minera Alumbra

## Topics observed in 2017



Source: Minera Alumbra



Hazardous waste (oil, grease, and hydrocarbon-stained cloths) is stored on site to be later transported and disposed of.

In 2017, there were incidents related to the pumps replaced in the Water Recovery System due to loss of efficiency, power failure in the impeller pump and a truck's broken oil hose. No incidents higher than Category 1<sup>2</sup> have been reported over the last 8 years.

## Initiatives by environmental leaders in 2017

### Waste management at PS2

A manual compactor for hydrocarbon-contaminated solid waste generated in the area was designed and manufactured by the mechanical maintenance personnel in PS2 (Andalgalá district). Waste is collected in 200-l containers, which are kept at a suitable storage area.

<sup>2</sup> Category 1: Negligible environmental impact that causes no damage to the environment, needs not be reported to any regulatory authority and has no impact. Categories range between 1 and 5, increasing with impact, damage and required remediation.

**5,500 kg**  
of compacted waste  
were collected at PS2  
in 2017.

With this tool, we were able to improve our storage capacity by 25% and use transport more efficiently to take waste from all site facilities to the final disposal site.

### Construction of water troughs

Water troughs were built using recycled material for cattle from towns in the vicinity of Campo Arenal. High-density polyethylene tubes, which are more resistant to the elements, were used.

In 2017, a schedule for environmental inspections conducted by different areas of observation was planned together with environmental leaders, to

conduct environmental observations and identify improvement opportunities.

## Training

An annual environmental training programme for employees and contractors was developed, and site visits were scheduled. The main goal is to communicate our environmental policies across work areas.

**366**  
people attended  
the 18 environmental  
training courses  
delivered in 2017.

Courses on waste management, environmental observations and incidents, and Mine Closure plan were delivered.





Regular monitoring activities are conducted to monitor water quality in the Vis Vis River.

SDG 6

## Water management and use

The area where we operate is dry with limited water availability. Therefore, we seek to maximise water use by reutilising most water in our process, instead of using freshwater<sup>3</sup>.

### Water consumption

EAlumbrera's total average water requirement for the entire production process was 785 l/s of freshwater in 2017, while the water use level permitted pursuant to a resolution by the Catamarca Mining and Sustainable Development Department –the enforcement authority– is 800 l/s.

In 2017, the ore milled was 11.5% less than in the previous year. However, water use increased due to the harness of the ore mined from the Bajo el Durazno deposit.

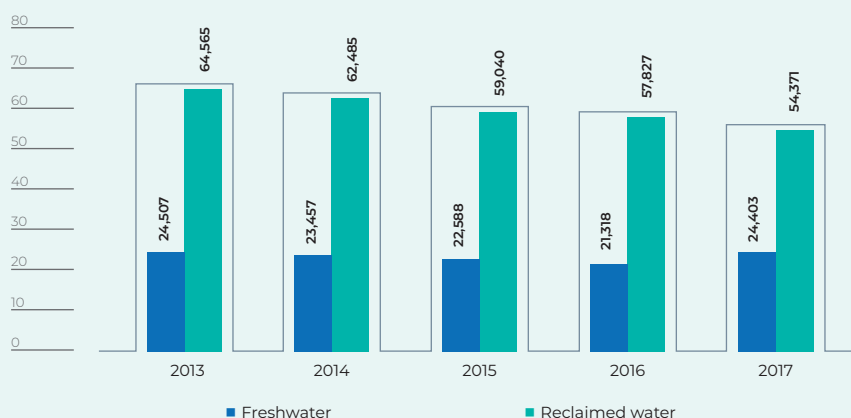
Alumbrera's operation has a closed system, meaning that water is not discharged outside the mine site. No water is discharged into any

river or aquifer downstream the site. The only outgoing water is that contained in the concentrate pumped through the slurry pipeline, representing 2.5% of the freshwater volume.

Water is reclaimed through pumpback wells and ponds to reduce freshwater use. The efficiency of the water recovery system at the Concentrator Plant is shown by regular pumping volumes.

**69%**  
of water from  
the Concentrator  
Plant is reused  
in the process.

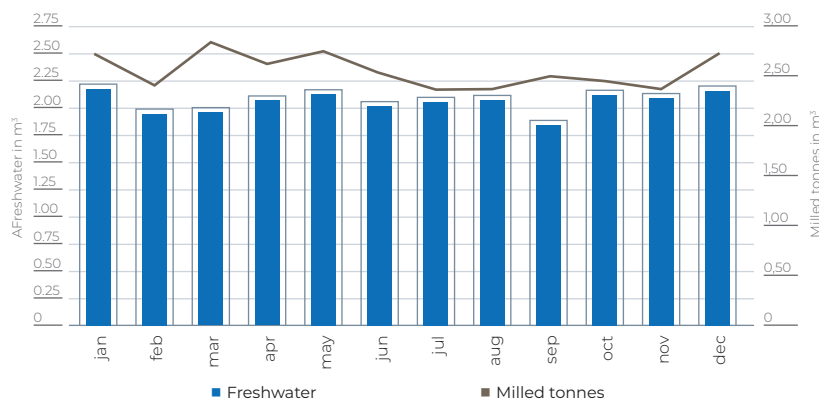
Freshwater and reclaimed water use in million m<sup>3</sup> for 2013- 2017



Source: Minera Alumbrera

- Freshwater use was in line with the ore volume milled. It should be noted that higher water levels are required for ore from Bajo el Durazno than from Bajo de la Alumbraera due to the hardness of the ore-bearing rocks.

#### Freshwater vs. tonnes milled in 2017



Source: Minera Alumbraera

#### Water withdrawal

Freshwater used in our process is withdrawn from the Campo del Arenal aquifer, in Santa María district, Catamarca. There is a large unconfined aquifer that stores water flowing from hills surrounding the basin.

To the southwest of the basin, there are 8 deep wells from which water is extracted and then pumped through a 21 km-long pipeline to be discharged into a freshwater dam at the site.

Water withdrawal is restricted to this area and does not affect water availability for the nearby communities or surface water flows from the rivers close to the basin. People from the neighbouring communities use water taken from wells drilled in the upper aquifer. Minera Alumbraera withdraws water from the deep aquifer.

The groundwater level quarterly and semi-annual monitoring activities confirm the results obtained from

predictive models regarding the extent of the aquifer depression and recovery times.

In 2017, the mathematical model was recalibrated, incorporating water level, quality and flow data gathered over the last 5 years. After the model was calibrated, predictive simulations were made to identify the aquifer recovery time. Approximately 90% of the depression is recovered within the first year after pumping activities are completed.

#### Discharge

Copper and gold concentrate is pumped through the 316-km slurry pipeline to our Filter Plant in Tucumán. To this end, water is added to the concentrate. At the Plant, water is subjected to a tertiary treatment prior to being discharged into the rainwater drain canal (DP2), under the authorisation and monitoring of the Tucumán enforcement authority.

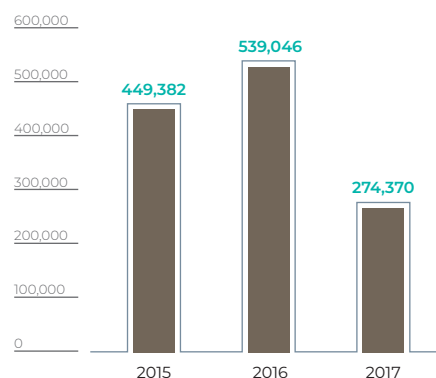
DP2 is a drainage canal built more than 25 years ago by the Tucumán administration to drain saline soils to the east and improve soil quality for farming activities. Now, it is also used to discharge effluents from the different economic activities carried out locally.

The treated water is discharged by Minera Alumbraera into the DP2 canal near Ranchillos town, in Tucumán.

Alumbraera meets the requirements of the applicable discharge water quality regulation. The permitted levels are set out in Tucumán Environment Department Resolution #30.

**274,370 m³**  
of water were discharged in 2017, which is lower than the previous year level due to a reduction in concentrate production.

#### Discharge into DP2 canal in m³ for 2015-2017



Source: Minera Alumbraera

3 Freshwater is water used in the production process for the first time.

4 To the west, the Campo del Arenal basin borders with Los Nacimientos River basin, the headwaters of Belén River. Geophysical studies and drilling activities have shown the limited connection between the

two basins, so an impact caused by the extraction of groundwater from Campo del Arenal on the flow of Belén River is ruled out. Similarly, the water chemistry confirms a minimum connection between the water of these two basins.





*Senna Aphylla, one of the native species with the best performance under the Revegetation Programme.*

SDG 15

## Biodiversity

Biodiversity consists of a variety of life forms developed in a natural environment, including plants, animals, microorganisms and their genetic material. Our biodiversity management efforts cover an area of 1,400 hectares across the mine site.

Since the ecological habitat is very important, we seek to mitigate any potential impacts on biodiversity through environmental programmes, including revegetation with native species or reforestation.

No species in the International Union for Conservation of Nature (IUCN) and Natural Resources Red List have been observed in the operational areas, and no areas for the protection of local vegetation and wildlife are being created.



### Biodiversity monitoring

Any potential and actual impacts on the ecosystem should be identified to take preventive management actions and corrective actions to address early alerts and restore the impacted areas.

It is essential to study those impacts and establish a connection between terrestrial and aquatic communities and the water physico-chemical variables during the different seasons, and to identify species whose conservation must be prioritised.

Monitoring activities consist of the search, identification and survey of mammals, amphibians, reptiles, birds, limnology, fish and native vegetation to obtain indexes of abundance. These activities are carried out by a group of biologists from different national universities. The Mining Department of Catamarca and the Mining Department of Tucumán are also involved to certify work methods.

#### ► Mammals

36 species have been identified at the mine site and in the Vis Vis Canyon.

#### ► Rivers crossing the slurry pipeline

Our goal is to monitor the physico-chemical parameters and condition of biological communities (limnology and ichthyology) at multiple points across the mine site and along the slurry pipeline, which crosses 10 rivers and 3 streams.

At each of the sampling points, the main physico-chemical parameters, such as pH, dissolved oxygen, conductivity and temperature, were measured on site. Samples were also taken.

Regarding the taxonomic composition, an algae species similar to that found in previous years was identified. Richness and

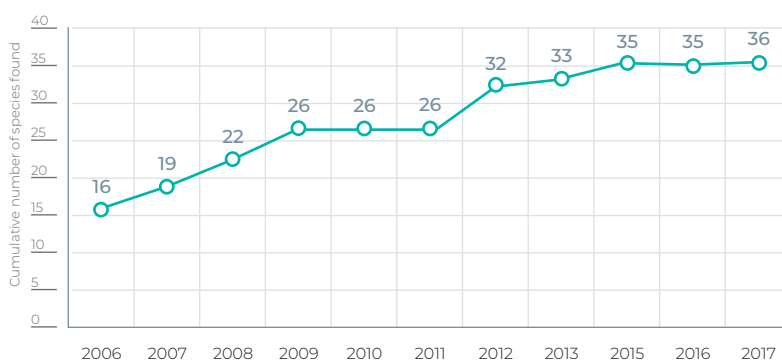
diversity values were considerably higher due to the good condition of water courses.

#### ► DP2 canal

The canal is monitored upstream and downstream the place where the Alumbrera effluent is discharged. The information gathered over two decades provides data on the local vegetation and wildlife for the Environmental Baseline, which will support the work of future generations in the long term.

Among the macroinvertebrates samples, 750 specimens from 21 families were identified and classified.

**Mammal species accumulation curve at Bajo de la Alumbrera**



Source: Minera Alumbrera

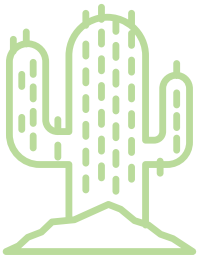


The guanaco is one of the 36 species found at the mine site.



The guanaco is one of the 36 species found at the mine site.





SDG 15

## Revegetation

Alumbrera has a bank of seeds collected inside and outside the Bajo de la Alumbrera site. Its goal is to preserve the local genetic diversity, particularly of native species. Now, we have approximately 190 kg of seeds of species preserved at low temperatures.

Trials with direct planting of native species seeds were conducted at the tailings dam and waste dumps. Upon designing revegetation trials, species mostly and naturally growing in these environments were prioritised. Rather than restoring the presence of each species, our goal is to restore the relative trend of vegetation surveyed on the land not disturbed by our operation.



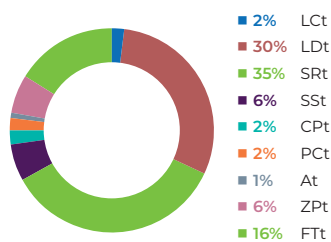
The site-based germplasm bank has 190 kg of native species seeds preserved at low temperatures.

## Disturbed\*, rehabilitated and revegetated area in hectares. 2016 and 2003-2017

		2017	2003-2017
Rehabilitated land	Minera Alumbrera waste dumps	0	80.72
	Bajo el Durazno waste dumps	6.11	19.95
	Tailings dam	0	1.75
Revegetated land	Tailings Dam	0	1.75
	Waste dumps	0	10.52
Disturbed land*	Minera Alumbrera	0	77.86
	Minera Alumbrera waste dumps	0	235.23
	Bajo el Durazno deposit	13.67	51.5
	Bajo el Durazno waste dumps	27.99	75.52

\* Disturbed area: Area altered by action of mining operations, either by excavations as is the case of the open pit, or backfilling as is the case of waste dump disposal.

## Species with best performance



Ldt: *Larrea cuneifolia* total; Ldt: *Larrea diva ricota* total; SRt: *Senna rigidatotal*; SSt: *Senecio subulatus* total; CPt: *Cercidium praecox* total; PCt: *Pappofoorum* total; At: *Atriplex sp* total; ZPt: *Zuccagnia punctata* total; FTt: *Flourenia tortuosa* total.

SDG 6, 7, 13

## Eco-efficiency

LEco-efficiency indicators are based on resource use standards applicable to mining production at similar sites. They are also guidelines

to properly use natural resources. Indicators are calculated annually based on Alumbrera's production and consumption levels.

## Production consumption

Performance Indicator	Unit of measurement	Target 2015	Result 2015	Target 2016	Result 2016	Target 2017	Result 2017
Freshwater	l/t milled	683	683	720	616	750	797
Recycled water	l/t milled	1,600	1,785	1,600	1,671	1,600	1,777
Energy	GJ/milled	0.093	0.096	0.093	0.091	0.093	0.101
CO <sub>2</sub> eq	t CO <sub>2</sub> /k t moved	1.92	1.83	2.78	2.30	2.78	1.98

■ Better than budget + 5%

■ In line with budget +/- 5%

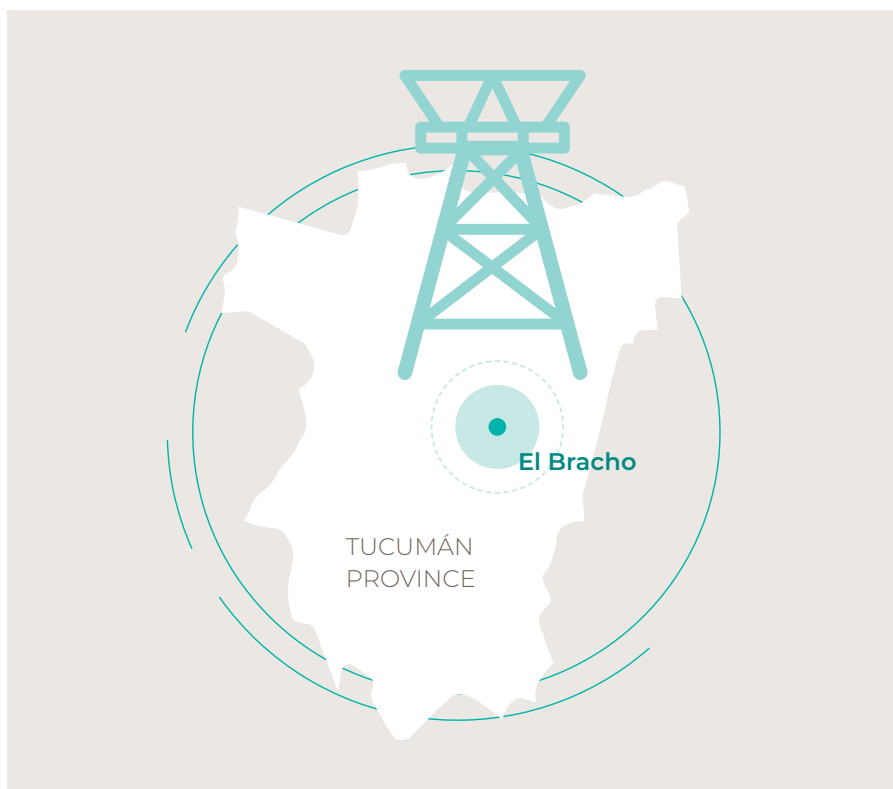
■ Worse than budget -5%

## Energía SDG 7

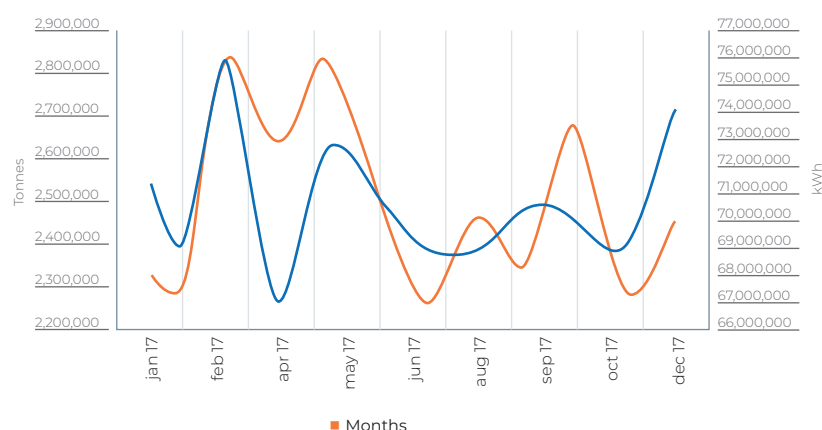
Electricity is supplied by a high-voltage 220 kV 202-km powerline owned by Minera Alumbraera, from the transformer station located in El Bracho, Tucumán, to the Bajo de la Alumbraera site.

# 3,057TJ

was our total electricity consumption from the national grid in 2017, from both renewable and non-renewable sources<sup>5</sup>.



### Total energy consumption in 2017

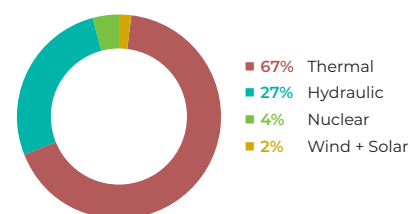


Source: Minera Alumbraera

The annual average consumption ratio was 11% higher than in 2016 due to the greater hardness and high-gypsum content of ore mined from the BED.

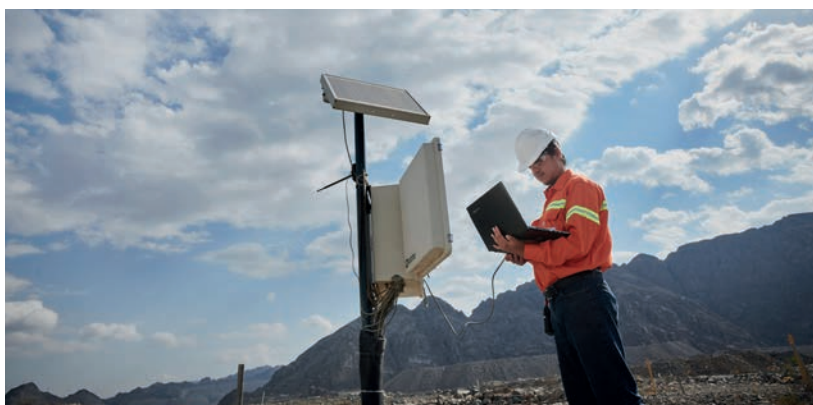
Out of our total annual total energy consumption, 81% was from non-renewable sources and 19% from renewable sources. This is because 90% of our energy requirement is supplied by CAMMESA, using mixed fuels, including:

### CAMMESA energy matrix



Source: Minera Alumbraera

The remaining 10% is supplied under a contract entered into by Energía Plus and a thermal power plant.



Biologist Edgar Alderete from Catamarca downloading information on capping trials.

<sup>5</sup> In 2016, pursuant to Energy Department Resolution No. 95/2013, the direct renewal of electric power supply contracts was banned by the Energy and Mining Ministry. Therefore, electricity is directly supplied by the

relevant authority through the Wholesale Electricity Market Administration Company (CAMMESA), the national power grid. Thus, neither the type of energy nor the supplier can be chosen.

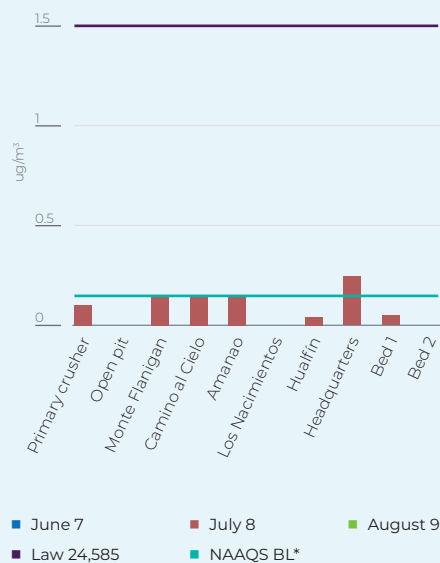


## Air quality SDG 13

Air quality depends on its composition, and whether substances are present or not and their concentration levels. The probable emission sources are earth movement of land being rehabilitated and those associated to ore mining and haulage activities.

There are **8** monitoring stations, 5 of which are at the mine site and 3 are in neighbouring towns.

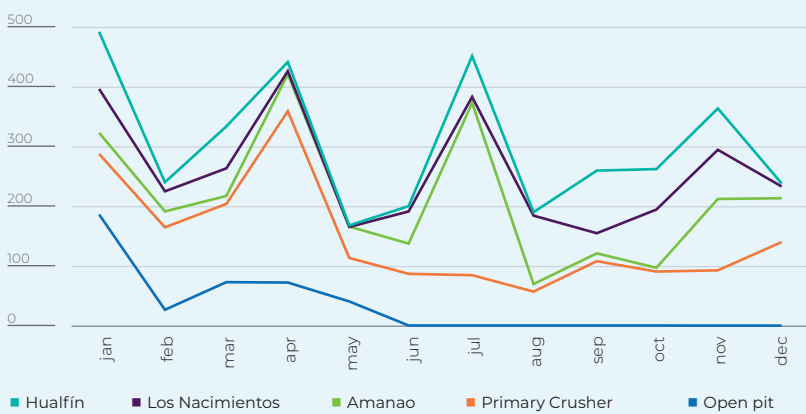
### Lead concentration in ug/m<sup>3</sup>. 2017



Source: Minera Alumbrera

\* Benchmark level of the National Ambient Air Quality Standards (set out by the US Environmental Protection Agency)

### Particulate matter concentration<sup>6</sup> (PM10) in ug/m<sup>3</sup>. 2017



Source: Minera Alumbrera

### PM10 in ug/m<sup>3</sup>. 2015-2017

	2015	2016	2017
OPEN PIT	66	54.75	77.96
AMANAO	24	17.21	63
LOS NACIMIENTOS	32	21.65	56.17
HUALFÍN	33	20.73	45.11

\* The open pit could not be accessed since June 2017.

Certain values were higher due to fewer rainfall and more wind occurrences.

### Lead concentration in ug/m<sup>3</sup> at the mine site and towns. 2015 - 2017

	2015	2016	2017
OPEN PIT	0.00054 ug/m <sup>3</sup>	0.0009576 ug/m <sup>3</sup>	0.00078 ug/m <sup>3</sup>
AMANAO	0.00047 ug/m <sup>3</sup>	0.0005821 ug/m <sup>3</sup>	0.01413 ug/m <sup>3</sup>
LOS NACIMIENTOS	0.00051 ug/m <sup>3</sup>	0.0006232 ug/m <sup>3</sup>	0.00137 ug/m <sup>3</sup>
HUALFÍN	0.00050 ug/m <sup>3</sup>	0.0006116 ug/m <sup>3</sup>	0.00468 ug/m <sup>3</sup>

\* The open pit could not be accessed since June 2017.

\*\* Lead benchmark level: 1.5 ug/m<sup>3</sup>

<sup>6</sup> Particulate matter: A mixture of liquid and solid organic or inorganic particles suspended in the air.



Climate change monitoring activities help gather relevant information for mine closure activities.

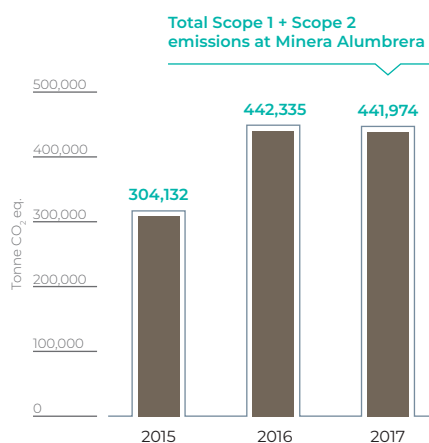
SDG 7, 13

## Climate change

Our operation has significant energy requirements. Since fossil fuels contribute to energy availability, it is necessary to reduce emissions and to be more efficient in our production and use of energy. We understand our responsibility in managing Greenhouse Gas (GHG) emissions and we seek to contribute to the global transition to a low-carbon economy.

Therefore, contingency cost for carbon is included in our financial models, which help us reduce our

### Alumbrera's carbon footprint in CO<sub>2</sub>, 2015-2017



Source: Glencore Group database

greenhouse gas (GHG) footprint. The operation and consumption from activities conducted at the mine site have not changed over the last year. Thus GHG generation remains stable.

Our GHG emissions has increased since 2016 because the (Scope 2) energy used is considered as energy from non-renewable sources.

We have three weather stations that record environmental variables of the mine site and surrounding areas. They are located at the Alumbrera airport (Campo del Arenal), the Tailings Dam and at the Puente Waste Dump. This allows us to monitor data and record the potential effect of climate change in the region, which is important information for mine closure activities.

Regarding our efforts to find opportunities to reduce Scope 1 GHG emissions, the Mine Planning area is continuously working to shorten ore and waste rock haulage truck routes to their respective destinations, trying to reduce fossil fuel consumption.

Regarding Scope 2 GHG emissions, electricity consumption is a variable that depends on characteristics of the ore fed into the concentrator plant, which makes it harder to control and reduce consumption.









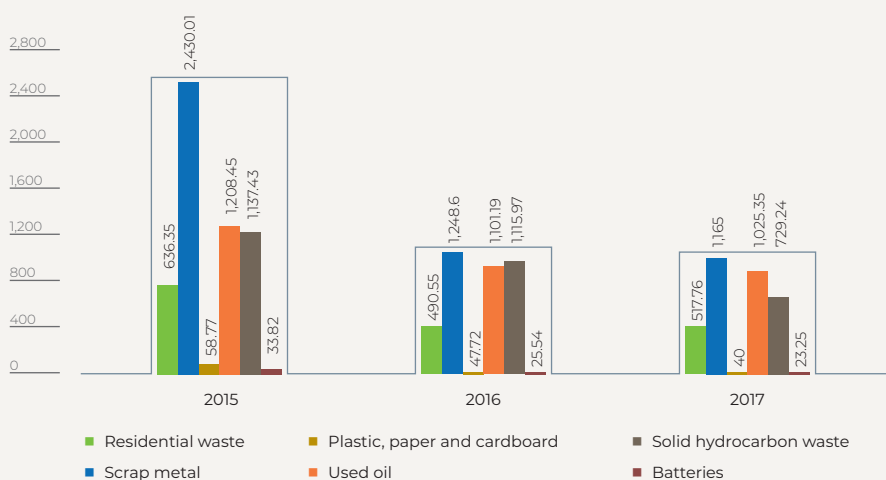
Area where batteries are stored prior to their final disposal by a Catamarcan firm.

## Waste

### Clasificación y destino

TYPE	WASTE	FINAL DISPOSAL
 RESIDENTIAL	Non-industrial waste generated in our daily life.	At an authorised waste dump in the mine site.
 HAZARDOUS	Used oil, grease, solid waste, hydrocarbon-contaminated soil, cans and batteries.	Final destruction by qualified operators.
 INDUSTRIAL	Scrap metal, wires, wood and tyres.	They are melted for recycling purposes.
 RECYCLABLE	Paper, cardboard and plastic.	They are donated to recyclers.

### Waste generated by Alumbraera in tonnes for 2015-2017



Source: Minera Alumbraera

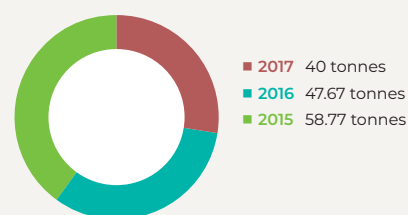
### Residential waste

Each person generated an average of 1.9 kg/day of Urban Solid Waste (USW) in 2017, which is stored at the current dump managed by Alumbraera. We continued with our waste classification initiatives at the workplace and our material recycling programmes.

### Paper, cardboard and plastic

Paper, cardboard and plastic are selectively collected to raise funds to support the comprehensive development of Hospital Garrahan Foundation and Pequeño Cottolengo Don Orione, charitable institutions located in Tucumán, and to contribute to environmental protection.

### Collection for social purposes



Source: Minera Alumbraera

### Hazardous waste

Solid and liquid hazardous waste is transported and disposed of by qualified contractors. This waste is used in local and national businesses as alternative fuels obtained through thermal destruction.

### Pathological waste

This waste is generated at the Health Care Service that provides primary health care to all employees working at the site. 130 kg of waste were sent away for final disposal.

### Industrial waste

In 2017, 1,165 tonnes of scrap metal were collected and sent away for final disposal. After having been melted, it is turned into steel bars which are traded again.

### Materials used in 2016-2017

SUPPLIES	UNITS	QUANTITY	
		2016	2017
Conveyor belts	Metres	3,027	1,195
Diesel fuel	Litre	61,957,639	41,740,929
Electricity	MW/h	852,557	910,621
Anfo explosives	Tonnes	10,889	8,597
Anfo Explosives – emulsion	Tonnes	7,992	4,965
Mill balls	Tonnes	19,398	18,855
Lime	Kilogramme	29,224,527	28,957,443
Liquified gas	Litre	515,498	500,437
Lubricating oil	Kilolitre	2,478	1,293
Tyres – heavy vehicles	Units	358	134
Tyres – light vehicles	Units	789	368
Fuel	Litre	19,218	6,406
Xanthates	Kilogramme	0	2,767
Recycling material	Paper, cardboard, plastic	Sent to recycling organisations for charitable purposes	40

### Impact by employee and cargo transport. 2015-2017

EMPLOYEE TRANSPORT	CARGO TRANSPORT
<b>2015</b> - 69,613 km - 17,350 l of diesel fuel	<b>2015</b> - 9,500,384 km - 30,401,229 l of diesel fuel
<b>2016</b> - 64,732 km - 16,120 l of diesel fuel	<b>2016</b> - 9,432,247 km - 30,183,191 l of diesel fuel
<b>2017</b> - 65,524 km - 17,127 l of diesel fuel	<b>2017</b> - 6,602,573 km - 21,128,234 l of diesel fuel



The final disposal of residential waste generated daily occurs in a site-based dump.



# Creating shared value



## Production

- 133,951 tonnes of copper concentrate
- 28,292 troy ounces of dore gold
- 1,301 tonnes of molybdenum



## Exports

US\$472 million



## Direct jobs

1,621 people



## Production value

\$400.2 million



## Fiscal revenues

National fiscal revenues: \$77.4 million  
Ingresos fiscales para Catamarca: \$11.9 millones



## Direct revenues

Contributed by Minera Alumbrera to the Argentine economy: \$400 million.



## Direct revenues

Contributed by Minera Alumbrera to the Catamarca economy: \$77,729,033 million



## Purchases

- \$252.1 million in purchases from domestic suppliers.
- \$21 million in purchases from Catamarca suppliers

## SUSTAINABLE DEVELOPMENT GOALS



Stop poverty in all its forms everywhere.



Promote inclusive and sustainable economic growth, employment and decent work for all.





Thickeners separate solids from liquids causing water to flow to the surface



SDG 1, 8

For two decades, Minera Alumbra has sustainably created value and created direct and indirect business opportunities for local businesses and quality jobs for thousands of workers.

Bajo de la Alumbra's contribution to the economic growth of the region where we operate ranges from job creation, purchases of goods and services from local suppliers, foreign currency generation and fiscal revenues paid to the national, provincial and municipal governments, to sustainable development expenditure in infrastructure works and intangible assets.

In addition, we were able to uphold and promote a work culture based on values such as efficiency, goal achievement, safety at work, respect for others, transparency, ongoing training, stakeholder engagement and respect for the environment.

This work and engagement method, which is also part of our intangible resources, has benefited and been replicated by local contractors and suppliers of goods and services.

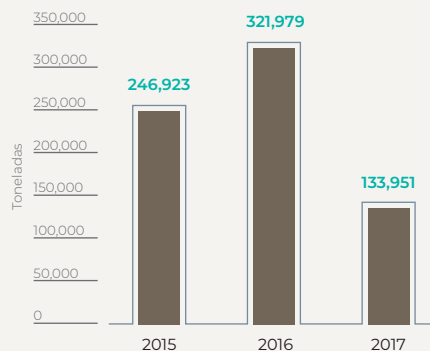


Mill balls are used to grind ore at the Concentrator Plant.

## Production

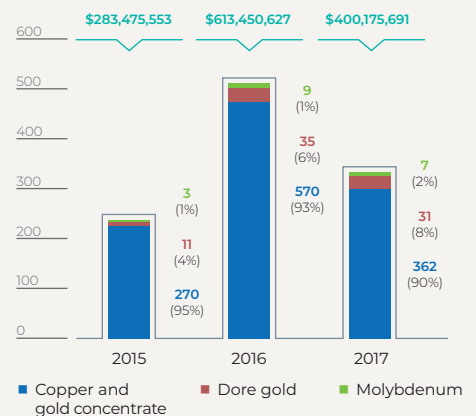
Minera Alumbra produced 133,951 tonnes of copper and gold concentrate, 28,292 troy ounces of dore gold and 1,301 tonnes of molybdenum in 2017.

### Alumbra's production of copper and gold concentrate. 2015-2017



Source: Minera Alumbra

### Alumbra's production value in dollars and percentage of each product in the total value. 2015-2017.



Source: Minera Alumbra

**\$400,175,691** was Alumbra's production value, 34.9% lower than in 2016.

Compared to 2016, production volumes decreased 58.4% for copper and gold concentrate, 19% for dore gold and 36.5% for molybdenum.

Just like in previous years, at this stage of the open pit mine closure, copper and gold concentrate is our main product, representing 90.5% of the total production value in 2017, while dore gold and molybdenum represented 7.7% and 1.8% of the total value respectively.



View of the Filter Plant, located in Tucumán, where concentrate is dewatered and water is treated.

## Exports

Minera Alumbra's exports totalled \$472 million in 2017, which is 31.2% below the 2016 level. In terms of volumes, 154,403 tonnes of copper concentrate, 0.93 tonnes of dore gold and 1,551 tonnes of molybdenum were exported.

In 2017, Alumbra's exports represented 77.4% of Catamarca exports, 11.4% of Northwestern Argentina exports and 12.8% of the Argentine mining exports.

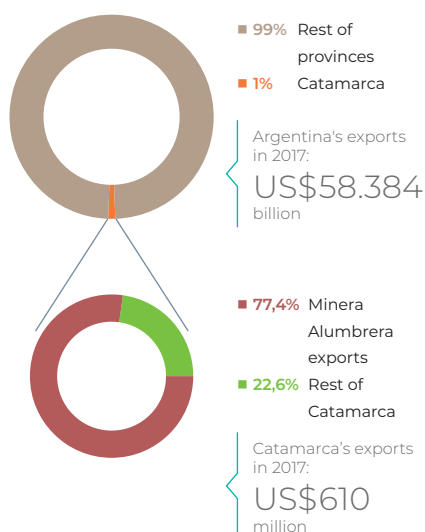
Minera Alumbra exported its products to seven countries in 2017. Copper concentrate was mainly exported to Germany, Finland, Bulgaria, Japan and Spain; dore gold was exported to Switzerland, and molybdenum was exported to Chile.

### Exports in million dollars (FOB). 2015-2017

	2015	2016	2017
Minera Alumbra's exports	501	686	472
Catamarca's exports	578	795	610
Northwestern Argentina's exports	3,390	4,588	4,111
Argentina's exports	56,784	57,879	58,384
Argentine mining exports	3,533	3,608	3,696

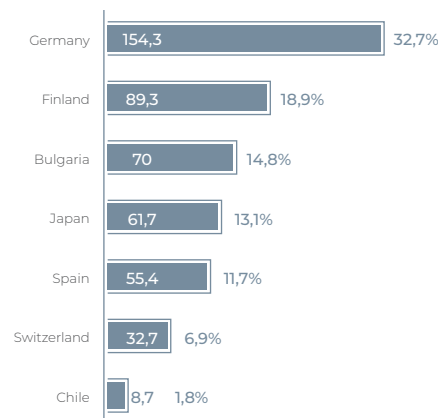
Source: Argentine Statistics and Census Institute (INDEC), Argentine Mining Information Centre (CIMA in the Mining Department) and Minera Alumbra

### Percentage of Alumbra's exports in Catamarca's exports and Argentina's exports in 2017



Source: INDEC and Minera Alumbra

### Destination of Alumbra's exports and percentage in total exports in 2017



Total exports: US\$472.105.270

Source: Minera Alumbra



### Alumbrera's contributions to the Argentine economy in 2015-2017 in dollars<sup>1</sup>

DESCRIPTION	2015	2016	2017	Acumulated 2015-2017
Income Tax	0	0	27,909,878	27,909,878
YMAD's profit share	565,896	0	0	565,896
Purchases of domestic goods and services	203,886,914	239,285,966	252,156,403	695,329,283
Provincial royalties	4,892,529	13,895,657	7,817,230	26,605,416
Salaries	32,100,005	45,659,260	59,077,557	136,836,822
Contributions	18,545,617	21,546,634	26,042,451	66,134,702
Grants	902,096	160,737	0	1,062,833
Wealth tax	0	0	0	0
Mining easements and water charges	2,422,466	2,397,582	3,946,248	8,766,296
Tax on diesel fuel	5,750,670	4,721,227	23,447,641	33,919,538
Turnover tax	36,871	55,122	77,438	169,432
Miscellaneous charges (real estate taxes, vehicle registration fees)	57,467	76,097	60,627	194,190
Import duties	18,651	7,157	18,812	44,620
Export taxes	29,741,894	10,390,898	0	40,132,791
<b>Total</b>	<b>298,921,075</b>	<b>338,196,338</b>	<b>400,554,286</b>	<b>1,037,671,698</b>

Source: Minera Alumbrera

### Alumbrera's economic contributions to Catamarca in 2015-2017<sup>2</sup>

CONCEPTO	2015	2016	2017
Mining royalties	4,892,529	13,895,657	7,817,230
Automobile tax	57,467	62,572	60,627
Water easement charge	2,419,349	2,394,857	3,943,523
Turnover tax	36,871	55,122	77,438
Real estate tax	0	13,561	0
60% of YMAD's profit share	339,538	0	0
Purchases from Catamarca suppliers	16,818,090	16,045,477	21,025,579
Payment of annual gross salaries	26,455,461	34,476,507	44,804,637
<b>Total contributions to Catamarca</b>	<b>51,019,304</b>	<b>66,943,718</b>	<b>77,729,033</b>

In 2017, \$11,898,817 in fiscal revenues, including mining royalties, taxes and provincial charges, were contributed by Alumbrera to Catamarca province. No profits were distributed to YMAD during such period. Our contribution to Catamarca's economy, including payments to suppliers and

estimated salaries paid to Catamarcan employees, is \$77,729,033 in 2017.

Catamarca province's fiscal revenues generated by Alumbrera represent 7.7% of the total provincial fiscal collection in 2017<sup>3</sup>.



<sup>1</sup> Values accrued and estimated as of December 2017.

<sup>2</sup> The amounts paid as mining royalties, taxes and charges are accrued, while salaries are estimated based on the gross average salary.

<sup>3</sup> In 2017, Catamarca fiscal revenues totalled \$153,743,623 including Real Estate, Automobile, Turnover and Stamp Taxes.

## Regalías

The amount accrued as mining royalties paid by Minera Alumbra in 2017 was \$7,817,230, representing 84,6% of total payments made by Alumbra to the Catamarca tax authority.

To the date of this report, royalties paid in 2017 have not been distributed in full due to delays by certain towns in submitting their project assessment reports, which are required to effectively to distribute such funds in accordance with the applicable regulations.



View of production lines at the Concentrator Plant.

### Partial distribution of mining royalties paid by Alumbra in Catamarca<sup>5</sup> in dollars. 2015-2017 and 2004-2017.

DISTRICT / TOWN	2015	2016	2017	Acumulado 2004-2017
<b>ANDALGALÁ</b>	<b>1,060,744</b>	<b>2.757.224</b>	<b>2.757.224</b>	<b>20.172.026</b>
Aconquija	505,496	602.178	602.178	4.679.400
Andalgala	555,248	2.155.046	2.155.046	15.492.625
<b>BELÉN</b>	<b>1,060,744</b>	<b>2.757.224</b>	<b>2.630.078</b>	<b>20.044.879</b>
Belén	372,533	968.337	968.331	7.084.434
Corral Quemado	104,631	198.796	198.796	1.482.555
Hualfin	109,746	358.439	358.439	2.594.212
Londres	107,241	278.755	278.755	2.039.392
Pozo de Piedra	100,980	197.142	69.965	1.340.260
Puerta de Corral Quemado	66,721	173.429	173.429	1.268.820
Puerta de San José	64,525	142.824	142.824	1.054.489
San fernando	45,984	99.812	99.848	737.848
Villa Vil	88,384	339.690	339.690	2.442.870
<b>SANTA MARÍA</b>	<b>333,210</b>	<b>716.878</b>	<b>722.314</b>	<b>5.348.246</b>
San José	107,370	322.595	328.031	2.367.196
Santa María	225,841	394.283	394.283	2.981.050
<b>Subtotal API</b>	<b>2,454,699</b>	<b>6.231.326</b>	<b>6.109.616</b>	<b>45.565.151</b>
Rest of Catamarca towns	927,560	2.560.280	1.810.862	17.924.308
<b>Total towns</b>	<b>3,382,259</b>	<b>8.791.606</b>	<b>7.920.477</b>	<b>63.489.459</b>
Rest: Treasury and Promotion Fund	2,679,137	6.963.960	6.963.960	54.483.951
<b>Total royalties</b>	<b>6,061,395</b>	<b>15.755.566</b>	<b>14.884.438</b>	<b>117.973.409</b>

Sources: Catamarca Province Official and Judicial Gazette, Catamarca Office of Mining Social Promotion.

4 The partial amount of mining royalties publicly reported by Catamarca province, and paid by Minera Alumbra, is \$14,884,438. This amount is distributed pursuant to Provincial Law No. 5,128 between the different districts, Catamarca's General Treasury and the Development Promotion Fund. This figure

includes amounts paid by Alumbra during the four quarters of 2017 and four official assessments applicable to the following terms: Q2 2016; Q2 and Q4 2014; Q1, Q2, Q3 and Q4 2015; Q4 2013 and Q1 2014.

5 To the date of this report, royalties paid in 2017 have not been distributed in full due to delays by certain towns in submitting their project assessment reports, which are required to effectively to distribute such funds in accordance with the applicable regulations.



A large yellow Komatsu 422 dump truck is the central focus, with its bed raised at a steep angle. The truck is situated in a vast industrial maintenance shop with a high ceiling supported by a complex steel truss system. Numerous bright overhead lights illuminate the scene. In the background, other vehicles and maintenance equipment are visible, along with a few workers. The foreground shows various tools, carts, and equipment on the floor.

At the truck maintenance shop, we seek to reduce safety risks, while implementing the best practices in the truck maintenance processes and improving our pollutant monitoring and environmental protection management effort



SDG 1, 8

# Value chain

In order to empower local families and businesses, at Minera Alumbra, supplier development programmes have been implemented during the decades that we have operated, efficiently generating wealth in the different links of our value chain.

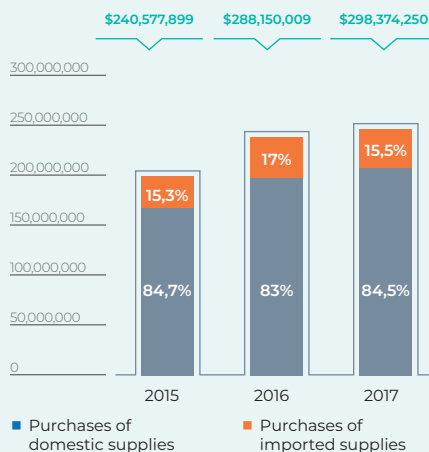
Due to the efforts made to strengthen the value chain, we now have key intangible resources to contribute to the economic and symbolic development of this region in the future, with results that will go beyond the life of Bajo de la Alumbra deposit.

## \$298.3 million

Alumbra purchased goods and services totalling \$298.3 million in 2017, \$84,5 out of \$100 were spent on goods and services from Argentine suppliers and only \$15,5 were spent on imported goods

Purchases of imported goods totalled \$46.2 million, while purchases of domestic goods totalled \$252.1 million. They represent monthly revenues for \$21 million in the Argentine economy or daily purchases for \$690,839.

### Supplies purchased by Alumbra by domestic or imported origin. 2015-2017

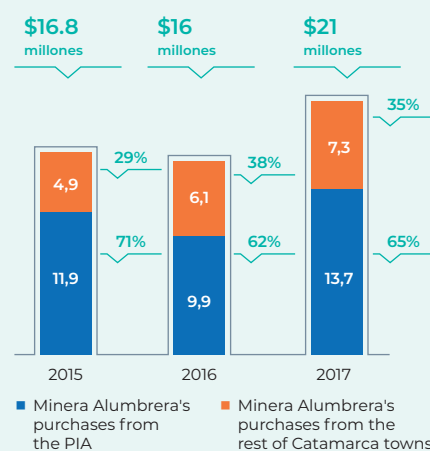


Source: Minera Alumbra

In 2017, Minera Alumbra's purchases from Catamarca suppliers totalled \$21,025,579, representing 8,3% of the total goods and services purchased domestically during said year, and 7% of our total purchases, including domestic and imported purchases.

Additionally, Alumbra's purchases from the PIA totalled \$13,732,210, representing 65,3% of our purchases in Catamarca, 5,4% of our domestic purchases and 4,6% of our total purchases, including domestic and imported goods and services.

### Alumbra's purchases sourced from Catamarca and distribution between the PIA and the rest of the districts, in million dollars. 2015-2017



Source: Minera Alumbra



Our purchases from Catamarcan suppliers totalled \$21 million in 2017.

6 The Primary Impact Area (PIA) comprises Andalgalá, Belén and Santa María.



# Commitment to local communities

Throughout the 20 operational years, we have sought to improve the standard of living at neighbouring communities by focusing on sustainable development practices (SD).



Sustainable development programme expenditure

\$259,914



Major communities

**Catamarca**  
Andalgala, Belén, Santa María, San Fernando del Valle de Catamarca



Production development programmes

81%  
of SD expenditure



Sustainable development programme expenditure over the last 3 years

\$1,944,302



Direct and indirect businesses from the PIA are the beneficiaries of our production programme

1.115 and 2.442  
respectively

## SUSTAINABLE DEVELOPMENT GOALS



**1 NO POVERTY**  
Stop poverty in all its forms everywhere.



**3 HEALTH AND WELL-BEING**  
Ensure healthy lives and promote well-being for all at all ages.




**4 QUALITY EDUCATION**  
Ensure inclusive and equitable quality education and promote life-long learning opportunities for all.



**8 DECENT WORK AND ECONOMIC GROWTH**  
Promote inclusive and sustainable economic growth, employment and decent work for all.





Chanar Punco farmers, supported by Minera Alumbra, developed a vineyard for winemaking





The Education Improvement Plan implemented by UNTREF and Minera Alumbraera represents the first community programme which had a major impact on the area and provided Catamarcan teachers with new education tools.

We believe that improving education quality in neighbouring communities, access to hospitals in the vicinity of towns and people's employability, together with a boost to local production activities have been Alumbraera's pillars to ensure a positive social change.

We have established a scenario where company benefits have a positive impact on neighbouring communities, which is the place where our employees, suppliers, producers, teachers, craftsmen and doctors come from.

## Community Liaison

ODS 1, 3, 4, 8

Since the onset of operations, we have maintained a Community Programme based on the following priority interests: health, education, production, as well as sports and culture. The main communities affected by our project are in the districts of Andalgalá, Belén, Santa María and San Fernando del Valle de Catamarca, in the province of Catamarca; and San Miguel de Tucumán, Concepción and Amaicha del Valle, in the province of Tucumán.

Our programmes are the result of joint efforts made by the civil society, the government and Minera Alumbraera. This cooperation approach is based on the recognition of the know-how and leading role played by each local member in managing the development process.

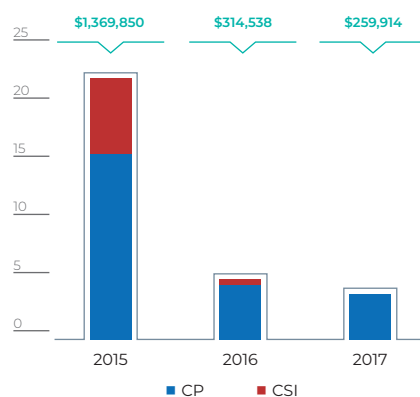
Our accomplishments over the last few years prove that this work is performed with responsibility, transparency and the ongoing commitment by all the parties involved.

During 2017, \$259,914 were spent in our Sustainable Development (SD) programme, which involves our Community Programme, together with major infrastructure works. Considering that mine closure is estimated in 2018, no civil or infrastructure works have been developed during 2017 as those executed over the last eleven years<sup>1</sup>. On the contrary, expenditure was made exclusively in production projects.

These projects, addressed to farmers, are intended to enhance human capital, which embodies technical know-how, skills, and experience-based learning.

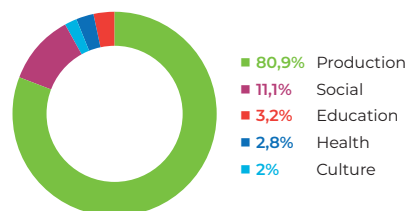
Our support was also provided to strengthen collective actions and the individual bonds for teamwork projects. This social capital is composed of association projects, farmer cooperatives, small-scale entrepreneur groups, among others.

### Evolution of Minera Alumbraera sustainable development expenditure on the Community Programme (CP) and infrastructure works (CSI) in dollars for the 2015-2017 period.



Sources: Minera Alumbraera

### Total Minera Alumbraera's Sustainable Development expenditure by area in 2017.



Total expenditure: \$259,914

Source: Minera Alumbraera

# 81%

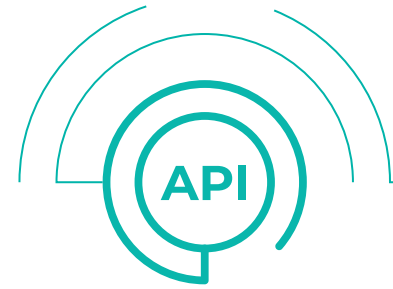
During 2017, 81% of our SD expenditure was allocated to production initiatives, including \$210,340 to support farming projects.

Production development projects include the provision of supplies, such as seeds, seedlings, agrochemicals, fencing posts and tools to various local farmer groups.

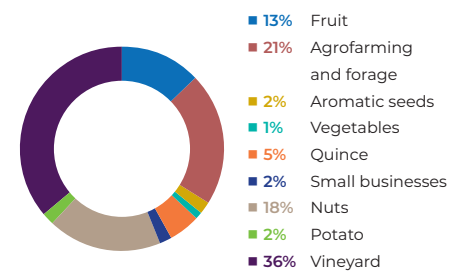
They also include technical assistance on health management and training on varietal re-engineering of local crops.

Regarding livestock raising activities, projects to provide technical assistance and training on forage to farmers were carried out and followed up, and association initiatives were facilitated.

11% of the aggregate amount was spent in the social area. Projects comprise actions and the provision of items that support infrastructure works and supplies given to health centres, sport gears and items for sports centres, among others.



## Breakdown per type of production in the PIA. 2017



Total expenditure: \$168,188

Source: Minera Alumbra

## MAJOR PRODUCTION SUPPORT PROJECTS CONDUCTED IN THE PIA DURING 2017<sup>2</sup>

PROGRAMME	DISTRICT	TOTAL AMOUNT BUDGETED	TOTAL AMOUNT SPENT	DIRECT BENEFICIARIES	INDIRECT BENEFICIARIES		
Fruit production	Andalgalá (Chaquiago-Choya)	ANDALGALÁ	\$17,418	30	90		
Walnut farmers	Andalgalá (Potrero)			36	72		
Potato farming	Andalgalá (Villa vil)			4	22		
Forage	Santa María - Loro Huasi - San José	SANTA MARÍA	\$40,403	39	58		
Farming and livestock raising	Santa María- Agua Amarilla and Paloma Yaco			54	66		
Aromatic seeds	Santa María - Loro Huasi			24	48		
Small businesses	Santa María			5	16		
Grapevine production	Santa María			14	32		
Fruit production	Santa María - San José			240	520		
Walnut production	Santa María - San José			12	24		
Quince production	Belén			BELÉN	\$37,925	12	30
Fruit production	Belén - Puerta de San José - Pozo de Piedra					250	530
Walnut production	Belén	24	50				
Grapevine production	Belén - Hualfín	24	35				
Vegetables	Belén - Londres	11	33				
Farming and livestock raising	Belén - Ampujaco	20	60				
Fruit production	Tucumán (Amaicha)	TUCUMÁN	\$72,443	200	460		
Grapevine production	Tucumán (Colalao del Valle)			14	33		
Grapevine production	Tucumán (Los Zazos)			18	42		
Walnut production	Tucumán (Amaicha)			22	49		
Farming and livestock raising	Tucumán (Amaicha)			62	172		
Total principales proyectos área productiva. Año 2017			\$168,188	1.115	2.442		

<sup>1</sup> As from 2006, several projects were developed jointly with the Catamarca and Tucumán governments under our Community Programme. Alumbra and the UTE have built hospitals, schools, sport centres and intensive care units and provided state-of-the-art medical equipment.

<sup>2</sup> The aggregate amount of the major projects in the table is lower than the total expenditure in production initiatives which also includes the operating and logistics costs under this programme





Production development programmes of local crops are supported with infrastructure works to improve access to water through irrigation channels



The nut processing plant in London, district of Belén, Catamarca, hires local people.

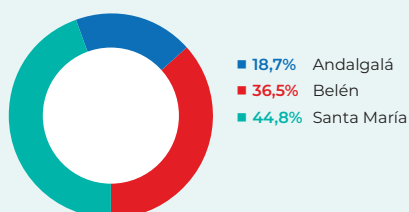
## Sustainable development expenditure in the PIA during 2017

Andalgalá projects  
\$22,732

Belén projects  
\$44,298

Santa María projects  
\$54,509

### Breakdown of sustainable development expenditure by areas, 2017



Total PIA: \$121,539

Source: Minera Alumbra



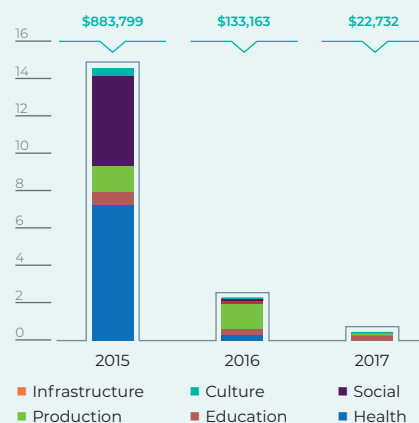
Andalgalá

SDG 1, 3, 4, 8

Minera Alumbra spent \$22,732 in this district during 2017, and over the last three years (2015-2017) the aggregate expenditure came to \$1,039,694. Expenditure on education accounted for 77% of the aggregate; 17% was allocated to agricultural activities such as fruit, walnut and potato production.

Regarding the 3% spent on health, Alumbra provided materials and equipment to support the major infrastructure works completed in 2015, while the remaining 3% was allocated to the social and cultural areas.

### SD Programme Expenditure of Alumbra in Andalgalá. Breakdown by area. In dollars. 2015-2017



Source: Minera Alumbra



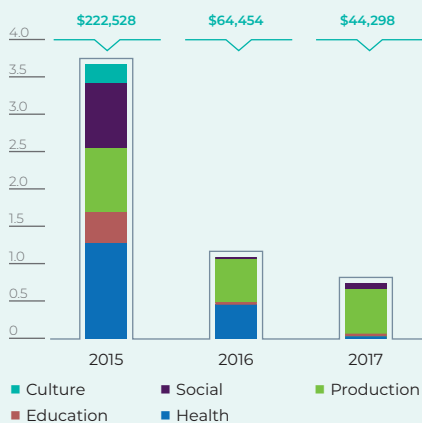
## Belén

SDG 1, 8

During 2017, Alumbraera spent \$44,298 in SD initiatives in Belén. The aggregate expenditure for the 2015-2017 period amounts to \$331,280.

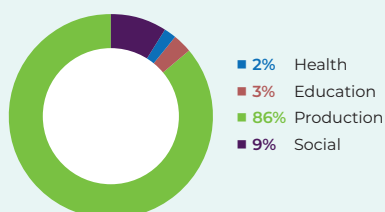
86% was allocated to production support projects for vineyards, aromatic seeds, fruit, walnut, quince and vegetables.

### SD Programme Expenditure of Alumbraera in Andalgá. Breakdown by area. In dollars. 2015-2017



Source: Minera Alumbraera

### Sustainable development expenditure in Belén by area. 2017



Total amount: \$44,298

Source: Minera Alumbraera



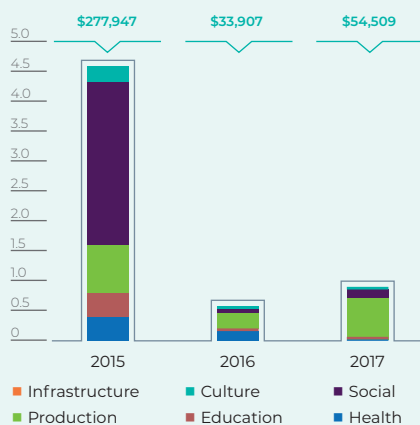
## Santa María

SDG 1, 8

During 2017, Alumbraera spent \$54,509 in SD initiatives in Santa María. The aggregate expenditure for the 2015-2017 period amounts to \$366,363.

74% was allocated to production agrofarming projects such as agriculture, livestock raising, forage, aromatic seeds and walnut production, in addition to the cooperation to establish small food businesses.

### Minera Alumbraera's SD expenditure in Santa María by area in dollars. 2015-2017



Source: Minera Alumbraera



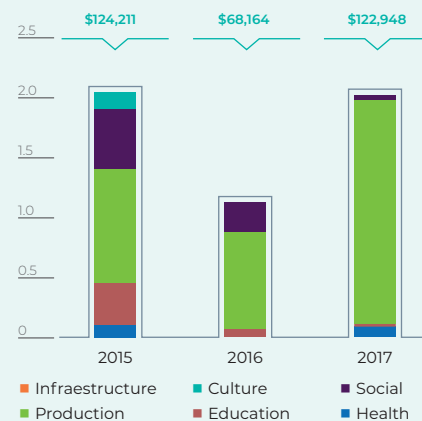
## Tucumán

SDG 1, 8

During 2017, Alumbraera spent \$122,948 in SD initiatives in Tucumán. The aggregate expenditure for the 2015-2017 period amounts to \$315,323.

93% was allocated to sustainable development production projects in Amaicha, Colalao del Valle and Los Zazos during 2017, including fruit, vineyards, walnut, quince and farming and livestock raising.

### Minera Alumbraera SD expenditure in Tucumán by area in dollars. 2015-2017



Source: Minera Alumbraera





# Social and environmental management for mine closure



## Challenge

Conduct successful mine closure activities, taking into consideration the social and environmental needs, acting responsibly, under a sustainable development framework.



## Vision

Create a positive experience that becomes a learning model for the Argentine mining industry.



## Environmental aspect

Our main actions will be waste dump rehabilitation, revegetation of rehabilitated areas in the waste dumps and tailings dam, and native species selection.



## Social aspect

Provide training programmes for our employees and sustainable activities for local communities as well as the value chain.



## Legislation

Catamarca Mining Department Resolution No. 396/16 sets a precedent on mine closure in Argentina.



## Mine Closure Committee

The Mine Closure steering committee embodies all Minera Alumbrera management areas.

## SUSTAINABLE DEVELOPMENT GOALS



Stop poverty in all its forms everywhere.



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



Ensure inclusive and equitable quality education and promote life-long learning opportunities for all.



38 haul trucks are operated around the open pit hauling rocks



**6** CLEAN WATER AND SANITATION



Ensure availability and sustainable management of water and sanitation for all.

**8** DECENT WORK AND ECONOMIC GROWTH



Promote inclusive and sustainable economic growth, employment and decent work for all.

**15** LIFE ON LAND



Sustainably manage forests, mitigate desertification, and halt and reverse land degradation and halt biodiversity loss.





The scope of our Revegetation Programme includes land rehabilitation, natural landscape restoration and habitat enhancement.

## Approach

Mine closure is a complex comprehensive process that requires organised and responsible planning. Planning spans over decades and a plan is developed considering the social and environmental parameters that are disturbed over the course of mining operations. This work is important because the impacts go beyond a generation.

Transparency and engagement are fundamental tools when facing an organised mine closure process with the appropriate support from our stakeholders.

At Minera Alumbrera, we started developing a comprehensive Mine Closure plan ever since project inception, as the end of resource mining is associated to the natural process of mining operations. Our

planning aligns social, environmental and safety variables under a sustainable-development-based management approach.

SDG 3, 6, 15

### General goals

#### 1 MITIGATE

impacts of mining operations.



#### 2 CLEAN UP

industrial facilities and rehabilitate the remaining infrastructure..



#### 3 ENSURE

a safe site condition that poses no risk to human health or the environment during closure and post-closure.

## Accountability

Mine closure responsibility lies with the project operator, i.e. Minera Alumbrera.

The government, through the Catamarca Mining Department, supervises the Mine Closure Plan, and oversees and conducts monitoring activities during closure and post-closure. Works are supervised by the regulator through 12 specific mine closure monitoring programmes.

Regarding the mine infrastructure, it will be completely cleaned up, decommissioned and closed in the future in accordance with the unincorporated joint venture (UTE) agreement entered into by Minera Alumbrera and YMAD, the holder of mining rightsn.

The Alumbrera Mine Closure steering committee was organised in 2017, including all management areas to follow up the Mine Closure Plan. The work progress and securing of human and economic resources are reviewed to achieve our closure goals.

## Legislation

Mine closure operations are subject to the provisions of the Environmental Protection Law 24,585, which regulates mining operations in general. In June 2016, however, the Catamarca Mining Department issued SEM Resolution No. 396/16, which regulates the closure of specific mining works and facilities. Thus, the “Guidelines for preparing mine closure plans for the mining industry in Catamarca” were approved, and all the awardees of mining rights in Catamarca are now required to observe these Guidelines.

## 2016

In November 2016, Alumbreira lodged the Mine Closure Plan with the regulator.

During 2017, enquiries were responded and meetings were held with management of the Catamarca Mining Department. As a result, a revised Mine Closure Plan was submitted in August 2017.

## 2018

Based on the schedule, open pit operations will be stopped by July 2018.

Then, a two-year maintenance and monitoring period will start, followed by initial Mine Closure activities that will last 8 years. Post-closure monitoring activities will extend for a further 5-year period.

As long as the project is extended using a different mining method, the Mine Closure Plan will be postponed until the end of such mining cycle.

## Provision and financial guarantee

Since the onset of our operations, Alumbreira has had an accounting provision for mine-closure-related expenses.

In line with SEM Resolution 396/16, Minera Alumbreira furnished a financial guarantee, which is now under consideration by the regulator. The purpose of such bond is to give the government a security and an assurance that the operator will comply with the mine closure plan in a complete and timely manner.



Works at the mine site are performed during day-time and night-time, 365 days a year.





SDG 3, 6, 15

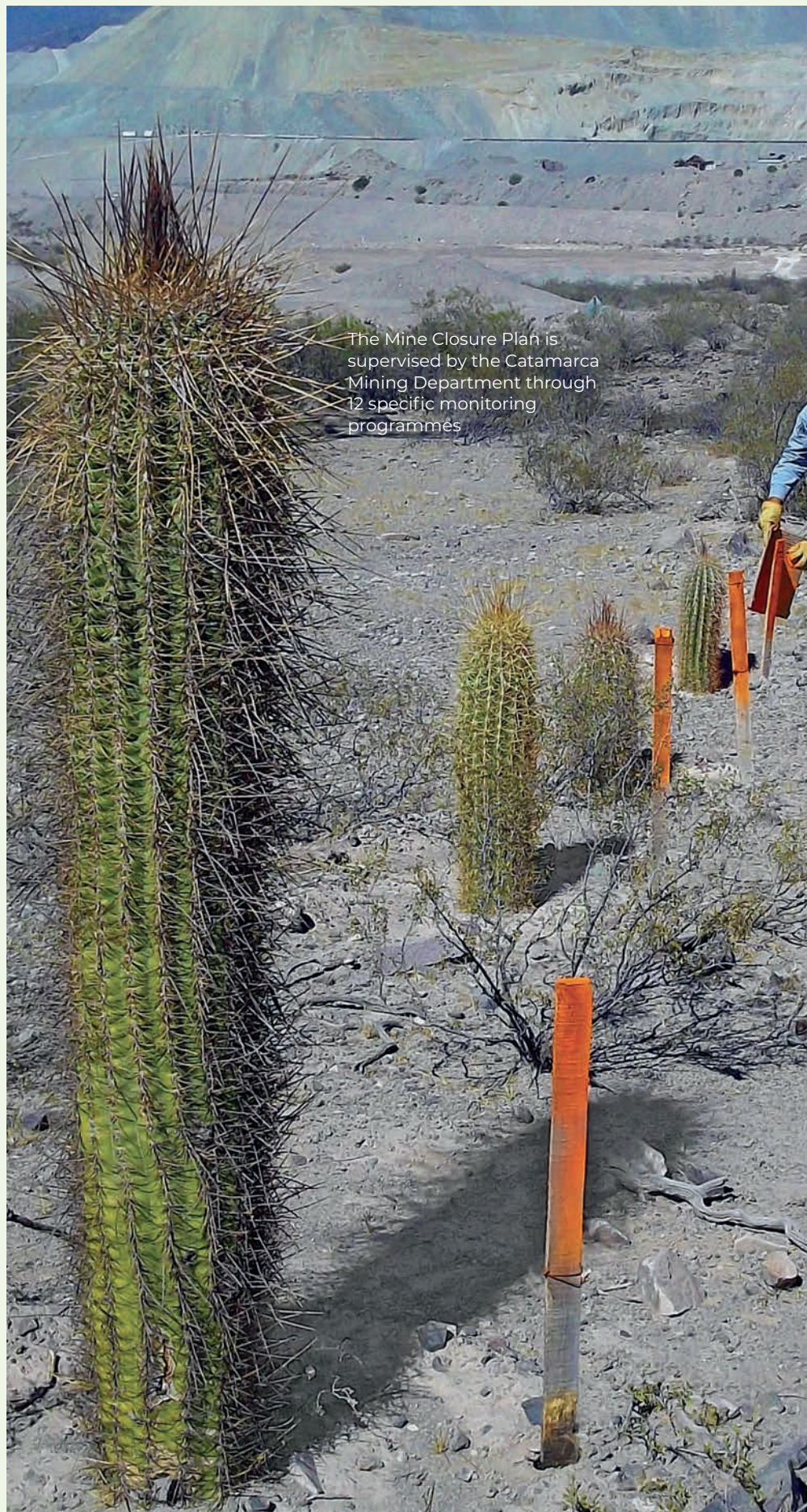
## ENVIRONMENTAL ASPECT

Our goal is to attain the physico-chemical stability of the facilities that will remain at the site after mine closure. In interaction with environmental factors, they must not have any impact that poses a risk to human health and/or the environment.

Therefore, the remaining site infrastructure must be integrated with the natural environment so that it can be stabilised over time.

As a result of the 20-year research and monitoring activities at the deposit, data is available on hydrology, biology, geology, soil, hydro-geology, climate, social and cultural studies.

Following an audit conducted by Glencore in 2015 with good results, improvement opportunities were identified in line with Glencore standards. Observations and requests for supplementary activities were incorporated by Minera Alumbra by in our Mine Closure Plan.



The Mine Closure Plan is supervised by the Catamarca Mining Department through 12 specific monitoring programmes



## Primary goals:

Ensure chemical stability by preventing Acid Rock Drainage (ARD)

Ensure physical stability at the waste dumps, tailings dam and the open pit

Recover the capacity of disturbed areas to support wildlife

Restore or ensure a balance in the hydrographic network

Ensure a landscape in line with the surrounding area, through revegetation using native species

Protect human health and safety during the mine closure and post-closure process

Obtain positive impacts on the regional socio-economic system

Minimise the negative social impacts resulting from the cessation of mining activities

# 44

## Environmental Monitoring Programmes (EMP) continued to be developed during 2017.

Under the EMPs, environmental-related activities are followed up, regular reports are submitted on a quarterly, bi-annual or annual basis, and environmental factors involved in the mine closure plan are monitored.

### Factors related to mine closure are:

- Revegetation
- Waste dump and tailings dam capping system operation
- Waste dump rehabilitation monitoring.
- Water quality monitoring at Vis Vis and Campo del Arenal
- Biodiversity monitoring at the mine site, Campo del Arenal, slurry pipeline and DP2 canal

From a technical standpoint, the following were the most important decisions made in 2017:

- The thickness of the capping for waste dump slopes was set based on a numerical model resulting from field trials implemented and monitored uninterruptedly for almost 15 years.
- Waste dump rehabilitation was designed and planned by mine

engineers, who determined the equipment, execution timeframe, human resources and costs involved.

- A consultant was appointed for the detailed mine closure engineering and tailings dam rehabilitation from an environmental and operational perspective to ensure its physico-chemical stability after closure.
- The methods to be used for the revegetation of waste dumps and the tailings dam were defined, including the associated costs and the selection of species with the highest survival rates. Since waste dumps are very heterogeneous, revegetation will be conducted on small areas on the dump surface, considering the ability of the planted species to spread via colonisation.
- An experienced international consultant was appointed to update the comprehensive Vis Vis basin water model. This will serve as a management tool to manage pumpback water and determine how long post-closure pumpback activities will need to be maintained and the flows required to meet the statutory water quality standards outside the mining lease.
- The hydro-geological and hydro-chemical model for the aquifer of the Bajo del Durazno open pit\* was developed with a view to make decisions under the mine closure plan.

*Open pit: Unlike underground mining of vein-shaped minerals, it is the exposed mineralised area for surface mining operations of disseminated ores.*





## MAIN COMPONENTS OF THE MINE CLOSURE PLAN

### 1 WASTE DUMPS

### 2 TAILINGS DAM

### 3 OPEN PIT

These are the most relevant facilities at site in terms of size, the rehabilitation works required and future interaction with the environment.

### 1 2

#### Waste dumps and tailings dam closure

The materials which are part of the tailings dam and waste dumps can potentially generate acid. Therefore, they must be isolated from atmospheric conditions using other materials for encapsulation to prevent degradation. The tailings dam will be covered using alluvial material, while the waste dump will be covered with barren core material. Revegetation will take place on these capping materials.

For the waste dumps, efforts were made by the Mine Planning area to define the equipment to be

used, barren core material haulage circuits and execution timeframes required to implement the moisture retention and release system.

For the tailings dam, a consulting firm with extensive experience globally in the mining sector was in charge of the tailings dam design, construction, operation and closure, and the final development of our closure plan, including surface water management (canals, spillways) and alluvial<sup>1</sup> material capping system implementation in the Vis Vis basin.

Downstream the tailings dam, there are pumpback wells that pump water that runs out of the dam back into the production process for reutilisation, thus reducing freshwater requirements. This system will be maintained during closure and post-closure for a period of approximately 8 years until the tailings dam is dewatered.

Water recovered from the tailings dewatering activities will be pumped into an evaporation pond located on the dam surface. It is estimated that, after a minimum period of 5 years, the tailings dam dewatering will stop and the dam surface will start to be covered. At the end of ore processing operations, water from the pumpback system will be pumped into the open pit.



Specialised personnel monitoring the sites where direct revegetation trials were conducted.



## Programmes associated to these two facilities

### • Capping system

Acid Rock Drainage (ARD) is a natural reaction that can occur in waste dumps and tailings dams when sulphur-bearing materials interact with oxygen and rainwater.

ARD can be prevented by predicting the acid generating capacity of materials and planning preventive actions that will be monitored in the future through mine closure and post-closure monitoring activities.

To mitigate the possibility that minerals contained in the tailings dam and waste dumps become potential acid generators, a capping system will be used to store and release moisture, thus limiting rainwater seepage into the facilities.

These covers have been field-tested many times with excellent results. The moisture retention, temperature and suction levels as well as the infiltrated water quality were measured to ensure chemical stability in the long term.

The selected capping system works like a sponge retaining moisture during the rainy season and releasing it during the dry periods. This prevents water from seeping into the facility, reduces suspended dust and facilitates the generation of a substratum suitable for the native vegetation to be planted on the surface cover.

## 2016<sup>y</sup>2017

During 2016 and 2017, we continued gathering capping trial information and, together with data obtained from the weather station, it was used for model recalibration.

This confirmed the final thickness of the capping material to be used in the waste dumps and the tailings dam.

<sup>1</sup> Alluvial material means uncompact natural material having variable grain size found on land.  
<sup>2</sup> Natural reaction that can occur in waste dumps and tailings dams when sulphur-bearing materials have a long-term interaction with oxygen and rainwater.





*The species most suitable for revegetation with native species were identified. Seeds are kept at low temperatures and planted at the nursery.*

SDG 15

## • Revegetation programme

The waste dump and tailings dam cover is supplemented with a revegetation programme. The goal is to plant native species on the covers, once these facilities are no longer operational. Following are the main goals:

- Reinstatement and integration with the natural landscape
- Capping fixation
- Preventing erosion
- Overall habitat improvement
- Fostering biodiversity reinsertion

After surveying, identifying and classifying vegetation at site, field and lab trials were carried out to develop a Revegetation Plan for disturbed areas. This programme has been implemented across the project area since 2005.

Using nursery studies and field trials conducted for 10 years, the species having the highest survival and adaptability rates were identified for revegetation of the mine site areas including the design for mass revegetation activities.

The direct planting trials were conducted on the waste dump and final design tailings dam areas in 2016. This was intended to test direct planting with a view to ensure the natural vegetation density at the slopes.

These trials will be monitored up to mid-2018. Based on the results, the mine closure method will be determined -i.e. seedling planting or direct revegetation. If seedlings are used, the design will consist of islets formed on fine materials found on the waste dump surface. The tailings dam design will be uniform

with seedlings planted in a 2 x 2m pattern.

The seeds for the waste dump and tailings dam cover revegetation are at Minera Alumbrera Germplasm Bank. Trials are regularly conducted to determine the breeding capacity that ensures seed viability.



### Open pit closure SDG 3, 6

The open pit will have a perimeter berm-enclosure that will be placed once mining operations are ended to ensure the safety of people or animals. The main access gate and ramps will also be closed using wire fences with warning signs.

During the operations, water naturally found inside the open pit is removed using a pumpback system having wells inside the pit. Water is mainly used for irrigation of site roads, and the rest is used at the Concentrator Plant. With the start of the mine closure process, dewatering wells are no longer operational and water from the aquifer has been restored forming a pond inside the pit.

The development of Bajo el Durazno pit water flow and hydro-chemistry model started in 2017. It will be used as a tool to monitor the underground aquifer in order to determine the ratio between this pit pond and the regional aquifer. The monitoring system provides information on the rock aquifer performance, giving an opportunity

to predict water levels and quality at the end of our operations.

In the case of the Bajo de la Alumbrera, it could reach the highest level in 10 years until it is levelled in approximately 200 years, with water quality similar to baseline levels. The hydro-chemical model predicts that the pH level of pond water will be slightly below neutral (6.5) and therefore it will not be acidic water.

Since the water level at the pond will be below the regional aquifer, groundwater will flow to the pit, at a depth of 160 to 200 m. Therefore, it will not supply water to the regional aquifer. This results from the high evaporation rate at the Alumbrera site.



Monitored urban solid waste dump.

### Waste

Industrial waste will be adequately classified and treated as set out in Alumbrera Waste Management procedure. Scrap metal will be temporarily stocked in a special yard and will then be transported for off-site final disposal.

Hazardous waste will be temporarily placed at the Compacting Plant area, following the above guidelines, until it is transported and finally disposed of by licensed carriers and operators. Similarly, tyres -including haul truck tyres- will be disposed of by licensed operators, in accordance with the practices of the Argentine Environment Department.



As a result of the open pit groundwater monitoring activities, predictive models on water quality and levels at the end of mining operations are developed.





## SOCIAL ASPECT

The social aspect of mine closure includes a comprehensive view of the social, economic and environmental conditions of the local people in particular. We have developed a social baseline over the past two decades, based on previous surveys on the social and economic impact of our operations, including the relevant updates.

From ongoing liaison and engagement, social goals were outlined for mine closure planning and subsequent review. The engagement process may not result in full agreement on closure outcomes, but it should be considered successful if it leads to fully informed decisions.

Alumbrera commitment and stakeholder involvement will provide a sustainable exit strategy to pursue results that are beneficial for all the parties involved.

*3 Catamarca and, particularly, the Primary Impact Area geographically including the Andalgalá, Belén and Santa María districts.*



*Local farmers being trained on the varietal re-engineering of their crops.*



*Support was provided to grape farmers for the development of fruit-drying facilities in Tinogasta, Catamarca.*

During the last stage, engagement with local communities and suppliers has been critical as they were informed on the gradual changes to the operations. Through active listening, we delved deeper into the needs reported by local communities and suppliers.

In addition, we attended various workshops to report on our Mine Closure Plan, such as Futuro Sustentable's Sustainability Seminar in Salta.

SDG 3, 4, 8

### Communities

Throughout the 20 years of operations, we supported the sustainable development of neighbouring communities in order to obtain sustainable long-term results. Our management efforts were based on our commitment to our stakeholders, in harmony with the environment.

Our Community Programme focused on education, health and production development, together with major infrastructure works (hospitals and schools) extended from 2006 to 2015 for the benefit of local communities. It included actual and long-lasting support beyond the project life.

Social expenditure has been an integral part of the various operational stages, supported by ongoing engagement with local communities. In 2017, we continued supporting local farmers with their production projects to strengthen their skills in various self-sustainable farming and livestock raising projects.

We have supported the growth of local farmers through programmes involving local products, such as a grapevine, walnut, aromatic seeds and forage.

SDG 4, 8

### Our people

Our employees are a top priority during this closure process. Regarding human resources management, our staff will remain on payroll up to the end of the open pit life.

Over the past few years, special focus was placed on employee training to prepare them for non-mining employment prospects.

Six years ago, we started to develop a career plan for our employees to provide them actual training tools to enhance their employability.

**98%**  
of employees voted to continue with training plans, as shown in a survey conducted in 2016. The training topics were selected by our employees.

### Site-based education initiatives:

#### High-School Programme

• **Period:** 2009-2010

• **Number of employees:**  
108 graduates

• **Venue:** Site-based training facilities

#### Technical degree on Mining

• **Agreement:** National University of Catamarca

• **Period:** 2012-2015

• **Number of employees:**  
48 graduates

• **Venue:** Site-based training facilities

#### Technical degree on Food

• **Agreement:** Tucumán Education Department

• **Period:** 2013-2016

• **Number of employees:**  
54 graduates

• **Lugar de cursada:** Site-based training facilities





133 employees and contractors attended the mine closure training courses at site.

# 133

people attended the initial Training workshop for Alumbreira employees and contractors from neighbouring communities in February 2017.

## SDG 1, 4 y 8

This workshop took place at the "Alumbreira Training Centre" especially built for the site-based technical courses. It consisted in lessons twice a month over a period of 4 months, covering all work shifts.

Led by an entrepreneurship and business association consultant from Andalgala, the training programme provided our employees with suitable skills so that they are better prepared to

find new jobs or develop their business projects.

The contents of the first course included entrepreneurship, validation of business ideas and small-project planning. At the end of the course, attendees developed their own Business Plan as a final assignment to pass the course.

At the Filter Plant, employees were trained on project financing and loans from various Catamarca lenders.

With these new courses, Alumbreira supported the training initiatives developed throughout the mine life, in order to minimise the socio-economic impact of Mine Closure by supporting employability in neighbouring communities.

Our programme is focused on providing tools that allow employees to find new jobs or

develop their business projects at the end of the project life.

In 2018, specific and selected workshops will be organised at technical schools from Andalgala, Belén and Santa María, by virtue of an agreement. Certain workshops such as the Food Preserve and Bakery workshop will be organised at site.

These employee training opportunities were advertised on notice boards as well as in videos played on TV screens at the canteen.

We achieved our goals by facilitating enhanced training for local people, which could maximise their income and have an impact on their socio-cultural level, in addition to using their skills and experience locally.

The technical and professional skills associated to state-of-the-art technologies and the high standards required by global-scale projects have been provided as a result of these human capital development efforts.

Employees also developed valuable skills required by efficient organisations, such as health and safety rules and best practice as well as the importance of interpersonal relationships. Moreover, the experience gained at Alumbrera is highly valued in the labour market.

### Suppliers

The reduced procurement requirements over the last few years was in line with the declining ore processing operations. Some regular major works are now less frequent due to the lower availability of ore milled. This was reported in advance during our supplier engagement sessions to keep them updated.

Regarding the value chain, Alumbrera examined together with a number of suppliers potential hiring opportunities in the region, based on the results of our Local Supplier Development Programme, which has supported business growth and the number of indirect jobs in the PIA for almost two decades.

The specific mine closure-goals will be based on the skills that may be of interest to other mining companies in the country or can serve industries subject to high standards. We will seek to bring, as far as possible, the interests of the parties together, based on the business priorities at the provincial and regional levels.



Through a voluntary survey, 808 employees selected their favourite training topics for the forthcoming mine closure stage.





## Chapter 3

# About this report

Through this publication, we seek to annually report on the way we operate and thus meet our stakeholders' expectations.

## Reporting process

The different areas of Minera Alumbraera participated in the reporting process, following the guidelines of our parent company, Glencore plc.



**Read more**  
Page 92



## Materiality assessment

The most significant and relevant topics for Minera Alumbraera's sustainable development.



**Read more**  
Page 94



## Engagement with stakeholders

Stakeholders were consulted with during the initial stage of this reporting process.



**Read more**  
Page 95



## GRI Standard Index and the United Nations Global Compact



**Read more**  
Page 98





# Reporting process

Every year the various areas of Minera Alumbraera participate in the reporting process for the Sustainability Report, following the guidelines of our parent company, Glencore plc. and international sustainability guidelines.



Environment officer Romina Nieto checking data collected by one of the site-based weather stations.





## Materiality assessment

The most significant and relevant topics for Minera Alumbrera's sustainable performance and stakeholders feedback are reflected in the Materiality Assessment, prepared in accordance with the GRI Standards and Guidelines and the involvement of our stakeholders.

### Process for the identification of material topics in accordance with the GRI Standards and Guidelines

#### 1 IDENTIFICATION

In identifying topics that are material, internal and external sources were considered, including Glencore plc's guidelines, Minera Alumbrera's sustainability strategy, international standards, trends and opportunities for the extractive industry as well as stakeholder feedback and expectations gathered over various engagement sessions.

#### 2 PRIORITISATION

Topics were reviewed and prioritised by categories and Minera Alumbrera stakeholders were invited to give their feedback.

#### 3 VALIDATION

Material topics and their prioritisation were validated by Minera Alumbrera managerial team.

#### 4 REVIEW

The first Materiality Assessment was undertaken in 2015 and subsequently reviewed in 2016. During such review, material topics were updated, and integrated into the most relevant aspects of our stakeholders.

## MATERIAL TOPICS FOR MINERA ALUMBRERA



### HUMAN RIGHTS

We respect human rights in our relationships with employees, contractors, business partners and local communities.

- No discrimination.
- No child labour.
- Freedom of association.
- No forced labour.
- Occupational health and safety.
- Grievance mechanisms.
- Security actions.



### OUR PEOPLE

We foster staff development through teamwork, ongoing training, a safe and healthy workplace, growth opportunities and a favourable work environment.

- Employee training and development.
- Encouragement of, and respect for, workforce diversity.
- Analysis of work environment.
- Improve staff professionalism and employability.
- Labour relations with trade unions.



### ENVIRONMENT

We aim at minimising impacts of our operations and promoting initiatives to foster global climatic conditions.

- Environmental management system: conservation, monitoring, risk management and remediation.
- Water and effluent management.
- Improved use of natural resources.
- Biodiversity management.
- Greenhouse gas emissions and mitigation actions.
- Water footprint.
- Waste management.
- People and materials transportation impact management.
- Investment in the use and research of future technologies and alternative energies.



### VALUE CHAIN

We seek to ensure economic benefits for our suppliers, giving priority to local goods and services as well as project development throughout the life of the project.

- Local employment.
- Promotion of local production activities with comparative advantages.
- Local goods and services from vendors in the Primary Impact Area.
- Liaising with local authorities to ensure the allocation of mining revenues to sustainable development initiatives.



### MINE CLOSURE

We are committed to a responsible mine closure based on a plan that contemplates the integration of socio-economic and environmental variables and constructive stakeholder liaison.

- Strategy and plan.
- Socio-economic aspects.
- Environmental aspects.
- Communication and engagement.
- Information transparency.



### HEALTH AND SAFETY

We take a precautionary approach to ensure the health and safety of our employees and the community.

- Safety Leadership Development Programme.
- Risk and Potentially Hazardous Activities Management.
- Training on attitudinal issues.
- Preventing occupational illnesses at the workplace.
- Learning from high potential incidents.
- Training on road safety for employees.



### COMMUNITIES

We seek that our social expenditure in local communities provides benefits to the entire production chain, strengthens social development and economic growth with long-term permanent results.

- Community programme and large infrastructure works.
- Development of culture, health, education and social aspects.
- Partnership with civil society organisations and the public sector.
- Creation and assessment of sustainable production projects.
- Stakeholder engagement.
- Site visits.



### ECONOMIC CONTRIBUTION

We seek to support new improvement opportunities in the region, through economic contribution and the impact of indirect benefits from mining operations on the communities in the project area.

- Overall contribution to the Argentine economy.
- Economic benefits for Catamarca.
- National, provincial and municipal fiscal revenues.
- YMAD profits.
- Employment.
- Salaries above average.
- Mining royalties and secondary distribution in Catamarca.

## Engagement with stakeholders

### Engagement approach

Every year our key stakeholders are invited to attend to a face-to-face engagement session in order to listen to and understand their opinions, feedback and expectations about the previous edition of our Sustainability Report and identify improvement opportunities for our next report.

Consultation with our stakeholders was the initial stage of the reporting process and it took place in San Fernando del Valle de Catamarca. Representatives of our various stakeholders, including employees, universities, public institutions, community leaders and mining industry leaders, civil society organisations, suppliers and the media were in attendance.

Based on the AA1000 Stakeholder Engagement Standard (AA1000SES), the method used was a focus group, including activities that provided opportunities to freely give opinions and make suggestions about the report, and individual as well as group exercises which helped gather information orderly about the main strengths and improvement opportunities in the report.

### 2017 Roundtable Technical Data Sheet

• **Place and date:** 27<sup>th</sup> of November in Catamarca.

• **Number of participants:** 22

• **Stakeholders represented:** Employees, universities, public institutions, community leaders and mining industry leaders, NGOs, suppliers and media.

• **External facilitator:** Reporte Social to prepare contents in advance and make final evaluation.

• **Methodology:** Focus group, group activities and individual surveys, AA1000SES Engagement standard.

### Results of the technical aspects of the report

Engagement was highly valued by participants. While 71% of participants were 'very satisfied' and 29% were 'satisfied' with the meeting, 100% pointed out that being included in the Engagement process was very important.

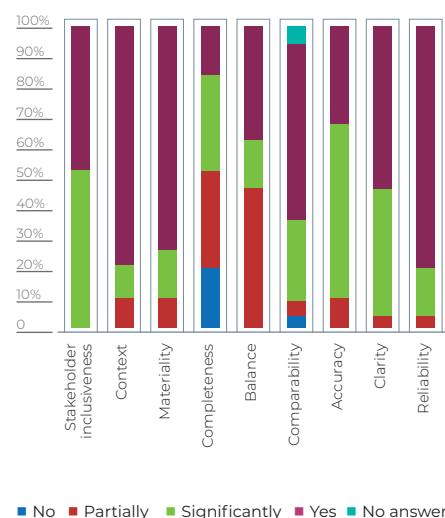
At first, participants considered whether the Report clearly showed stakeholder inclusiveness, whether the information was presented considering the broadest sustainability context in the industry, whether it reflected topics that are material for Minera Alumbrera and its stakeholders (materiality) and whether it was complete enough, and they also examined the quality of the information.

While stakeholder inclusiveness, clarity, reliability, context, and materiality were the highest rated criteria, improvement opportunities were identified for completeness and balance.

# 74%

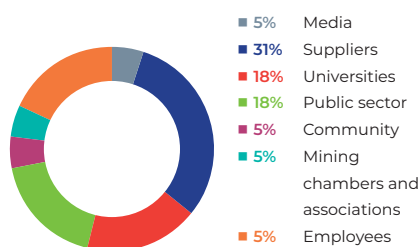
of respondents stated that the report was 'very' helpful to grasp Minera Alumbrera's commitment to sustainability.

### 2016 Sustainability Report assessment



Source: Minera Alumbrera

### % of participants by stakeholder



Source: Minera Alumbrera





## STRENGTHS AND VALUED ASPECTS IN THE REPORT

As in previous years, stakeholders valued the possibility of engaging in face-to-face liaison and the continuous efforts and response by Minera Alumbreira. Participants were asked whether the 2016 roundtable results were presented in a clear and sufficient manner.

**53%** responded affirmatively.

**26%** considered that they were “quite” clear.

Some of the aspects highlighted by participants about the 2016 Sustainability Report and Minera Alumbreira’s management efforts include:



### CREATING SHARED VALUE

#### They valued:

- The transparency and detailed quality of this chapter.
- The detailed writing of the “Value Chain” section regarding goods and services sourced from the PIA.



### MINE CLOSURE SOCIAL AND ENVIRONMENTAL MANAGEMENT

#### They valued:

- The mine closure information provided.
- The cross-functional involvement of various government and private bodies.
- The inclusion of the mine closure plan since the onset of operations, comprising environmental, social, and technical aspects, among others.
- The definition of the guidelines to be followed and the programmes to be implemented in every case.
- Minera Alumbreira’s social commitment reflected in the efforts made to provide training to its staff, and its relationship with the community and suppliers.
- Mining Department Resolution No. 396/16, which regulated the closure of mine works and facilities.
- The detailed explanation of how the waste dump, tailings dam and open pit closure process will be carried out.
- The revegetation programmes and studies, the vegetation and wildlife treatment and waste dump capping.
- The manner in which this topic is presented to employees and training is provided to expand their knowledge for future jobs.



### COMMITMENT TO THE COMMUNITY

#### They valued:

- The comprehensive nature of this chapter and consistency in community programmes.
- The infrastructure contributions and human capital development.
- The joint effort of sustainable development managers and the community and project evaluation.
- The sustainable development expenditure in the PIA.

## Expectations identified during the roundtable and Minera Alumbra's response

STAKEHOLDER EXPECTATIONS	MINERA ALUMBRERA'S RESPONSE
<b>CREATING SHARED VALUE</b>	
Expenditure is shown at constant prices, in a more stable currency than the Argentine peso, which is impacted by very high inflation, to facilitate reading and more realistic examination throughout the years.	The information published in the Report must be adapted to meet local criteria. Therefore, data is shown in the local currency. Sometimes data is shown in American dollars for comparison, but in order to formally adapt the report to the local scenario in Argentina, figures cannot be shown in foreign in the Report.
Describe Alumbra contributions to the Argentine economy throughout the years, in all categories, or clarify the reason why some data is missing.	Regular publication of contributions for three-year periods and the aggregate of those contributions to the Argentine economy. In this report, we clarify the reasons why the figures associated to usually reported economic indicators are not included, such as dividend distribution and income tax.
<b>COMMITMENT TO THE COMMUNITY</b>	
Expand community programmes across the province, to community centres and schools from Eastern and central Catamarca, not just from Northwestern Catamarca.	We will refer this concern to the Catamarca Mining Department to discuss the possibility of joint work with a greater scope.
<b>MINE CLOSURE SOCIAL AND ENVIRONMENTAL MANAGEMENT</b>	
Report on the 12 specific mine closure monitoring programmes by the Catamarca Mining Department.	In this report, the 12 programmes by the enforcement authority are explained in detail.
Provide additional detail on the provisions and financial guarantees contemplated under the mandatory environmental insurance for the mine closure stage.	Financial bonds were originally furnished to the Catamarca Mining Department in November 2016, upon discussion. In March 2017, a further bond was furnished, which is now under consideration by the relevant authorities. The mandatory environmental insurance is now effective and is renewed on an annual basis.
Provide further information about the changes to supplier development over time, as from project commissioning to date.	This topic was reported in previous reports, including evolution and notable success stories.
Information on Minera Alumbra infrastructure in the mining area following the end of the production chain.	In accordance with the Unincorporated Joint Venture Agreement (UTE) entered into with YMAD, the disposal of infrastructure must be defined by YMAD.
Cross-functional and inter-institutional review of the mine closure process.	The mine closure process is audited by the Catamarca Mining Department, which in turn hires auditors.

## Engagement comparative results

From a comparison of roundtables held in Catamarca to discuss the 2015 and 2016 Sustainability Reports respectively, survey results show that roundtable participants were as prepared to discuss the 2016 Report as they were to discuss the 2015 Report (68% of roundtable attendees said that they had read a 'significant' part of the 2016 report against the 67% reported in 2015), and the interest to read it was also maintained (100% said that that

they were 'quite' and 'very' interested in 2016 relative to 96% reported in 2015).

When discussing the 2015 Report, stakeholders mainly expected us to improve the reporting of mine closure and to focus on presenting our communication strategy. During 2016, additional efforts were made on mine closure communications, although to a lesser extent. A request was made

to have a more impactful communication, including roundtables to inform about all the contributions made by Minera Alumbra to the community.

Finally, there was an improvement regarding how useful the Report is to inform about Minera Alumbra's commitment to sustainability. 100% responded 'quite' and 'very' useful regarding the 2016 Report relative to 88% reported in 2015.



# GRI Standards Index and United Nations Global Compact

This 2017 Sustainability Report was prepared in accordance with the Global Reporting Initiative (GRI) Sustainability Reporting Standards principles and indicators and the Mining and Metal Sector Supplement.

The table below shows all contents and indicators that meet the "core" «in accordance» criteria under the guidelines, and additionally some contents of the "comprehensive" «in accordance» option were included as part of our commitment to reporting in a complete and transparent manner.

GRI Standard	Content	Page No.	SDG
GRI 101: Founded in 2016			
<b>GENERAL CONTENTS</b>			
GRI 102: General Contents 2016	<b>Perfil de la organización</b>		
	102-1 Name of the organisation	3, 9	
	102-2 Activities, brands, products, and services	3, 9, 10, 11	
	102-3 Location of headquarters	11	
	102-4 Location of operations	10	
	102-5 Ownership and legal form	Nota 1	
	102-6 Markets served	9, 10, 11	
	102-7 Scale of the organisation	7, 11, 62-69	
	102-8 Information on employees and other workers	42-44, 47, Nota 2	8.5, 10.3
	102-9 Supply chain	10, 69	
	102-10 Significant changes to the organization and its supply chain	Note 3	
	102-11 Precautionary Principle or approach	23, 27, 50	
	102-12 External initiatives	17	
	102-13 Membership of associations	17	
	<b>Strategy</b>		
	102-14 Statement from senior decision-maker	4, 5	
	102-15 Key impacts, risks, and opportunities	4-5, 95-97, 20-25	
	<b>Ethics and Integrity</b>		
	102-16 Values, principles, standards, and norms of behaviour	16, 20-22, 30-33	16.3
	102-17 Mechanisms for advice and concerns about ethics	15-17, 22	16.3
	<b>Governance</b>		
	102-18 Governance structure	14-15	
	102-19 Delegating authority	15, 23	
	102-20 Executive-level responsibility for economic, environmental, and social topics	14-15, 23	
	102-21 Consulting stakeholders on economic, environmental, and social topics	15-16, 94	16.7
	102-22 Membership of the highest governance body and its committees	14-15	5.5, 16.7
	102-23 Chair to the highest governance body	14	16.6
	102-24 Nominating and selecting the highest governance body	15	5.5, 16.7
	102-25 Conflicts of interest	15	16.6
	102-26 Role of highest governance body in setting purpose, values, and strategy	14-15	
	102-29 Identifying and managing economic, environmental, and social impacts	15, 23	16.7
	102-30 Effectiveness of risk management processes	15, 23	
	102-31 Review of economic, environmental, and social topics	15, 20, 23	
	102-32 Highest governance body's role in sustainability reporting	Note 4	
	102-33 Communicating critical concerns	23	
	102-35 Compensation policies	15	

In addition, it shows the connection with the United Nations Sustainable Development Goals, and the indicators meeting the 21 criteria of our Advanced Communication on Progress (COP) of the United Nations Global Compact were shown in a different colour.



Indicators in line with the UN Global Compact Principles

GRI Standard	Content	Page No.	SDG
GRI 101: Founded in 2016			
<b>GENERAL CONTENTS</b>			
GRI 102: General Contents 2016	<b>Stakeholder Engagement</b>		
	102-40 List of stakeholder groups	24	
	102-41 Collective bargaining agreements	7, 42	
	102-42 Identifying and selecting stakeholders	25	
	102-43 Approach to stakeholder engagement	24-27, 32, 78, 86-87, 95-97	
	102-44 Key topics and concerns raised	27, 95-97	
	<b>Reporting Practice</b>		
	102-45 Entities included in the consolidated financial statements	14	
	102-46 Defining report content and topic Boundaries	92-94, Note 5	
	102-47 List of material topics	94	
	102-48 Restatement of information	Note 6	
	102-49 Changes to reporting	Note 7	
	102-50 Reporting period	Note 8	
	102-51 Date of most recent report	Note 9	
	102-52 Reporting cycle	Note 10	
	102-53 Contact person for questions regarding the report	Back of cover	
	102-54 Claims associated to reporting in accordance with the GRI Standards	98	
	102-55 GRI content index	98	
	102-56 External assurance	Note 11	
<b>MATERIAL TOPICS</b>			
<b>Economic Performance</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	42, 46, 64, 59	
	103-3 Evaluation of management approach	7, 66-75	
GRI 201: Economic Performance 2016	201-1 Direct economic value generated and distributed	7, 46, 62-75	8.2, 9.1, 9.4, 9.5
	201-2 Financial implications and other risks and opportunities arising from climate change	59	13.1
	201-3 Define benefit plan duties and other retirement plans	42	
	201-4 Financial assistance received from government	Note 12	
<b>Market Position</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	42, 46	
	103-3 Evaluation of the management approach	46	
GRI 202: Market Position 2016	202-1 Ratios of standard entry level wage by gender compared to local minimum wage	46	1.2, 5.1, 8.5
	202-2 Proportion of senior management hired from the local community	Note 13	8.5



GRI Standard	Content	Page No.	SDG
<b>MATERIAL TOPICS</b>			
<b>Indirect Economic Impacts</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	69, 72, 86	
	103-3 Evaluation of the management approach	66, 67, 72, 74, 75, 87	
GRI 203: Indirect Economic Impacts 2016	203-1 Infrastructure investments and services supported	72, 74, 75	8.2, 9.1, 9.4, 11.2
	203-2 Significant indirect economic impacts	66, 67, 69, 70, 74, 75, 87, 88, 89	1.2, 3.8, 8.3, 8.5, 9.1
<b>Procurement Practices</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	64, 69	
	103-3 Evaluation of the management approach	69	
GRI 204: Procurement Practices	204-1 Proportion of spending on local suppliers	69	8.3
<b>Anti-corruption</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	15, 16, 21	
	103-3 Evaluation of the management approach	15, 16, 33	
GRI 205: Anti-corruption 2016	205-1 Operations assessed for risks related to corruption	15, 16, Note 14	16.5
	205-2 Communication and training about anti-corruption policies and procedures	16, 20, 21, 33 Note 14	16.5
	205-3 Confirmed incidents of corruption and actions taken	16	16.5
<b>Materials</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	50, 52	
	103-3 Evaluation of the management approach	51, 52, 61	
GRI 301: Materials 2016	301-1 Materials used by weight or volume	51, 61	
	301-2 Recycled input materials used	52	
	301-3 Reclaimed products and their packaging materials	60, 61	
<b>Energy</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	50, 57	
	103-3 Evaluation of the management approach	56, 57, 61	
GRI 302: Energy 2016	302-1 Energy requirements within the organisation	57, 61	7.2, 7.3, 8.4, 13.1
	302-3 Energy intensity	57, 61	7.3, 8.4, 13.1
	302-4 Reduction of energy requirements	57, 61	7.3, 8.4, 13.1
<b>Water</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	50, 52	
	103-3 Evaluation of the management approach	52, 53, 56	
GRI 303: Water 2016	303-1 Water supply by source	53	8.4
	303-2 Water sources significantly affected by the supply of water	53	6.4, 8.4
	303-3 Water recycled and reused	52	6.3, 6.4, 8.4
<b>Biodiversity</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 3	
	103-2 The management approach and components	50, 55, 78	
	103-3 Evaluation of the management approach	7, 55, 56	
GRI 304: Biodiversity 2016	304-1 Operational sites owned, leased, managed in, or adjacent to, protected areas and areas of high biodiversity value outside protected areas	54-55	6.6, 14.2, 15.1, 15.5
	304-2 Significant impacts of activities, products, and services on biodiversity	54-55, 80-85	6.6, 14.2, 15.1, 15.5
	304-3 Protected or restored habitats	54-56	6.6, 14.2, 15.1, 15.5
	304-4 IUCN Red List species and national conservation list species with habitats in areas affected by operations	54	6.6, 14.2, 15.1, 15.5
	Land (owned or leased and managed for production or extractive use) disturbed or rehabilitated	7, 54, 56	
	Number and percentage of total sites identified as requiring biodiversity management plans according to stated criteria, and the number (percentage) of those sites with plans in place	7, 55, 56, 84	

GRI Standard	Content	Page No.	SDG
<b>MATERIAL TOPICS</b>			
<b>Emissions</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	50, 59	
	103-3 Evaluation of the management approach	58, 59	
GRI 305: Emissions 2016	305-1 Direct (Scope 1) GHG emissions	59	3.9, 13.1, 14.3, 15.2
	305-2 Energy indirect (Scope 2) GHG emissions	59	3.9, 13.1, 14.3, 15.2
	305-5 Reduction of GHG emissions	59	13.1, 14.3, 15.2
<b>Effluents and Waste</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	50, 52	
	103-3 Evaluation of the management approach	53, 60, 61	
GRI 306: Effluents and Waste 2016	306-1 Water discharge by quality and destination	53	3.9, 6.3, 6.4, 6.6, 14.1
	306-2 Waste by type and disposal method	60, 61	3.9
	306-4 Transport of hazardous waste	61	3.9
	306-5 Water bodies affected by water discharges and/or runoff	53	6.6, 14.2, 15.1, 15.5
<b>Environmental Compliance</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	18	
	103-3 Evaluation of the management approach	27	
GRI 307: Environmental Compliance 2016	307-1 Non-compliance with environmental laws and regulations	27	16.3
<b>Supplier Environmental Assessment</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	50	
	103-3 Evaluation of the management approach	51	
GRI 308: Supplier Environmental Assessment 2016	308-1 New suppliers that were screened using environmental criteria	51	
<b>Employment</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	42	
	103-3 Evaluation of the management approach	42, 43	
GRI 401: Employment 2016	401-1 New employee hires and employee turnover	42, 43	5.1, 8.5, 8.6, 10.3
<b>Labour/Management Relations</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	42	
	103-3 Evaluation of the management approach	46	
GRI 402: Labour/Management Relations 2016	402-1 Minimum notice periods regarding operational changes	46	8.8
	Number of strikes and lock-outs exceeding one week duration by country	46	
<b>Occupational Health and Safety</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	36, 38, 39	
	103-3 Evaluation of the management approach	36, 37, 39	



GRI Standard	Content	Page No.	SDG
<b>MATERIAL TOPICS</b>			
<b>Occupational Health and Safety</b>			
GRI 403: Occupational Health and Safety 2016	403-1 Percentage of total workforce represented in formal joint management-worker health and safety committees	39	8,8
	403-2 Type of injury and rates of injury, occupational diseases, lost days and absenteeism, and total number of work-related fatalities, by region and by gender	36, 37	3.3, 3.9, 8.8
	403-4 Health and safety topics included in formal agreements with trade unions	39	8,8
<b>Training and Education</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	42, 47, 78, 86	
	103-3 Evaluation of the management approach	47	
GRI 404: Training and Education 2016	404-2 Programs for upgrading employee skills and transition assistance programs	47, 87, 88	8.2, 8.5
	404-3 Percentage of employees receiving regular performance and career development reviews	47	5.1, 8.5, 10.3
<b>Diversity and Equal Opportunity</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	42, 45	
	103-3 Evaluation of the management approach	43, 44	
GRI 405: Diversity and Equal Opportunity 2016	405-1 Diversity of governance bodies and employees	43, 44, 45, Note 15	5.1, 5.5, 8.5
<b>Non-discrimination</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	32, 33	
	103-3 Evaluation of the management approach	33	
GRI 406: Non-discrimination	406-1 Incidents of discrimination and corrective actions taken	42	5.1, 8.8
<b>Freedom of Association and Collective Bargaining</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	32, 33, 42	
	103-3 Evaluation of the management approach	32, 42	
GRI 407: Freedom of Association and Collective Bargaining 2016	407-1 Operations and suppliers in which the right to freedom of association and collective bargaining may be at risk	32	8.8
<b>Child Labour</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	32, 42	
	103-3 Evaluation of the management approach	33	
GRI 408: Child Labour 2016	408-1 Operations and suppliers at significant risk for incidents of child labour	33	8.7
<b>Forced or Compulsory Labour</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	32, 42	
	103-3 Evaluation of the management approach	42	
GRI 409: Forced or Compulsory Labour 2016	409-1 Operations and suppliers at significant risk for incidents of forced or compulsory labour	42	8.7
<b>Security Practices</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and Boundary	94, Note 5	
	103-2 The management approach and components	32, 42	
	103-3 Evaluation of the management approach	1, 33	
GRI 410: Security Practices 2016	410-1 Security personnel trained in human rights policies or procedures	1, 33	16.1

GRI Standard	Content	Page No.	SDG
<b>MATERIAL TOPICS</b>			
<b>Human Rights Assessment</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and boundary	94, Note 5	
	103-2 The management approach and components	11, 17, 21, 32, 42	
	103-3 Evaluation of the management approach	42	
GRI 412: Human Rights Assessment 2016	412-1 Operations that have been subject to human rights reviews or impact assessments	1, 32	
	412-2 Employee training on human rights policies or procedures	21, 33	
<b>Local Communities</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and boundary	94, Note 5	
	103-2 The management approach and components	72, 86	
	103-3 Evaluation of the management approach	72-75	
GRI 413: Local Communities 2016	413-1 Operations with local community engagement, impact assessments, and development programs	72-75	
<b>Supplier Social Assessment</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and boundary	94, Note 5	
	103-2 The management approach and components	21, 32, 42, 64	
	103-3 Evaluation of the management approach	1, 42	
GRI 414: Supplier Social Assessment 2016	414-1 New suppliers that were screened using social criteria	33	5.2, 8.8, 16.1
	414-2 Negative social impacts in the supply chain and actions taken	33, 42	5.2, 8.8, 16.1
<b>Public Policy</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and boundary	94, Note 5	
	103-2 The management approach and components	15, 16	
	103-3 Evaluation of the management approach	1	
GRI 415: Public Policy 2016	415-1 Political contributions	Note 16	16.5
<b>Socioeconomic Compliance</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and boundary	94, Note 5	
	103-2 The management approach and components	15-16	
	103-3 Evaluation of the management approach	27	
GRI 419: Socioeconomic Compliance 2016	419-1 Non-compliance with laws and regulations in the social and economic area	27	16.3
<b>Emergency Preparedness</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and boundary	94, Note 5	
	103-2 The management approach and components	36, 38, 39	
	103-3 Evaluation of the management approach	39	
	Emergency practices	39	
<b>Closure Planning</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and boundary	94, Note 5	
	103-2 The management approach and components	77-89	
	103-3 Evaluation of the management approach	79, 81, 87, 88	
	Number and percentage of operations with closure plans	82	
<b>Materials Footprint</b>			
GRI 103: Management Approach 2016	103-1 Explanation of the material topic and boundary	94, Note 5	
	103-2 The management approach and components	50	
	103-3 Evaluation of the management approach	59, 61	
	Impact by employee and cargo transport	59, 61	



# Notes to the GRI Index contents:

**Note 1:** The company name is Minera Alumbra Ltd.

**Note 2:** All employees have been hired for an unlimited period of time.

**Note 3:** No significant changes regarding company size, capital structure, or supply chain occurred during the reporting period.

**Note 4:** Our Sustainability Report is reviewed and approved by the Minera Alumbra management team.

**Note 5:**

## Material topic boundary and its impact on stakeholders

MATERIAL TOPIC	STAKEHOLDERS
Commitment to health and safety	Employees, unions, communities.
Environment protection	Employees, communities, NGOs and representative organisations.
Commitment to the community	Employees, communities, NGOs and representative organisations, universities
Human rights	Employees, unions, communities, NGOs and representative organisations.
Our work team	Employees, unions, government, communities.
Economic contribution	Customers, employees, suppliers, government, communities, associations and chambers.
Value chain	Investors, suppliers, governments, associations and chambers, media.
Mine closure 2017	Employees, suppliers, communities.

**Note 6:** No significant restatements of information of previous reports were made.

**Note 7:** No significant changes to material topics and their boundary were made regarding previous reports.

**Note 8:** This Sustainability Report covers all activities conducted in 2017. It also includes information from previous years in order to facilitate comparison and to provide the reader with the evolution of the data in the document over time.

**Note 9:** The most recent Sustainability Report was published in 2016.

**Note 10:** The Sustainability reporting cycle is annual.

**Note 11:** Although the report was not externally verified, specific audits were conducted in different areas.

**Note 12:** Minera Alumbra does not receive any financial assistance or grant from the federal or provincial governments.

**Note 13:** Top management (including senior managers and superintendents) come from various Argentine provinces, mainly from Catamarca and Tucumán, and a few come from Córdoba, La Rioja, Mendoza, Salta, Santa Fe and Jujuy. Three out of the four members of Minera Alumbra Board are from Argentina and 1 is from Canada.

**Note 14:** For additional information about Compliance, Transparency, and Bribery and Corruption Prevention, please refer to our 2016 Sustainability Report.

**Note 15:** The age of our Directors ranges from 42 to 57. The age of our Managers ranges from 44 to 60.

**Note 16:** Minera Alumbra makes no financial or in-kind contribution to individuals or political parties.

# Glossary

**Reclaimed Water:** Water that, upon being used at the plant, is pumped to the tailings dam system and it is reclaimed to be reused in the process.

**PHA:** Potentially Hazardous Activity.

**AA1000 Stakeholder Engagement Standard (AA1000SES):** The first worldwide stakeholder engagement standard developed by AccountAbility in order to incorporate engagement processes into our business strategy and practices.

**Capping:** A layer of barren core material stocked on the surface of waste dumps. It retains rainwater and avoids water seepage into the covered material. It is placed on waste dumps as their final design is completed. It is 1 metre thick on horizontal surfaces and 15 metres thick on slopes.

**Tailings:** The waste of an industrial process; it is the milled rock left after ore has been removed.

**DIFR:** Disabling Injury Frequency Rate refers to injuries which prevent employees from performing their duties during their next work shift.

**Acid Rock Drainage (ARD):** It occurs by the natural oxidation of sulphurous minerals when exposed to air and water simultaneously, which results in acid sulphates and metal dissolution. ARD is the result of successive chemical reactions and stages normally resulting from almost neutral to more acidic pH conditions.

**Eco-efficiency:** It is a management model under which more products are made using less resources and energy (and creating fewer pollutants), thus reducing waste and emissions.

**Indirect energy:** Energy used by the Minera Alumbra facilities, but supplied by third parties as electricity.

**Renewable energies:** Energy obtained from renewable and non-exhausting sources, including solar, wind, biomass, tidal, hydroelectric and geothermal energy, as applicable.

**Waste Dump:** Stock of waste rock (with no mineral content) resulting from mining operations that is generally stocked in coarse fragment piles.

**Run-off:** Rainwater that flows on the land surface.

**GRI (Global Reporting Initiative):** It is a network-based organisation that develops and disseminates voluntary sustainability reporting guidelines; there is a specific supplement for the mining and metals industry.

**HPR:** High Potential Risk incidents are incidents that could have potentially resulted in a catastrophic (Category 5) or significant (Category 4) outcome under Minera Alumbra's management framework.

**HPRI:** High Potential Risk Incidents are incidents that could have potentially resulted in a catastrophic (Category 5) or major (Category 4) outcome in accordance with Glencore Group assessment matrix.

**HSEC:** Health, Safety, Environment and Communities.

**ICMM:** The International Council for Mining and Metals, based in London is an industry trade body dedicated to establishing and promoting leading sustainability practices.

**ISO 9001:** A quality management system standard issued by the International Organization for Standardization (ISO). It is a voluntary standard that can be independently audited by certifying bodies.

**ISO 14001:** A management system standard similar to ISO 9001, but covering environmental risks and impacts.

**IUCN:** The International Union for Conservation of Nature is a global environmental professional network comprising more than 1,000 member organisations and 140 countries.

**Cut-off grade:** It is the lowest ore grade contained in a mineralised body that can be mined obtaining economic value.

**Alluvial material:** Modern and uncompact material of variable grain size carried by water.

**Total Suspended Particulate Matter (TSPM):** TSPM consists of very small solid or liquid particles accumulated in ambient atmosphere that result from any anthropogenic (human) or natural activity.

**Settleable Particulate Matter (SPM):** It is matter of any size captured on a certain surface unit in a given time unit. In general, it consists of solid particles with a size ranging from 10 to 500 micrometres. These are "coarse dust" particles that settle at a significantly fast rate and stay in the atmosphere for a relative short period of time.

**Open pit:** It is the mineralised area that is exposed when mining operations are conducted on the surface because they are disseminated minerals, unlike underground mining that is conducted underground because they are vein-shaped minerals.

**Mine Closure Plan:** A formal document detailing an outline of how the operation will be closed, taking into account the options available to deal with prevailing social and environmental issues.

**PM:** Particulate matter, or dust, usually from industrial sources.

**PM10:** Breathable particulate matter consists of particles of 10 or less micrometres in size on which the air quality pattern is currently measured in accordance with the US Environmental Protection Agency.

**Greenhouse Gas Protocol (GHG):** Standards and guidance for corporate accounting and reporting on GHG emissions, which help governments and business leaders to understand, quantify, and manage GHG emissions (e.g. CO<sub>2</sub>). The protocol separates GHG emissions into different scopes depending on source.

**TRIFR:** Total Recordable Injury Frequency Rate is the aggregate number of lost time injuries -including fatalities-, restricted work injuries and medical treatment injuries.

**Waste rock:** Mineral waste with no economic value resulting from mining operations. Waste rock is either used for backfilling or stored at the surface.

**Sustainability:** It refers to the foundations of sustainable development, which integrates three aspects that must be in balance: economic growth, social equity and environmental protection.

**Slope:** Inclined surface that laterally limits rock stockpiling.





**MINERA ALUMBRERA**  
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