# Minera Alumbrera



Sustainability Report 2005





# MINERA ALUMBRERA HAS BEEN OPERATING BAJO DE LA ALUMBRERA COPPER AND GOLD DEPOSIT IN CATAMARCA SINCE 1997.

PROJECT COMMISSIONING REQUIRED USD 1.2 BILLION INVESTMENT.

BAJO DE LA ALUMBRERA IS THE FIRST LARGE-SCALE MINING DEVELOPMENT IN ARGENTINA AND A SOURCE OF ECONOMIC BENEFITS AND OPPORTUNITIES FOR ARGENTINA AND IN PARTICULAR FOR THE COMMUNITIES CLOSE TO THE OPERATION.



ARGENTINA

CATAMARCA



BAJO DE LA ALUMBRERA



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# A Message from Xstrata Copper Chief Executive



Further safety and environmental performance and system improvements are expected at our operations this year following the implementation of recommendations from the Xstrata plc HSEC Assurance Audits that were conducted during 2005.

# Charlie Sartain

Xstrata Copper's business strategy is to maximise value for Xstrata's shareholders by successfully growing and managing an industry-leading portfolio of copper assets that deliver superior returns. Associated with this strategy are more specific objectives relating to the areas of health and safety, environment, community and people, namely:

- Injury free, safe work environments for our people.
- Continual improvements in environmental performance.
- A reputation for social responsibility.
- Realisation of the full potential of our people.

We are passionate about pursuing this strategy and these related objectives. We are also convinced that our success absolutely depends on the partnerships that we build with our employees and their families, communities, governments and other stakeholders.

In this sustainability report Minera Alumbrera, as with those being produced by our other divisions and within the individual site reports, we have provided information on how our people are progressively working towards the achievement of these strategic objectives. These reports also demonstrate how our convictions about health and safety, environmental and social responsibility translate into the way we do business every day.

#### Improving our safety and environmental performance

Last year in our operations a strong management and organisation focus helped Xstrata Copper continue to improve its safety performance. This included almost halving the total recordable injury frequency rate (TRIFR) from 24 in 2004 to 12.9 in 2005. However, tragically a fatality occurred at the Las Bambas exploration project in Peru early in the year with the accidental death of Mr. Elmer Cordoba. The continuing implementation of site Environmental Management Systems (EMS) at all Xstrata Copper sites resulted in improved environmental performances during the year.

At Minera Alumbrera, during 2005 ISO 14001 accreditation was attained at the port, filter plant and concentrate pipeline facilities. Integration of smelter operations and air quality management at Mount Isa Mines, in north-west Queensland, Australia, remained a focus area during 2005. Commencing in 2006, Xstrata Copper is targeting an increase from 80% to 95% capture of total sulphur dioxide emissions from the Mount Isa copper smelter.

Further safety and environmental performance and system improvements are expected at our operations this year following the implementation of recommendations from the Xstrata plc HSEC Assurance Audits that were conducted during 2005.

# Extending our commitment to Corporate Social Involvement (CSI) and community engagement

Commencing in 2005 and following extensive community consultation, Xstrata Copper developed and launched a three year AUD4 million Xstrata Community Partnership Programme in north Queensland, focusing on health and education. The programme has been further extended in 2006 to include additional initiatives in north Queensland. It will also comprise a AUD 2.5 million commitment over three years to social welfare, health and education initiatives throughout Queensland on behalf of Xstrata's three commodity businesses operating in Australia (copper, zinc and coal). In Argentina, Minera Alumbrera continued to support local communities with an annual commitment of USD1 million on an extensive set of programmes focusing on health, education and sustainable development. During the year the Alumbrera social initiatives were significantly extended to include a Ar\$12 million commitment over four years to specified health and education infrastructure works in Catamarca and Ar\$11 million over three years for identified health infrastructure in Tucumán, in both cases through partnerships with the respective provincial governments.

A range of social initiatives were implemented at the Las Bambas project in southern Peru during 2005, as exploration activities commenced. Priority areas include relationship building and awareness workshops with local communities, capacity building programmes to improve the local skills base for project-related work, and partnering with local communities, NGOs, service providers and government to commence sustainable, local projects to improve nutrition levels within the communities.

The Las Bambas CSI programme, currently under development, will commit USD1 million per year over the next three years towards sustainable agribusiness and tourism projects in the area. It will also include a skills training programme for members of the local communities.

During the year, Xstrata formed an Independent Advisory Group (IAG) to help ensure that the Las Bambas project manages the complex social and environmental issues associated with mining operations in a socially acceptable way.

#### Commitment to standards and best practice performance

Xstrata Copper has a strong commitment to the International Council of Mining and Metals (ICMM's) principles for sustainable development and the Minerals Council of Australia's (MCA's) 'Enduring Value' framework for sustainable development, both of which form the basis of Xstrata plc's own HSEC standards.

Importantly, the people at our operations are committed to best practice health, safety, environmental and socially responsible performance in line with these standards. We are actively pursuing industry leadership across all these areas, and I believe that these sustainability reports are an effective way for us to share with you our progress in this regard.

Charlie Sartain Chief Executive Xstrata Copper

# A Message from Minera Alumbrera Vice President

At Minera Alumbrera we are totally committed to achieving our goals in a safe, environmentally and socially responsible way, with open partnerships between our people the communities, governments and other stakeholders.



Minera Alumbrera has a reputation and image for social responsibility and our main objective is to strive to continue to improve this reputation.

The principles that we adhere to on a day-to-day basis are our absolute commitment to safety, health and the well-being of our employees. We strive to continue our demonstrated leadership in environmental management through the establishment of the best environmental practices available. We value being a progressive, constructive partner with our stakeholders to advance the economic, educational and social infrastructures of the communities in which we operate.

During 2005 we have achieved significant results towards our Health, Safety, Environmental and Community (HSEC) targets. The 2005 HSEC performance highlights include:

- No serious injuries were sustained during 2005 and more than a 100% reduction in Safety Injury Frequency Rates.
- Zero Significant Environmental Incidents.
- Achievement of ISO 14001 accreditation at our pipeline, filter-plant and port facilities.
- Extension of the Minera Alumbrera Corporate Social Involvement (CSI) Programme.
- Compliance to the Xstrata HSEC Standards with an acceptable rating.
- Completion of all Significant Risk Registers throughout Minera Alumbrera.
- Expansion of Minera Alumbrera Apprenticeship and Graduate programme.
- Extension of Minera Alumbrera Leadership Development programme to include operators and contractors.

It has given me great pleasure during 2005 to announce the continued commitment of Ar\$3 million per annum to extensive programmes in health, education and sustainable development and the extension of the Minera Alumbrera Corporate Social Involvement programme. Minera Alumbrera has committed Ar\$12 million over a period of four years to the province of Catamarca and Ar\$11 million over a period of three years to the province of Tucumán on specified health and education infrastructure works.

We have also expanded our apprenticeship and graduate programme by increasing the number of apprentices by 30% and the number of graduate positions by 100%. Our apprentices and graduates are sourced from the technical schools in the surrounding communities and through the universities of Catamarca and Tucumán.

The Minera Alumbrera Leadership Development programme (LDP) was also extended during 2005 to increase the participation of our people to include both operators and contractors. Up to 30% of Minera Alumbrera permanent employees and 10% of contractors attended the LDP programme during 2005. The Leadership Development Programme has been running now for a period of 5 years and has underpinned the ongoing achievements of Minera Alumbrera and our commitment to leadership.

During 2005 we announced the 40Mtpa expansion to the concentrator with a capital investment of Ar\$46.5 million This expansion will be achieved with the use of local contractors and suppliers adding significant investment and employment to the provinces during the construction of the project. We also announced a further reserve extension during 2005, achieving our year-on-year objective of extending the longevity of the Minera Alumbrera operation.

# Jon Evans

At Minera Alumbrera we recognize that an integrated approach of sound principles governing health, safety, environment and community with strong economic and business practices is the only way to achieve further sustainable development. We are committed to pursuing industry leadership across all areas of HSEC and look forward to reporting our progress in 2006 as we continue to focus on creating value for all of our stakeholders.

We would welcome any feedback that you have in relation to this report. Please e-mail comments to Minera Alumbrera at informe2005@alumbrera.com.ar.

Jon Evans

Minera Alumbrera Vice President

# **Our Purpose and Values**

MINERA ALUMBRERA DEFINED ITS PURPOSE, OBJECTIVES AND VALUES TO FACE THE CHALLENGES AND RESPONSIBILITIES OF ITS BUSINESS IN COMPLIANCE WITH THESE CONCEPTS.

#### Purpose

Contribute to Argentina's development by promoting open and honest relationships with our people, the communities and institutions, generating leading returns on investments in the mining industry, in a safe, sustainable and environmentally responsible way. We work in partnership with our employees, the communities, governments and other stakeholders.

In line with these concepts, in April 2004 we voluntarily signed an agreement adhering to the UN Global Compact, an initiative that promotes corporate social involvement in the fields of human rights, labour, environmental protection and non corruption.

# Objectives

- Work in a healthy injury-free environment.
- Achieve continuous and sustainable improvements in our environmental performance.
- Develop the capabilities of our people.
- Improve the value of our business continuously, achieving a return on our invested capital above 15%.
- Support our communities through our social responsibility programme.
- Maximise in a consistent and reliable basis the production capacity of our plant and equipment.
- Implementation of common key systems.

### Values

Our activities demonstrate that we value:

SAFETY AND HEALTH

above all

#### NESTY AND RELIABILITY

we work ethically and we meet our obligations.

# COURAGE

we face our tests and challenge conventional thinking.

we treat our people the way we would like to be treated.

#### PASSION

we work actively and enthusiastically, pursuing excellence while encouraging positive initiatives.

#### RESPONSIBILITY

we are accountable for our performance and behaviour.

#### COMMUNICATION

we are committed to success through teamwork, open communication and involvement.

# Scope of this report

- This Sustainability Report 2005 is a communication document describing company management. This report to our stakeholders is focused on the economic, social and environmental responsibilities of our business.
- This edition states our continuous commitment to sustainable development, as it is clearly reflected in the support provided to the communities from project development through long-term programmes. This is the second edition of this report<sup>(1)</sup>.
- Data is presented through representative case studies. Examples illustrate the company's initiatives regarding the Community Programme, as well as the safety and environmental aspects implemented by a methodology that encompasses the whole production process.
- Part of the data provided in this report has been taken from a study on Minera Alumbrera's socio-economic impact, conducted by Universidad Nacional de San Martin in 2005. In addition, this report was based on proposals and exchanges with the communities in which the company operates, with employees, government agencies and other stakeholders.
- Minera Alumbrera Sustainability Report 2005 has been prepared in accordance with the guidelines of Consejo Empresario Argentino para el Desarrollo Sostenible (CEADS), the local branch of the World Business Council for Sustainable Development (WBCSD), an international business organisation that promotes economic progress while respecting the environment and social development.

(1) The Spanish and English versions of Minera Alumbrera's previous report may be found at http://www.alumbrera.com.ar.



Planner Emilio Bepre and Supervisor Javier Jais at the Truck Shop

#### STAKEHOLDERS

Minera Alumbrera's Corporate Social Involvement policy pursues an increasing essential consent from society to the company's standing, actions and benefits. Our strategy is focused on providing an efficient and sensible response to the needs of the various stakeholders, who are directly or indirectly impacted by Minera Alumbrera's activities.

Maximise the return on investments, through successful management, while leading the copper industry.

#### CUSTOMERS

Provide the raw materials required for progress in a continuous and safe manner.

#### EMPLOYEES, SUPPLIERS AND CONTRACTORS

Generate a respectful, flexible and efficient organization, through professional development and compliance with mutual duties.

#### GOVERNMENT

Strictly enforce and comply with the laws. Support the professional management of efficient regulatory agencies so that they may accomplish their mission

#### Corporate governance

Minera Alumbrera is committed to the best practice corporate governance principles, in line with its transparent management and its respect for the legislation in force. The Board, which is comprised of four members, one of them being the chairperson, establishes the strategic line of the company and assumes responsibility for appropriate management. The Board holds regular meetings to discuss company performance.

Xstrata, Minera Alumbrera's operator, which holds a 50% share, appoints a general manager. Other company managers also take part in the meetings.

Minera Alumbrera has entered into an unincorporated joint venture agreement with Yacimientos Mineros de Aguas de Dionisio (YMAD) to mine the deposit.

Concentrator Operator Marta Aybar adjusting the filter plate in the concentrate pipeline pump station #1

#### TRADE UNION

Support the existence of equally responsible organisations for employees' welfare.

#### COMMUNITIES

Provide growth opportunities through training, employment and sustainable programmes for people wishing to progress.

#### MINING CHAMBERS AND INDUSTRY ASSOCIATIONS

Support their activities in order that they may represent and activate on the needs of the mining industry during the Argentine mining boom.

#### NGOS AND OTHER ORGANISATIONS

Interaction with organisations which are seriously and responsibly contributing to the creation of a better social, technical and institutional framework for the region and Argentina as a whole.

Provide thorough information and clarifications through fluent and timely communication.

The Management Committee is made up of eight members, three of them representing YMAD and five members representing Minera Alumbrera. During these meetings, Alumbrera's performance is analysed by YMAD.

Minera Alumbrera endorses Xstrata's business principles, bearing in mind the different cultures, customs and local laws. These guidelines determine the ethics of the company and are rolled out to all employees. They include the Universal Declaration of Human Rights. equality of opportunities and non-discrimination policies.

An "ethics line" was implemented in 2004 to provide employees and contractors with a toll-free and confidential telephone line, managed by the consultant KPMG, to report any procedure breaking pre-established rules and which may not be communicated to supervisors following the ordinary procedure.



# **Corporate Involvement**

MINERA ALUMBRERA'S CHALLENGE IS TO TRANSLATE ITS VALUES, AS APPLIED IN DAY-TO-DAY MANAGEMENT, INTO CONCRETE ACTIONS THAT RATIFY ITS COMMITMENT TO WORK IN A RESPONSIBLE WAY IN ORDER TO IMPROVE THE QUALITY OF LIFE IN NEIGHBOURING COMMUNITIES. Minera Alumbrera's responsibility and commitment are based on the following objectives:

- Continue the development of its Community Programme in the project impact areas.
- Maintain open, honest and on-going relationships with the communities, governments and other stakeholders.
- Protect Minera Alumbrera's corporate image and reputation.

These objectives follow the guidelines of the HSEC Standards and Policy defined by Xstrata. However, Minera Alumbrera set its own community relationship policy, in accordance with associated procedures.



Grindline operator Cecilia Cata taking pressure measurements

Chemical assayer Eduardo Robledo smelting concentrate samples

#### Purpose

For Minera Alumbrera, Corporate Social Involvement (CSI) is the company's commitment to contribute to sustainable development with the participation of stakeholders, in order to improve the quality of life of the society as a whole.

The direct contributions of the mining industry to the local community in terms of royalties, taxes, assessments, employment, supply chain, etc. are pre-conditions but they are not enough for local community development. Therefore, under a system of responsibilities shared with other stakeholders, Minera Alumbrera plays an active role in its liaison with the community. Its challenge is to contribute to the development of the communities so that they may continue growing beyond the life of mine operations. Minera Alumbrera uses environmentally responsible and respectful work practices, through strict operational quality controls. In fact, since the beginning of operations, the company's environmental performance has been subjected to audits by renowned technical experts under the strictest standards as well as those from the sponsor countries and the World Bank. This allows Minera Alumbrera to meet –and exceed– the standards under the Argentine laws in force.

Provincial affairs and community relations are a key component of the company's business strategy. For this reason, in addition to operational requirements, health, safety, environment and community (HSEC) initiatives were included in the company's CSI Programme. CAT 793 truck operator Elizabeth Vilca

#### PROJECTS TO BE EXECUTED IN CATAMARCA

New 6,000 square metre technical school in Belén, with contributions from the gov
Expansion and repair works at Samuel Lafone y Quevedo School 995 in Andalgalá.
Infrastructure works and provision of equipment for intermediate therapy at hospit
Assistance in the start-up of the medical waste furnace of the capital city and in pr

#### PROJECTS TO BE EXECUTED IN TUCUMÁN

Improvements in the main hospitals of the province, including Hospital Padilla, del Niño Jesús, Centro de Salud O. Barrio, Del Carmen and other inland hospitals.

### Investment

- Minera Alumbrera invests Ar\$3 million annually on community programmes.
- However, in 2004, as anticipated in the sustainability report, Xstrata contributed additional funds to the provinces of Catamarca and Tucumán to carry out health and educational works, as previously agreed with the local governments.
- Xstrata will make a Ar\$12 million contribution to programmes in Catamarca for a period of four years and a Ar\$11 million contribution to programmes in Tucumán for a period of three years.
- Additionally, seven four-wheel-drive ambulances were provided to remote health care centres in Catamarca.

Gabriel Visconti checking the copper calibration curve at the company's site lab

overnment of Catamarca and from the relevant municipality.

itals in Belén, Andalgalá and Santa María.

providing equipment for a provincial water laboratory.

# **About Minera Alumbrera**

BAJO DE LA ALUMBRERA IS LOCATED TO THE NORTH WEST OF THE PROVINCE OF CATAMARCA, IN THE EASTERN FOOTHILLS OF THE ANDES MOUNTAIN RANGE, AT AN ALTITUDE OF 2,600 METRES ABOVE SEA LEVEL. PROJECT COMMISSIONING REQUIRED USD 1.2 MILLION INVESTMENT IN 1997.







Bajo de la Alumbrera location

Minera Alumbrera's investment spans across five projects in Catamarca, Tucumán and Santa Fe including an open pit, a concentrator, a 316 km long slurry pipeline, a 220 kW, 200 km long powerline, a filter plant and the associated railway loading facilities, and the company's railway unloading and port facilities.

Through large-scale crushing, grinding and flotation processes, Bajo de la Alumbrera's annual average production totals 700,000 tons of concentrate containing 180,000 tons of copper and 650,000 troy ounces of gold.

Bajo de la Alumbrera was the first major mining development in Argentina and is now a source of direct and indirect economic benefits and opportunities for the Argentine people, especially for local communities close to the operations.

(1) Reference: "Estudio de impactos sociales, económicos, ambientales y culturales de la actividad minera en regiones de la República Argentina", as prepared in 2000-2001 by the National Mining Department and "Actualización del Informe de Impacto Económico del Proyecto Bajo de la Alumbrera", as prepared in 2003-2004 by Universidad Nacional General San Martín.

Operators checking air levels in the flotation cells

# Investment

Exploration and mining rights are owned by Yacimientos Mineros de Agua de Dionisio (YMAD), a statutory corporation represented by the Catamarca Provincial Government, Universidad Nacional de Tucumán and the Argentine National Government.

YMAD has entered into a joint-venture agreement with Minera Alumbrera to mine the deposit. Minera Alumbrera is operated by Xstrata, a Swiss company having a 50% share in the project, with Canadian Goldcorp and Northern Orion Resources having a 37.5% and 12.5% share respectively.

Minera Alumbrera has a strong impact on the Catamarcan economy, given the significant investment that has been made since the beginning of operations to expand the local production capabilities.

To measure Minera Alumbrera's contribution to the local economy, the company's economic impact<sup>(1)</sup> update was prepared by Universidad Nacional General San Martín. The latest report includes the investment recently made by Minera Alumbrera under its community development programme as well as other project deliverables.



Operator Joel Gómez measuring thickener levels



#### MINERA ALUMBRERA'S CONTRIBUTION TO THE ARGENTINE ECONOMY<sup>(1)</sup>

USD 900 million exports
Ar\$67 million direct salary payments <sup>(2)</sup>
Ar\$420.5 million domestic supplies purchased
Ar\$350.3 million indirect wealth <sup>(3)</sup>
Ar\$452 million total fiscal revenues
9.7 employment multiplier <sup>(4)</sup>

# MINERA ALUMBRERA'S CONTRIBUTION TO CATAMARCA

# 1,690 jobs in 2005

3.7 employment multiplier
Ar\$ 109.9 million total annual revenues:
Ar\$ 18.7 million salaries (direct jobs)<sup>(5)</sup>
Ar\$ 9.6 million supplies and services purchased at the local level
Ar\$ 26 million indirect value added
Ar\$ 55.6 million direct fiscal revenues- representing approx. 63% of local tax revenues.

### MINERA ALUMBRERA'S CONTRIBUTION TO THE PRIMARY IMPACT AREA (INCLUDING BELÉN, ANDALGALÁ AND SANTA MARÍA)

# 1,144 jobs3.3 employment multiplierAr\$50.6 million total revenues:Ar\$14.8 million salaries (direct jobs) (6)Ar\$14.1 indirect value addedAr\$4.5 million - supplies purchased at the local levelAr\$17.2 million mining royalties

# **Fiscal revenues**

Minera Alumbrera tax and royalty payments at the municipal, provincial and national level total Ar\$426.7 million. Minera Alumbrera income tax payments for 2004 totalled Ar\$355.5 million.

Annual figures.
 Including payroll taxes.
 Indirect value added.
 8.7 additional jobs are created for each direct job in the Argentine economy.
 Including payroll taxes.
 The total employment level accounts for 50% of the unemployed people from each district.



Four shovels and forty haul trucks operate 24 hour/day

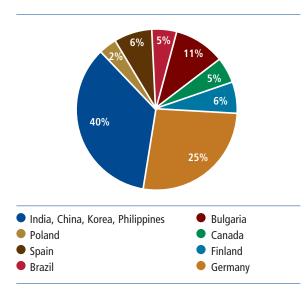
# Production

Annual copper production: 180,000 tonnes Annual gold production: 630,000 ounces

# Exports

Project exports for the 2002-2005 period totalled USD 2.58 billion at an average USD 647 million/year. Exports for 20005 totalled USD 897 million, representing 11.3% of commodity exports.

Minera Alumbrera's exports have been diversified since 1998 to include non-traditional markets such as China, India, Japan and Korea. Exports to these destinations represented 40.6% of company exports for the 2002-2005 period.



#### Project exports for 2005 per destination

Source: company data and information provided by the Mining Department

# **Our People**

Employment opportunities

BEST-OF-CLASS EMPLOYMENT CONDITIONS AND CAREER DEVELOPMENT ARE THE PILLARS OF MINERA ALUMBRERA'S HUMAN RESOURCES, TRAINING AND DEVELOPMENT SUSTAINABLE MANAGEMENT INITIATIVES. BEARING IN MIND THAT TRAINING IS A BASIC DEVELOPMENT TOOL, MINERA ALUMBRERA EMPLOYEES ARE HIGHLY TRAINED FOR THEIR JOBS THROUGH REGULAR AND SPECIFIC COURSES.

BASED ON OUR CONTINUOUS IMPROVEMENT APPROACH, THIS PROCESS IS ALSO INTENDED TO ENSURE EQUAL OPPORTUNITIES FOR THE PEOPLE FROM NEIGHBOURING COMMUNITIES. CURRENTLY, 88% OF MINERA ALUMBRERA EMPLOYEES ARE FROM NEIGHBOURING COMMUNITIES, MOSTLY IN CATAMARCA AND TUCUMÁN. MINERA ALUMBRERA'S GRANTS, EDUCATION AND INTERNSHIP PROGRAMMES ARE NOURISHED AMONG OTHERS BY MINERA ALUMBRERA'S LIAISON WITH PROVINCIAL EDUCATION CENTRES.



In addition to ensuring the implementation, annual revision and updating of key Human Resources (HR) standards and policies, Minera Alumbrera's HR department provides significant services throughout the organisation. Minera Alumbrera employees become aware of their roles and responsibilities (including company standards) through training sessions.

Individual action plans and training workshops are organised under Minera Alumbrera's Performance Management System, which also serves as a powerful management tool.



Truck shop operators planning their activities

# Objectives

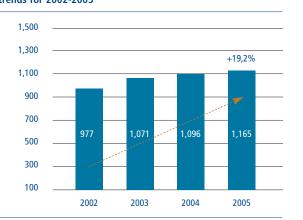
- Keep on developing our employees through regular training, effective communications and employee involvement.
- Manage individual performance effectively
- Provide additional career development opportunities through succession planning
- Identify and train future leaders through our Leadership Programme
- Encourage innovation and creativity throughout the organisation
- Recognise individual development and achievements
- Transfer candidates to other Xstrata operations

Truck operators Jorge Romero, José Cisternas and Daniel Segura talking at the Recreation Area the end of the night shift

### Increased Employment

According to BLA's Economic Impact Study (as prepared by Universidad Nacional General San Martín), Minera Alumbrera employed 1165 people in 2005. This meant a 19.2% increase over the manpower levels for 2002<sup>(1)</sup>. In other words, Minera Alumbrera created 190 additional direct jobs in Northwestern Argentina –66% of which are based in Catamarca.





Source: Company data

(1) A preliminary study of BLA impact was made by Universidad Nacional General San Martín in 2004.

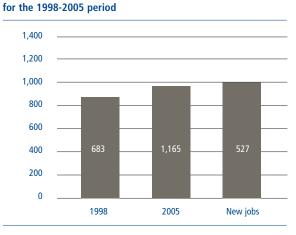


Employees arriving at Minera Alumbrera's air station in Campo del Arenal

Furthermore, Minera Alumbrera is committed to provide additional employment opportunities to the local people. The HR department plays a key role in the achievement of this objective, by identifying potential candidates at the local level with a view to increase the number of local employees progressively.

While 88% of company employees are from Northwestern Argentina, the remaining 12% come from other provinces. A breakdown of Minera Alumbrera manpower shows that, while the percentage of Catamarcan employees increased from 33.8% in 2002 to 39% in 2005, Minera Alumbrera's expansive manpower requirements increased by 71% during the 1998-2005 period. This means that 527 additional direct jobs were created during the operations stage. Thus, the direct employment multiplier rose to 9.7% –which means that 8.7 indirect jobs are created for each direct job.

# Employment levels

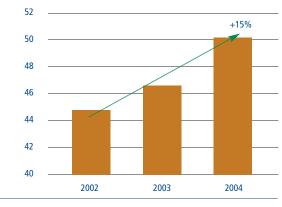


Source: Company data

# **Salaries**

Minera Alumbrera's HR department maintains ongoing liaison with union leaders. Communication and understanding help maintain Minera Alumbrera's outstanding employment standards. Furthermore, the HR department keeps employees informed on Minera Alumbrera's standing in terms of good management practices, competitive salaries and best-of-class working conditions while ensuring compliance with the applicable collective bargaining agreements as well as political support to union leaders.

Salary payments (excluding payroll taxes) totalled Ar\$51 million in 2004. This amount is 7% and 15% higher than the 2003 and 2002 levels respectively.



#### Minera Alumbrera salary payment trends for the 2000-2004 period (in Ar\$ millions)

Source: Company data



Chemist Sandra Padilla monitoring effluent water sample quality

# A M.1.5/1 A.m.M.2/0/1

### Training Programmes

A number of training programmes have been implemented in Alumbrera. These include general training courses such as Minera Alumbrera's Leadership Programme and those envisaged to communicate company values, health and safety programmes, those specifically designed to acquire and develop technical skills, and those for the local education centres.

The outcome of Minera Alumbrera's training and development programmes for 2005 was positive. Some of these outcomes were:

#### Minera Alumbrera Apprenticeship Programme

Eleven out of the sixteen secondary school students from Catamarca who were trained for a period of 2 years became regular employees in 2005 (additional information is provided on page 50).

#### Minera Alumbrera Leadership Programme

This is one of the most successful training programmes within Minera Alumbrera. Developed and led by in-house facilitators, it includes a number of one-day workshops. This programme was completed by all employees in supervisory or managerial positions. Refresher sessions and workshops for new leaders will take place during 2006.

#### **Talent Pooling**

Minera Alumbrera's success is based on providing its employees with the skills required to develop and implement the organisational plans. Minera Alumbrera's Talent Pooling Process is intended to evaluate potential and existing skills of Minera Alumbrera employees.

#### Partnering with local education centres

Internship agreements were entered into with local universities and technical schools from Andalgalá, Santa María, San José and Belén, for their graduates and advanced students. Candidates are trained on geology, metallurgy, equipment maintenance, administration, in Minera Alumbrera's open pit, concentrating operations, filter plant and port operations under the guidance and supervision of Alumbrera employees. This initiative will be pursued as part of Alumbrera's commitment to the educational development of the local people, who will thus be highly skilled for future mining operations or other industries.



Eleven candidates under Minera Alumbrera Apprenticeship Programme became regular employees in 2005

#### Grants

During 2005, Alumbrera placed special emphasis on language training for potential candidates to grants in Australian universities. Sponsored by Alumbrera, these grants cover mining and metallurgy training programmes for mining engineering students and graduates. This is undoubtedly a value-added experience for the professional career of future Argentine miners.

#### Mining and tourism

Students of the tourism career in Hualfín joined Minera Alumbrera Apprenticeship Programme to foster mining-related tourist activities. Candidates investigated Alumbrera mining practices and work standards to provide additional information to neighbouring communities.

The benefits of this programme are many since not only does Alumbrera contribute to professional development but it may also identify local talent and students have access to state-of-the-art technologies by working subject to world standards in a booming industry.

#### Latest trends in training time

YEARS	2003	2004	2005
Employees	1,071	1,096	1,165
PROGRAMMES	# OF HOURS	# OF HOURS	# OF HOURS
Leadership and Management Practic	ces 53	1.138	1.194
Alumbrera values	2.123	2.281	9.107
Technical skills	27.720	37.893	35.571
Regional school talents	3.360	15.120	24.004
Total number of training hours	59.776	88.199	120.350
Annual target (in hours)	60.000	75.000	100.000
Budget (in USD)	140.009	362.049	460.290

#### Training sessions planned for 2006

CONTENT	SCOPE	BY
LEADERSHIP	GENERAL	
Leadership Development Programme (LDP)	Minera Alumbrera Leadership Development Programme includes 4 modules covering specific skills for managers and supervisors. It covers the supervisor's role, planning and delegation, coaching, performance management and communication.	Facilitators with HR support
LDP Update	Refresher course of the management module in the original LDP, for employees who have completed the previous four modules.	Ditto
LDP for Contractors	Training workshop for contractor managers. This course is intended to communicate Minera Alumbrera management modules and consolidate behavioural patterns under Minera Alumbrera's work standards.	Ditto
POLICIES & VALUES	COMPANY VALUES	
Operating workshop for Minera Alumbrera employees	This course is intended to review and reinforce company policies and work standards among Minera Alumbrera employees.	HR
Operating workshop for supervisors	This course is aimed at company managers and supervisors. It is intended to provide them with HR management tools.	HR
Induction	General induction session for new recruits. It covers Safety, Health, Environment, Community and HR issues.	HR
Re-induction	Re-induction session for employees with more than 2 years of service. It is an update of company policies and procedures.	HR
HEALTH & SAFETY	HEALTH & SAFETY	
Technical & operational safety	Safety drills for Alumbrera employees and contractors, led by the safety advisors of each area.	Safety department of each area
Medical Services	First-aid training for all Minera Alumbrera employees, contractors and rescuers.	HR & Safety
Safety	General training sessions on safety matters.	HR & Safety
Fire brigade	General training sessions on safety matters for rescuers, contractors and employees.	HR & Safety
TECHNICAL SKILLS	TECHNICAL SKILL DEVELOPMENT	
Operations & Maintenance Technical training	Technical training sessions on mine operations and maintenance by specific trainers.	Training department
Languages (in-house course)	English & Spanish language training.	HR
Languages (external course)	TOEFL training, sponsored by Alumbrera and organised by Universidad Nacional de Catamarca (UNCA) for mining engineering students who have applied for Minera Alumbrera's international grants.	HR
COMMUNITY	REGIONAL SCHOOL TALENTS	
Community	Special training programmes for local schools and community members, based on their needs and interests.	HR & Training departme
Internship	6-month programme for 30 graduates / advanced students of local universities and 12 graduates of local high schools in their field of specialty.	HR, specific area manag UNCA and Universidad Nacional de Tucumán
Apprenticeship	Technical training in three operational areas for 18 graduates of local high-schools, including Andalgalá Polimodal #32, Belén Polimodal #19, Santa María Polimodal #12, San José Polimodal #13, Hualfín Polimodal #40 and San Fernando del Valle de Catamarca Polimodal #29.	HR & Training departme

### Communication

Minera Alumbrera communication campaign for in-house and external parties was streamlined in 2005 with a view to keep our stakeholders regularly informed on responsible mining operations. Minera Alumbrera's communication programme for Catamarca and Tucumán communities is intended to ensure that the local benefits resulting from mining development and in particular from Minera Alumbrera operations be regularly reported, based on company data. This programme also remarks on Alumbrera's working practices under the highest local and international standards. Minera Alumbrera's communication campaign is focused on:



Build on the fact that Minera Alumbrera is a prime mover of social and economic development for neighbouring communities.

CONDUCT

Report on the earnestness, safety and experience of Minera Alumbrera's operations.

BELONGING

List the beneficiaries of company operations by maximising the support of Minera Alumbrera's international sponsors.



Community insert for neighbouring communities



Written communication tools for Minera Alumbrera employees and local communities

# Communication initiatives for 2005

- Distribution of Minera Alumbrera's Sustainability Report for 2005, describing Minera Alumbrera's impact on neighbouring communities (as reported by Universidad Nacional General San Martín), community initiatives and projects for 2004 in addition to Minera Alumbrera's responsible management practices for critical business areas. This report will be updated on an annual basis.
- Open contact with national and provincial journalists on mining issues.
- Regular information on Alumbrera to mainstream media through regular meetings, interviews and brochures.
- Bi-weekly article in NOA Productivo insert in EL ANCASTI (Catamarca) newspaper.
- Weekly publication in Catamarcan LA UNIÓN, EN ACCIÓN newspaper.
- Community insert to be distributed with EL ANCASTI newspaper.
- Additional site visits for local education centres. Currently, the average number of visitors is 2500/year. It is expected to maintain this level of visitors in the near future.
- A magazine matching company activities to local interests will be distributed with Tucumanian LA GACETA newspaper.
- Additional site visits and open days for local authorities, journalists and community members.
- Reporting on Minera Alumbrera community programme in local radio stations
- Company advertorials to be published on specific holidays in Catamarca and Tucumán.

#### A banner on Minera Alumbrera's Community Programme posted in strategic site locations

### **Communication Tools**

#### In-house communications

Minera Alumbrera activities are reported at various levels using a number of communication tools for our employees, including:

#### Notice Boards:

Notice boards with information on Minera Alumbrera programmes were first posted in 2001. They are situated in five key areas to ensure that information is available to all employees.

#### A CIELO ABIERTO magazine:

Distributed to all Minera Alumbrera employees and contractors. It is intended to share Minera Alumbrera's operational achievements with the families of Minera social and economic benefits of the mining industry. Alumbrera employees and contractors and to reinforce Minera Alumbrera strategy in key areas including safety, EN ACCIÓN: environment, international accreditation and good Weekly production insert on micro and macroeconomics operational performance. for miners.

#### Minera Alumbrera's intranet:

The latest company policies, achievements and events are posted in Minera Alumbrera's intranet.

#### **External Communication**

Alumbrera uses traditional communication tools including brochures, special inserts, calendars, information releases and signage.

#### Community Insert:

Alumbrera's communication campaign for neighbouring communities was streamlined in 2003 to include company inserts reporting on joint health, education and sustainable development activities under the three core areas of Minera Alumbrera's Community Programme. Each insert covers health, education and production development cases gathered through interviews with community members who report on local working



Minera Alumbrera website displays

practices and requirements. It is distributed with EL ANCASTI newspaper. A full-colour brochure is also distributed to neighbouring communities.

#### MINERA ALUMBRERA:

A quarterly colour magazine distributed with LA GACETA newspaper to report Alumbrera operations to the local community.

#### NOA PRODUCTIVO:

Weekly insert in Catamarcan EL ANCASTI newspaper to foster entrepreneurship in local communities. It is focused on regional production matters while emphasising on the

#### ALUMBRERA WEBSITE

In addition to the latest key events, Alumbrera initiatives, standards and policies are posted in Minera Alumbrera website at www.alumbrera.com.ar.

Alumbrera is involved in local festivals, seminars and exhibitions including round tables of local producers, seminars on mountain greenhouses, supplier meetings, business exhibitions, social involvement seminars and special events organised by national authorities such as INTA's exhibition in Tucumán, the National Poncho Festival, etc.

Minera Alumbrera's communication campaign is also based on spontaneous reports by local beneficiaries and mining-related organisations.

# Safety & Health

DEVELOP ITS OPERATIONS SAFELY TO ENSURE THE HEALTH OF ITS EMPLOYEES, CONTRACTORS AND SUPPLIERS.

Safety is a matter involving us all



# BY TARGETTING A ZERO-ACCIDENT GOAL, MINERA ALUMBRERA IS COMMITTED TO

Minera Alumbrera's Health & Safety Programme

#### Performance

2005 was highly successful for Minera Alumbrera in terms of safety. In December, Minera Alumbrera broke a record of one million injury-free man hours worked to achieve a DIFR of 0.84 at the end of the year. Also of note, in 2005 the Total Recordable Injury Frequency Rate decreased by 39% compared with 2004 levels, and was 37% above the estimate for 2005. Safety records continue to be improved and are well recognised worldwide.

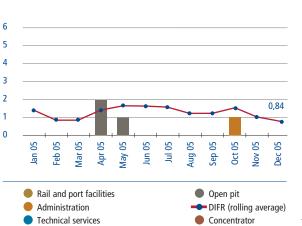
#### **Statistics**

To assess the safety performance of Minera Alumbrera operations, monthly statistics are kept by the HR and Safety department.

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

It includes labour-related accidents that prevent a worker from performing his/her regular duties during the following shift. It includes lost-time accidents.

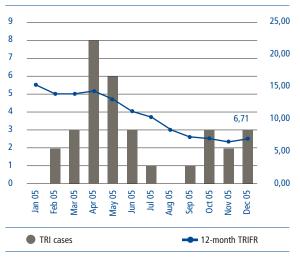
#### DIFR - Disabling Injury Frequency Rate 12-month rolling average



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

It is the aggregate number of lost time injuries (including fatalities), injuries resulting in restricted duties and medical treatment cases.

#### TRIFR - Total Recordable Injury Frequency Rate 12-month rolling average



### Forecasts

Other areas

GOALS FOR 2005 <sup>(1)</sup>	STATUS	GOALS FOR 2006 (according to statistics)	WORK GOALS FOR 2006
Zero fatalities	Achieved	Zero fatalities	Make Alumbrera standards consistent with Xstrata's HSEC standards.
DIFR < 3.0	Reduced by 48%	DIFR < 2.2	Develop additional positive attitude safety sessions.
LTIFR <sup>(2)</sup> < 2.5	Achieved	LTIFR <1.5	Arrange a Contractor Audit Programme.
TRIFR < 18	Reduced by 39%	TRIFR < 12	Reinforce existing health monitoring programmes.
		DISR <sup>(3)</sup> < 58	Develop risk profiles and risk identification at the workplace.
			Train employees by implementing PASS System sessions.
🕢 Goal fully achieved		Soal partially achie	eved 🔮 Goal not achieved



# • Safety is a matter involving us all

By virtue of its continuous improvement process, Minera Alumbrera follows an open-mind approach to ensure that roles and responsibilities be clearly understood at all levels and that the relevant people be duly empowered, while encouraging employees to be actively involved through shared experience.

The Vice President is ultimately responsible for safety management as well as for updating Minera Alumbrera's Safety and Health Policy on an annual basis. However, all employees, contractors, consultants and visitors are personally responsible for safety.

Safety programmes are in turn implemented, monitored and executed by departmental managers, with the assistance of full-time safety advisors who support the operations.

(1) As mentioned in Minera Alumbrera Sustainability Report 2004.

(2) Lost time injury frequency rate (LTIFR): the number of injuries or work-related illnesses requiring at least one shift of medical leave because the employee is unable to perform his/her duties.

(3) Disabling injury severity rate (DISR): the number of days lost for disabling injuries. It is measured on an annual basis. It was included among Minera Alumbrera Safety Objectives as from 2005.

Safety Advisor Daniel Argente and Metallurgist Rodolfo Micone inspecting the conveyor belt

# Positive Attitude System

Minera Alumbrera has implemented the Positive Attitude Safety System (PASS) as a management system tool aimed at improving communication lines and operational safety. Created in 1985 by a Canadian psychologist James Burns, it is being used by major companies around the world.

This system is intended to encourage a positive and proactive attitude towards safety while minimising or removing accidents. Each crew holds daily meetings at the beginning of each shift, to discuss the safety events of the previous day. If the previous day is considered as a safe day, the safety actions taken are discussed for reinforcement purposes. Otherwise, risks are identified and a solution is sought.

Once the activities of the previous day are revisited, the actions planned for that day are discussed and at least one member is required to take a proactive approach to identify the safety concerns associated to the equipment, the area, the procedures or the people involved.

Managers provide positive communication on the achievements of each team and supply the resources required to correct problems. During safety meetings a score chart is also prepared based on the employee's agreement over the type of day involved. This system was implemented in our open pit in 2000 and rolled throughout Minera Alumbrera in 2003 with positive results.

# **Risks under control**

Alumbrera uses the risk management tools required to identify, assess and bring risks under control at the workplace as well as in the event of changes to equipment and processes, irrespectively of production or time constraints.

Risk analysis is performed prior to hazardous activities. Risk analysis is performed using a probabilistic matrix to measure the actual frequency and likelihood of an event to occur. Such matrix is essential to identify on a preventive basis the key control measures as well as any additional action that may be required.

As a supplementary initiative, TRABAJO SEGURO Written Procedures (also known with the Spanish acronym "PETS") are developed for repeated actions. A PETS is a document describing the steps required to complete a task, including an identification of hazardous conditions in the workplace, an assessment of the associated risks and the control actions required to minimise those risks. Before an action associated to a PETS is started, safety awareness by contractors and employees is ensured. Furthermore, PETS are regularly audited and updated.

Based on their experience, employees are actively involved in Risk Analysis and PETS development and thus ratify their non-delegable commitment to their own safety.



Luis Llanque and Edgardo Moreno inspecting the multi-locking box during a plant shutdown

# Case: Interlocking system

The interlocking system is a general mine procedure to remove the risk of workplace injuries during equipment maintenance activities or operations close to electrical, pneumatic, hydraulic, kinetic or chemical sources.

Employees under this system have a non-transferable interlocking device (called "padlock") and a personal identification card.

A multiple interlocking system is used at Minera Alumbrera concentrator and port facilities to eliminate all hazards associated to specific equipment.



Rescuers in a drill using fire-fighting foam

# Case: Emergency rescuer training

Emergency brigades are composed of employees who voluntarily pursue improved safety conditions by working together in an organised fashion to prevent and mitigate incidents and accidents. Emergency rescuers are trained and work in a team.

The Emergency Rescuer training programme is a one-year programme that includes both emergency instructions and drills led by experts from Minera Alumbrera Fire Brigade and Medical Services. Trainees become actively involved in this dynamic programme, in particular at the Training Area/Field where rescue and fire drills take place. Since Minera Alumbrera Emergency Brigade was first organised in 1998, no injuries have been sustained. Sixty-two rescuers (including beginners and advanced trainees) were trained in 2005.

Safety signage at the concentrator

# Minera Alumbrera's Health & Safety Programme

Minera Alumbrera has implemented a Health and Safety Programme including food tests and a survey of work areas, to ensure the health of its employees.

# Workplace Surveys

Environmental measurements are undertaken throughout the year to ensure that risk agents such as noise, total and respirable dust, fumes, heavy metals and inorganic acids are removed.

Once these measurements are obtained, corrective action is taken, as required –e.g. reengineering, training, improved signage, changes to existing procedures or additional personal protective equipment.



Award-winning drawing by Carolina Zapata (12) under Minera Alumbrera's Safety Contest

Food and nutrition expert Karina Amayo checking the quality of catering services at Minera Alumbrera's messing hall

A Risk Map is also prepared based on the risks identified at the workplace, in accordance with the Work Risk Superintendency guidelines. This map is then lodged with the Work Risk Agency in order that medical examination is prescribed to each employee based on his/her level of exposure.

# Food testing

Food tests are intended to ensure food safety and prevent foodborne illnesses in the 950 employees who eat at Minera Alumbrera mess hall. Minera Alumbrera also employs a food and nutrition expert to reinforce food safety at all catering stages (including food transport, storage, preparation, displaying, serving and housekeeping) and to keep a nutritionally balanced diet.

#### "Safety tips not just for kids" Drawing Contest

A drawing contest for the children of Minera Alumbrera employees was organised in 2005 with the support of La Caja work-risk insurer.

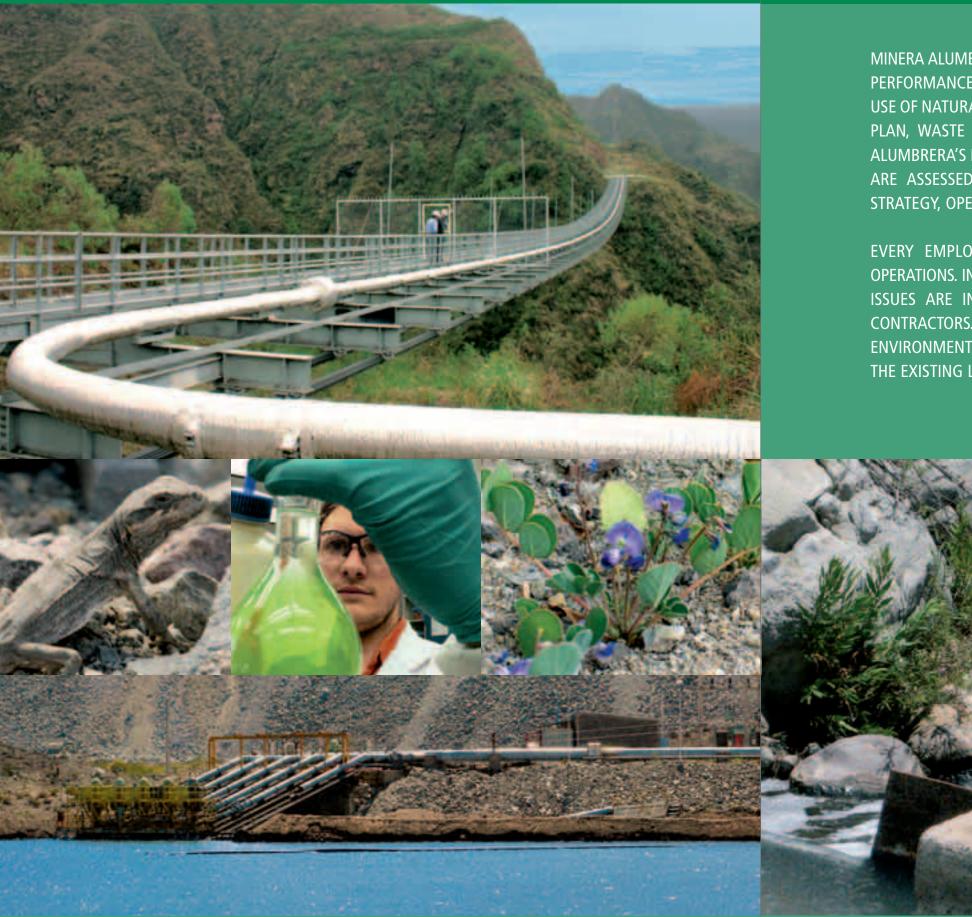
This drawing contest was mainly intended to make all family members aware of the safety procedures to be followed by employees to avoid accidents. Thus, children were asked to convey this message to their parents in a drawing of their own.

Therefore, five hundred drawing kits were provided to two hundred and twenty-five children aged from 6 to 12 years old. Awards (including bicycles, toys and storybooks) were granted to the top five winners in each category.

# Environment

MINERA ALUMBRERA HAS IMPLEMENTED THE HIGHEST STANDARDS OF ENVIRONMENTAL PERFORMANCE, BASED UPON A CONTINUOUS IMPROVEMENT PROCESS. THE EFFICIENT USE OF NATURAL RESOURCES, THE CONTINUOUS OPTIMISATION OF THE MINE CLOSURE PLAN, WASTE TREATMENT AND BIODIVERSITY CONSERVATION REPRESENT MINERA ALUMBRERA'S ENVIRONMENTALLY RESPONSIBLE OPERATIONS. ENVIRONMENTAL RISKS ARE ASSESSED ON A PERMANENT BASIS AND ARE INCLUDED IN THE BUSINESS STRATEGY, OPERATING DECISIONS AND COMPANY BUDGET.

EVERY EMPLOYEE IS COMMITTED TO MINIMISE ANY IMPACTS FROM MINING OPERATIONS. IN THIS SENSE, TRAINING AND SPECIFIC CAMPAIGNS ON ENVIRONMENTAL ISSUES ARE INCLUDED IN THE INDUCTION PROGRAMMES FOR EMPLOYEES AND CONTRACTORS. THE SUPPLY OF RESOURCES BY MINERA ALUMBRERA TO ACHIEVE ENVIRONMENTAL OBJECTIVES ALSO ENSURES COMPLIANCE WITH THIS POLICY UNDER THE EXISTING LAWS.





# **Environmental Management System**

In compliance with the standards of Xstrata Health, Safety, Environment and Community (HSEC) programme, Minera Alumbrera has established environmental strategies, procedures and objectives. Further to this policy, Minera Alumbrera has continued optimizing their Environmental Management System based upon the requirements of ISO 14001 International Standard, which aims at supporting environmental protection in accordance with the social and economic needs of the community. Minera Alumbrera has obtained such certification in three operational areas: Slurry pipeline, Filter Plant and Port Facilities. The on-going interaction of such processes with Human Resources, Environment and Provincial Affairs has led to include them within the scope of standard. The certification requires procedures with the operating criteria to maintain activities under control and minimise any environmental impact. Thus, every area has an Environmental Management Programme with goals and objectives and a specific budget.



Reusable water in Minera Alumbrera's filter plant ponds (Tucumán)

#### Underground water

The fresh water required for mine operations is drawn from Campo Arenal, which includes a large basin in the northeastern area of the minesite. During 2005, Australasian Groundwater and Environmental (AGE) recalibrated the underground water flow model that had been developed and submitted to the provincial authorities by such consulting company in 2002.



#### Monitoring

Alumbrera is committed to maintain the natural quality of surface and underground water in the Vis Vis canyon, downstream of the operations site. For this purpose, Minera Alumbrera uses a pumpback system to return drained water to the tailings dam. The efficiency of this process means keeping process water within the permit boundaries. To optimise this process, new monitoring wells are drilled every year in the location sites recommended by additional studies.

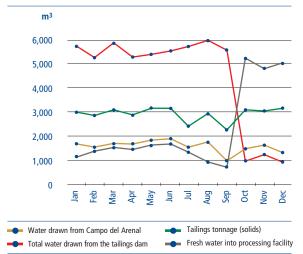
Since the beginning of operations, monitoring programmes have been implemented, in compliance with the existing laws, to obtain accurate information to optimise mine closure planning. Daily, weekly, monthly or semi-annually monitoring takes place according to the relevant programme. The Vis Vis Canyon water quality monitoring is performed jointly with the enforcement authorities.

GOALS FOR 2005	PERFORMANCE	GOALS FOR 2006
Implement the ISO 14001 Standard at Minera Alumbrera's Filter Plant, Slurry Pipeline and Port Facilities.	Certified in December 2005.	Environmental Management System: Implement ISO 14001 Standard at the mine site.
-Recalibrate the Campo Arenal and underground water model. -Recalibrate the Vis-Vis underground water model.	<ul> <li>Accomplished.</li> <li>Ongoing. To be completed by the first quarter of 2006.</li> </ul>	Disturbed land rehabilitation: Recalibrate tailings dam and waste dump capping model based upon the data obtained from field trials (2003-2005).
Survey local species and build a revegetation nursery at the mine site.	Accomplished. The next stage involves germination trials.	Biodiversity: Execute the first sediment, water quality, soil structure and annual wildlife survey.
Complete the first biannual sampling trial for tailings dam and waste dump capping.	Accomplished. Bi-annual sampling trial has been successfully completed.	Soil management: germination trials of local species at the nursery, to supplement the tailings dam and waste dump capping programme.
Drill two monitoring wells and replace the two existing pumpback wells.	Accomplished. Four wells have been drilled in the Vis-Vis canyon	Water impact prevention: Drill 2 new monitoring wells and replace 2 pumpback wells in the Vis-Vis canyon.
		Waste: add paper and cardboard to the recyclable waste programme and dispatch the first lot of plastic collected during 2005 to a neighbouring town for future use.
Soal fully achieved	Goal partially achieved	🕚 Goal not achieved

Minera Alumbrera is subject to national and provincial environment regulations:

ENVIRONMENTAL REGULATION	ENFORCEMENT AUTHORITY	KEY PERMITS
MINE SITE, CONCENTRATOR,	Catamarca Mining Secretary	Approval of Environmental Impact Report. Underground water permit over Campo Arenal.
SLURRY PIPELINE	Sustainable Development & Environment National Secretary	Dangerous waste generation, transport and operations.
FILTER PLANT,	Tucumán Energy and Mining Department	Approval of Environmental Impact Report. Filter plant discharge permit.
SLURRY PIPELINE	Sustainable Development & Environment National Secretary	Dangerous waste generation, transport and operations.
	National Secretary of Energy, Transport and Communications	Approval of Environmental Impact Assessment.
POWERLINE	National Electricity Regulator (ENRE)	Environmental Management Programme, including semiannual progress reports.
PORT FACILITIES	Santa Fe Secretary of Environment and Sustainable Development	Dangerous waste generation, transport and operations.

Flamingos in Minera Alumbrera's tailings dam during the 2005 winter



#### Recycled and fresh water requirements for 2005

#### Capping system

The Acid Rock Drainage (ARD) potential will be minimised by encapsulating potentially reactive materials. This is achieved through a capping system, designed to profit from the climate conditions prevailing on site: a combination of high evaporation rates with low rainfall levels. Thus, water remains in the local water system during the rainy season and moisture is released during the dry season.

By keeping water within the capping system, the possibility of surface erosion is reduced while maximising successful revegetation.

In October 2003, field trials were put in place. They are expected to provide real standards to develop the final model. The second year of field trial performance sampling was completed in October 2005 with encouraging results.

The conclusions were submitted to the Catamarcan enforcement authorities.



Germinating seeds in BLA nursery. They will be used in Minera Alumbrera's revegetation programme

#### Luis Cointte analysing water samples in Minera Alumbrera's filter plant lab, which was granted the IRAM 301 standard accreditation

Recycled plastic materials

#### **Rehabilitation Plan**

Mine closure planning includes field surveys and validation tests to confirm pre-established assumptions. The main issues related to the responsible mine closure by Minera Alumbrera involve the Vis-Vis underground water model, revegetation, and the capping system research and development programme. In this sense, daily monitoring of environmental and weather standards will be performed to control the performance of capping field trials.

#### Training

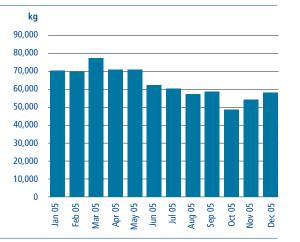
Awareness and training are essential for the success of Alumbrera's environmental programme. Employees and contractors take induction courses and workshops to increase their awareness and learn how to perform their daily activities in a reliable way. Main topics include environmental management policy, waste management, incident reporting, and the Environment Department activities. These topics are reinforced with pictures posted on notice boards on site.

#### Waste Treatment

Minera Alumbrera works every day to minimise waste generation and maximise responsible waste disposal. Routine activities include a broad waste selection programme for responsible treatment. Recyclable materials (wood, metal, rubber) are segregated at the workplace by each area.

Minera Alumbrera fully complies with national and provincial dangerous waste regulations.

#### **Residential Waste**



#### Filter Plant Accreditation

The filter plant lab was the first assay lab in Northwestern Argentina to obtain the IRAM 301:2000 standard accreditation. In August 2005, Organismo Argentino de Acreditación<sup>(\*)</sup> thus recognised Minera Alumbrera's ongoing commitment to provide highly-reliable analytic results under a Technical Competence & Quality Management System in order to maintain high safety standards, subject to Minera Alumbrera's environmental responsibility. Samples are assayed during routine monitoring of the filter plant effluent and water treatment processes as well as during the monthly and quarterly monitoring of site and related basin samples.

> (\*) Organismo Argentino de Acreditación (OAA) is a private non-profit organisation under the Quality Standards & Certification National System. It is the only Spanish-speaking accrediting agency in Latin America which is recognised by the InterAmerican Accreditation Cooperation (IAAC) for calibration and assay accreditation.

# A case for Material Recycling

# Date and place:

Year 2005, minesite

A pilot test of recycling bulk materials that are disposed on a daily basis (such as mineral water containers) was carried out. Our motto is: Reduce, Recycle, Reuse.

#### Direct beneficiaries:

Mine employees and neighbouring communities.

#### Programme objectives:

Protect the environment by including raw materials into production cycles and reducing difficult-to-degrade domestic waste, as well as help satisfy the needs of neighbouring communities.

#### Changes:

This is the first step under an ambitious improvement programme to be implemented in terms of waste management at the mine site. It will be extended to the Port Facilities and the Filter Plant. A similar paper and cardboard segregation programme will be implemented during 2006.

#### Other community institutions involved:

Every week, residents from neighbouring communities pick up reusable waste from the mine site for subsequent sale with a view to obtain additional income. Before joining this programme, they are inducted on safety and environmental issues.

Argilia, a local vegetation species

# A case for Biodiversity Plan

#### Date and place:

2006-2015, Bajo de la Alumbrera

Biodiversity includes all forms of life, from animals and plants to micro-organisms and their ecosystems. Damage to biodiversity would entail serious risks to global ecosystems. Therefore, Minera Alumbrera's operations respect all forms of life through a preservation programme aiming at mitigating any potential impact on the local flora and fauna. For this purpose, best practice to restore and monitor sustainable ecosystems is being investigated.

Minera Alumbrera runs a research programme of the local ecosystems that also monitors environmental variables. By working on potential and real impacts, Minera Alumbrera takes preventative management measures and corrective actions upon an alert and restores disturbed areas. Thus, Minera Alumbrera ensures water quality and availability, the existing vegetation and wildlife and the natural ecosystem of the Bajo de la Alumbrera region: including Campo del Arenal basin, Tampa Tampa, the Fresh Water Dam, the Tailings Dam, Vis-Vis Canyon and the area surrounding the minesite.

#### Objective:

Maintain the biodiversity of the species in the region by protecting their habitats<sup>(1)</sup> on an ongoing basis.

(1) Local habitats include nationally protected areas, as defined by International Union for the Conservation of Nature. Moreover, Alumbrera extended coverage to sensitive areas that have been damaged or threatened, even though they have not been protected or recognised as such.

#### Minera Alumbrera's contribution:

Minera Alumbrera will perform a baseline study to:

- Control the structural and dynamic variables of water species (phyto and zooplankton, benthos, macroinvertebrates and fish) and surface wildlife (invertebrates and vertebrates).

- Identify the different soil and habitat patches for surface vertebrate species.

- Match water species with the physical and chemical water variables and seasonal variances.

- Identify priority species for preservation.

- Develop a monitoring plan for the local wildlife and water species.

Wildlife monitoring and quantification will be undertaken in four field trips to be arranged during 2006. Vis-Vis river basin sampling will be prioritised at the mine site, in downstream & upstream areas, along roads, along the powerline as well as water pipelines.



Cardón (local cactii) growing beside our tailings dam



Environment official surveying local species under Minera Alumbrera's revegetation programme

### A case for Revegetation

**Date and place:** 2004-2005, Bajo de la Alumbrera

By late 2004, a programme to evaluate local vegetation features was started to determine the possibility of growing local vegetable species on the capping system.

#### **Objective:**

Restore and rehabilitate the ecosystem in neighbouring areas that were disturbed by mining operations, by revegetating the area with local species to restore landscape as part of Minera Alumbrera's rehabilitation plan. Vegetation improves the capping system performance by releasing moisture through evapotranspiration, minimising surface erosion and providing a habitat for animals.

#### Survey area:

Activities started in Tampa Tampa, the area close to the fresh water dam and tailings dam shore. Then, vegetation sampling was extended to Campo del Arenal and Vis-Vis river canyon.

#### Minera Alumbrera's contribution:

The first project stage was launched by the Environment Dept. in 2004. By 2006, all the species in the area will have been carefully surveyed to develop a database. This process must be regularly repeated to include, in addition to perennial specimens, annual and bi-annual species.

Biologist Virginia Córdoba surveying local species on site

#### Other institutions involved:

Two professional botanists from the School of Natural Sciences and Instituto Miguel Lillo under Universidad Nacional de Tucumán were involved in the initial project stage.

Then, experts in Systematics reviewed records and surveyed the area. They also organised monthly trips to survey vegetation through sampling with a view to identify the species in the area and their family structure, establish seed blooming and ripening periods and prepare a herbarium.

#### Climate:

The climate in the area is desert-like, with dry winters and warm summers. Sandy-clay soil with little organic matter is exposed to strong water and wind erosion. Annual rainfall levels ranging from 150 mm to 160 mm, span from December to March, with generally storm-like precipitation.

#### Changes:

Works included the construction of a greenhouse and an on-site laboratory to determine seed production and feasibility. Germination works are performed on site to identify the local species that will ensure capping revegetation, based upon their growth pace and their tolerance to the local climate.

During the initial field stage, 65 vegetable species from 20 vegetable families were collected.

Field survey trips will continue to identify the species that will adapt more easily to the revegetation process.

Minera Alumbrera's 310km long slurry pipeline takes copper and gold concentrate from the minesite to the company's filter plant

# A case for Slurry Pipeline Impact

#### Date and place:

Year 2005, Bajo de la Alumbrera

#### Objective:

Determine if the installation and operation of Minera Alumbrera's slurry pipeline –carrying copper and gold concentrate from the mine site to the Filter Plant in Tucumán– has changed the environment of the Vis-Vis, Vila Vil, Pisa Vil, del Campo, Cangrejillo, Durazno, Medina, Gastona, Seco, Romano, Famaillá and Lules rivers as well as the Bolsón creek.

#### Minera Alumbrera's contribution:

Minera Alumbrera has performed limnology surveys –i.e. studies of algae, microinvertebrates, soil components, vegetation and wildlife, fish, water quality and sediments– in the rivers and streams along the slurry pipeline route.

#### Changes:

The fish and invertebrate research showed increased diversity relative to a 1999 report. This demonstrates that Minera Alumbrera's pipeline is not likely to have an adverse impact on these areas.



Workshop housekeeping and preventive maintenance are environmentally responsible practices

# A case for 5-Star Certification

#### Date and place:

Year 2005, Bajo de la Alumbrera

Minera Alumbrera was the first mining company in the world to obtain the 5-Star Mechanical Maintenance Environmental Monitoring Certification awarded by Caterpillar International.

#### Objective:

Streamline heavy equipment maintenance through responsible environment and safety management at the Mechanic Maintenance workshop in the mine site.

#### Minera Alumbrera's contribution:

Equipment, lubrication and vehicle preventative maintenance procedures have been analysed. Rules and procedures have been reviewed to maintain low dust levels, clean and compact floors, proper signage in walkways and roads as well as in safety and storage areas, and the provision of support for large components. Likewise, all employees have been duly trained including both research and field work.

#### Other institutions involved:

Caterpillar International auditors personally granted the 5-star award at the mine site.

#### Changes:

There was a 15% increase in performance and the life of components and equipment was also maximised. By keeping a clean work place, a pollution-free environment is ensured while facilitating site inspections as well as leakage or equipment failure identification. New equipment has been purchased, such as the component washer with an oil filtering system. Mine Maintenance employees were involved in the development of Minera Alumbrera's pollution control manual (including improvements to be implemented) for distribution to the relevant groups.

Bajo de la Alumbrera will be recognised by Caterpillar International as a World-Class Mine as a result of Minera Alumbrera's strong commitment to achieve this objective.



Employees were trained both in research and field work

### A case for Grey Fox Preservation

#### Date and place:

2004 - 2005, Bajo de la Alumbrera

Grey fox is a curious mammal. This is probably the reason why they dared come down the mountains, near the facilities surrounding Alumbrera mine site. After a while, they started to prowl the area, attracted by people and vehicles. But their natural instinct and food habits have been lost since they started to eat organic waste from human consumption. This has led to nutritional imbalance that has adversely affected their immune system.

#### Objective:

Protect grey fox through a health and food survey, implement precautionary health measures and specific treatment, make employees aware of this situation.

#### Minera Alumbrera's contribution:

A multi-skilled team made up of biologists and environmentalists from the Environment Dept. started to regulate human life with about 60 foxes at the mine site. Foxes have been vaccinated and vitamin-fed and their blood has been tested. In turn, employees have been made aware of the impact of human life on the food habits of foxes, to protect the hunting instinct of these animals.

#### Other institutions involved

The Catamarca Fauna Department has authorised and implemented Minera Alumbrera's programme based upon company reports.

#### Changes:

33 foxes were examined during 2005. Their reluctance to vaccination led them to gradually return to their original habitat. Results have been positive since no further sick foxes specimens have been identified. In turn, Minera Alumbrera employees show a positive attitude towards fox preservation and care.



A specimen of the local grey fox from mountain areas



Site signalling to make employees aware of Grey fox preservation



🔵 Neighbouring town

# **Community Programme**

MINERA ALUMBRERA IS INVOLVED IN THE SOCIAL, ECONOMIC AND INSTITUTIONAL DEVELOPMENT OF NEIGHBOURING COMMUNITIES THROUGH SUSTAINABLE HEALTH, EDUCATION AND COMMUNITY DEVELOPMENT PROGRAMMES.



#### Programme Status

- Minera Alumbrera carries out a sustainable community programme under its Corporate Social Involvement policy, based on three key areas: health, education and production development.
- Since project inception, Minera Alumbrera has supported the social, economic and institutional strengthening of neighbouring communities (including Belén, Santa María, Andalgalá, Antofagasta de la Sierra and San Fernando del Valle de Catamarca). Minera Alumbrera further supports the towns in Cruz del Norte as well as the towns along the slurry pipeline route in Tucumán and Puerto General San Martín (Santa Fe).
- Minera Alumbrera actions are coordinated with the projects developed by local education, health, non-government and public organisations. Minera Alumbrera's contribution consists in providing training as well as technical and financial resources to support ongoing projects by existing organisations.

#### Objectives:

- Contribute to the development of regional production activities in regional economies through sustainable programmes.

- Be actively involved in the social and institutional development of neighbouring communities.

#### Types of projects:

- Projects that improve the quality of life of the families and strengthen social bonds by contributing with the transfer of technology and the introduction of new self-supply promotion activities.

- Projects that improve market competitiveness for local producers.

- Projects that improve local infrastructure conditions.

#### Production development programmes

Minera Alumbrera encourages sustainable initiatives to support local producers through training, infrastructure works and state-of-the-art technologies.

#### **Objectives:**

Partnering with the Instituto Nacional de Tecnología Agropecuaria and local agribusiness organisations. - Support agricultural projects in remote areas such as Los Nacimientos, Vis-Vis and Amanao.

Consolidate the Belén and Hualfín greenhouse programmes to ensure self-supplied seedlings.
Monitor and continue the existing grapevine and nut reengineering programme for small family farmers as

well as with aromatic seed production. - Continue our Pro-Huerta Programme for school orchard, greenhouse and farm projects through a formal agreement with INTA, in particular in Santa María and Andalgalá.

- Extend our Pro-Huerta Programme to communities along the pipeline route and close to the filter plant in Tucumán.

- Support municipal infrastructure development projects, in particular irrigation development projects.

- Participate in small production projects (pilot-scale plan in Andalgalá).

- Sponsor traditional festivals to ensure that local heritage is preserved.



Students from Amanao School #410 performing their duties under the school greenhouse programme

# Greenhousing

INTA's Pro-Huerta Programme consists in school greenhouse and farm development (including continuous training and technical assistance) to produce food at a small scale. Minera Alumbrera has been supporting this project in Andalgalá, Belén and Santa María since 2000.

#### Objectives:

Greenhouse development

Construction ongoing in 2005:

Construction ongoing in 2005-2006:

status in 2005:

Santa María

1- Andalhuala 2- Euerte Ouemado

1- Alto de las Juntas

on 100 people: 1- Barranca Molle 2- Amanao

Operational, with an impact

Andalgalá

Promote improved food habits among the local inhabitants –in particular school children– while encouraging self-supply production initiatives.
This project is intended to provide fresh vegetables In addition to eggs and meat year round to local schools.

Appropriate eating habits are directly related to health and result in better student performance at school and successful integration into society. Furthermore, this programme encourages school members to repeat what they have learnt in their own family orchards.

#### Location

#### \_\_\_\_\_

# Antofagasta de la Sierra 20 Antofalla 21 Antofalla 22 Los Nacimientos 23 Las Quínoas 24 El Peñón 25 Gendarmería Infantil

5	Salar del Hombre Muerto
	Santa María
7	Fuerte Quemado
3	Andalhuala

	Andalgalá
29	Villa Vil
30	Amanao
31	Barranca Molle
32	Minas Capillitas
33	Vis-Vis

32 greenhouses are being developed for	the benefit of 2,300 people from Belén,	Andalgalá, Santa María and	d Antofagasta de la Sierra.
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		Location	Operational	Construction ongoing	Materials on site	Maintenance
		Belén				
ireenhouse development	1	Laguna Blanca				•
tatus in 2005:	2	Corral Blanco	•			
	3	Los Morteritos	٠			-
elén	4	Las Cuevas	٠			•
ompleted, with an impact	5	Jacipunco	•			
n 300 beneficiaries:	6	Papachacra			•	-
- Ampujaco	7	Huasi Ciénaga de Villa Vil			•	
- Los Nacimientos de Hualfin	8	Rodeo Gerván			•	
- La Quebrada de Hualfín	9	San Fernando	٠			-
- La Ciénaga de Arriba	10	Los Nacimientos de Hualfín	•			
- Jacipunco	11	La Quebrada de Hualfín	•			
saciparico	12	La Ciénaga de Arriba	•			
perational:	13	La Ciénaga de Abajo	•			
· Hospital Zonal de Belén	14	La Puerta de San José	•			
	15	La Estancia	•			
onstruction ongoing in 2005-2006:	16	Hospital de Belén	•			
· Papachacra	17	Ampujaco			•	
- Rodeo Gerván	18	La Aguada de Londres	•			
	19	School # 288				•

Under this programme, Minera Alumbrera provided construction materials, critical supplies, logistics, maintenance, fuel, accommodation and transport services during 2005.

INTA Pro-Huerta Catamarca provides technical assistance and training. Municipal administrations provide labour and materials. School teachers are trained first and then teach what they have learnt to their students. The parents of local students are also trained to develop their own greenhouses.

Projects are developed in remote areas, subject to unfavourable weather conditions. As only a few vegetable species may be grown outdoors in mountain desert areas, local orchards are developed inside a greenhouse and breeding changes are made in local farms to raise poultry under harsh weather conditions.

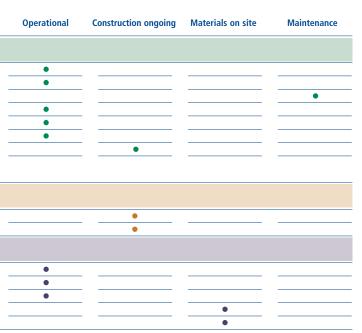
Results obtained include changes to food habits in local schools, which are being expanded throughout the community.

- In addition, the harvest period for some vegetables could be extended to produce summer vegetables such as tomato, pepper, eggplant and cucurbitaceous species in areas where these vegetables had never been grown before.

- This community project contributes to the involvement of the local people in decision-making, planning,

execution and assessment. In turn, relationships among all participants are strengthened.

- Surplus products may be sold to provide local families with fresh food year round while ensuring self-generated financial resources for greenhouse maintenance to local schools.





# **Production Development**

THE IMPACT OF MINERA ALUMBRERA'S COMMUNITY PROGRAMME IS MEASURED USING THE SUSTAINABLE LIVELIHOOD METHODOLOGY (1), A COMPREHENSIVE APPROACH INCLUDING SOCIAL AND PHYSICAL RESOURCES, IN ADDITION TO COMMUNITY ACTIVITIES INTENDED TO IMPROVE THE LOCAL STANDARD OF LIVING.



# Hualfín

Case: Varietal re-engineering of Hualfín strains second stage

**Date and place:** Year 2005. Hualfín

Minera Alumbrera supports varietal grapevine re-engineering

**Beneficiaries:** 22 small local producers

#### Objectives:

Increasing local employment levels, expanding cultivated areas, optimising local grape quality for improved competitiveness, and promoting joint work.

In 2000 and 2001, traditional plum and torrontés grapevines were re-engineered to fine varieties including Malbec and Syrah. During the fourth project year, thirty additional hectares of grapevine were implanted on existing plants in Hualfín in order to produce 0.6 million kilograms. Over 120 local people prepared the land for planting purposes.

The second stage of this project started in 2005. The grapevine area in Quebrada de Hualfín and Los Nacimientos was expanded to 16 hectares. In addition, appropriate agricultural supplies and machinery were provided to Asociación de Productores Viñateros de Hualfín. Implanted areas are maintained and monitored using the above tools.

#### Community and other organisations involved:

INTA Belén provided technical support and training. Producers not only provided land but also contributed with labour for the preparation of such land (clearing, levelling, erection of posts for vineyards) during one month and a half.

#### Minera Alumbrera's contribution:

At a cost of Ar\$89,000, Minera Alumbrera provided additional plants, 144 rolls of galvanized high-resistance wire; 2640 kg of wire of various sizes; 1632 kg of agrochemicals, safety and fumigation equipment and fuel for INTA transportation.

(1) Sustainable Livelihoods is an approach developed by the International Development Department under the British Government to address development issues.



A 16-hectare vineyard was planted in Hualfín and Los Nacimientos during 2005

#### Changes:

The 30-hectare vineyard will employ over 200 people for the next three years –up to the initial grape production.

The grapevines planted during 2004 are expected to produce the first harvest in 2006, though in a small volume, while the estimated volume for 2007 will be about 15 to 20 tons per hectare.

The current market price is Ar\$0.35/kg. With the above improvements, prices rocketed to Ar\$0,70/kg. Asociación de Productores Viñateros de Hualfín is consolidating itself as an efficient producer association. They have been developing their activities for over five years while showing that joint and orderly work results in major achievements.

### Belén

### A case for Varietal walnut re-engineering

Date and place: Project started in 2000. Belén

#### Direct and indirect beneficiaries:

Through technological transfer and training in the planting of grafts, over 500 producers have already re-engineered their plantations in five years' time.

#### **Objectives:**

Adapt native crops using grafts of walnut tree species with increased market competitiveness in order to improve product quality and increase sales.

#### Community and other organisations involved:

Agencia de Extensión Rural INTA-Belén provided training, technical management and follow-up. The Londres, Pozo de Piedra and Puerta San José municipal administrations invited local producers and provided labour.

#### Minera Alumbrera's contribution:

Minera Alumbrera provided construction materials for local irrigation works, built two industrial walnut dehydrators and provided walnut buds. Minera Alumbrera also provided a refrigerating chamber to store genetic grafting materials as well as construction materials for the development of the Belén walnut nursery. Minera Alumbrera further provided INTA with an electrical furnace for the third drying facility to be developed at the local level.

#### Changes:

The American Chandler, Howard and Sundlan nut varieties are grafted. Out of the 4,000 grafted plants, 80% improved their quality. The native variety yields 8 kg per plant, at a Ar\$3.5 market price, while the grafted variety yields up to 30 kg, at a price of Ar\$6.5/kg.



American walnut grafting



Belén municipal workers developing a nursery for local crop diversification

# A case for Fruit and walnut nursery

Date and place: Year 2005, Belén

The Belén district nursery is a project to grow new local species. Midgrowth walnut, grapevine, peach olive and quince trees are grown across 80% of the 12,000-hectare area being cultivated and irrigated.

#### **Beneficiaries:**

600 small and medium-sized producers in Belén.

#### Objectives:

Diversify and maximise the yield of such crops by incorporating additional fruit species, such as apples, pears, blueberries, raspberries and figs.

#### Minera Alumbrera's contribution:

Minera Alumbrera invested Ar\$30,000 in construction materials, fuel and logistic services for the development of 7 test pepper areas.

#### Community and other organisations involved:

Agencia de Extensión Rural-INTA Belén, the Belén municipal government and Minera Alumbrera entered into an agreement to carry out this project.

#### Changes:

A 2.5-hectare property was fenced, soils were prepared and 500 walnut trees were test planted during 2005. A shed were built for the above refrigerating chamber, warehouse, lab and administration offices.

Not only does this nursery ensure the health quality of genetic materials but it also enables local producers to grow the plants being currently supplied from neighbouring areas.

# A case for Local producer training

Date and place: Year 2005, Belén

Eighty percent of businesses from Belén are small producers aged 60-65, with insufficient financial resources. In the absence of their own agricultural machinery, they cultivate the land using the same precarious irrigation systems and tools as their ancestors. Additionally, they use poor quality seeds and are not familiar with partnering work.

#### Direct and indirect beneficiaries:

About 300 producers from Belén.

#### **Objectives:**

Change local attitude by training producers and their families so that they may organise local cooperatives and production groups. In addition, new cultivation techniques are being shown in test plots owned by representatives from each area.



Local producers are trained and monitored by INTA Belén

Belén producers working in INTA's nursery

#### Community and other organisations involved:

The Initial Seminar on Cooperativism was organised by INTA and municipal administrations. Local producers were trained during two 8-hour sessions in Belén and San Fernando del Valle de Catamarca. Lecturers included Federación de Cooperativas Agrarias (FECOAGRO)'s agricultural engineer Alfredo Romano. 150 people were in attendance.

#### Minera Alumbrera's contribution:

Minera Alumbrera donated Ar\$7,000 and provided technological equipment for such event. Minera Alumbrera will continue to support local training initiatives during 2006 and 2007 as well as the development of these organisations.

#### Changes:

Training results will be observed throughout the process. Activities were developed in seven test plots during 2005 and are expected to be completed in 2006. By way of example, local pepper-for-paprika producers changed to new production and drying technologies in line with current market schedules and health requirements. Traditionally pepper was dried outdoors, a process that used to take 30 days but now takes from 16 hours to 5 days, depending on weather conditions.

# Santa María

# A case for Irrigation Channel Development

Date and place: Year 2005, Santa María and San José

**Direct and Indirect beneficiaries:** 1,000 producers.

#### **Objectives:**

A large number of current irrigation channels have been developed in sandy soil, what results in significant losses for local producers. Minera Alumbrera lined a 7 km segment of local irrigation channels to optimise water supply and production conditions.

#### Other community organisations involved:

Catamarca Irrigation Department provides construction materials (concrete) and technical supervision. Santa María and San José municipal administrations provide labour and equipment.

#### Minera Alumbrera's contribution:

Ar\$30,000 for the supply of construction materials (mainly stone and concrete).

#### Changes:

Results are difficult to estimate since the cultivated area depends on several factors such as product price, weather conditions, efficient water management and the financial resources of local producers.

# A case for Hydrogeological Survey

#### Date and place:

Year 2005, Santa María Valley

Minera Alumbrera funded a hydrogeological survey of the Santa María river basin, to be developed by Hydrogeology Professor Alfredo Tineo from the School of Natural Sciences under Universidad Nacional de Tucumán.

#### Direct and Indirect beneficiaries:

Since the survey will be used to improve irrigation and drinking water supply, it will have an impact on the local population (22,000 inhabitants).

#### **Objectives:**

Having an updated survey to plan drilling works for a long-term solution.



Irrigation channels are developed using local stone with a view to enhance local agribusiness

#### Other community organisations involved:

San José and Santa María municipal administrations, Catamarca Irrigation Department, Catamarca Environment Secretary, Association of Producers from San José District.

#### Minera Alumbrera's contribution:

Minera Alumbrera has provided Ar\$50,000 to fund the survey.

#### Climate and Geography of the District:

Climatic change, the insufficient economic resources to explore cultivated land and the unavailability of ground water data are adversely affecting local agribusiness.

#### Quantifiable and Non-Quantifiable Changes:

This survey confirmed that the hydrogeological basin in Santa María River valley -across Tucumán and Catamarcaincludes a large and unexplored ground water reservoir, with above 800 cubic hectometre water resources. Planning works to optimise this resource will enable development across the Santa María valley. The San José municipal administration has planned the execution of these works to be funded with mining royalty revenues.



Professor Alfredo Tineo confirmed a 800 hm<sup>3</sup> water reservoir in Santa María Valley

# Andalgalá

# A case for Master Water Plan

# Date and place:

Year 2006, Andalgalá

The unavailability and poor management of drinking and irrigation water in Andalgalá impairs the agricultural development of local products such as nut, quince, cumin and olive.

Beneficiaries:

16,000 people from Andalgalá

#### Objective:

Update water data from such district and investigate the reinstatement of two local power generation facilities.

#### Minera Alumbrera's contribution:

Minera Alumbrera has provided Ar\$70,000 to pay for Claudio Bravo's engineering services. Project implementation requires Ar\$10 million. This amount will be funded out of mining revenues.

#### Community and other organisations involved:

The Andalgalá municipal government and the Committee Overseeing Royalty Allocation (made up of local residents), the Provincial Minister of Public Works and his cabinet have provided documentation and suggestions.

#### Changes:

Local power requirements will be partially satisfied with low-cost self-generated power supply –eventually including supply to the national grid. Pumps will be installed to operate downtown wells and to expand agricultural activities to dry, barren areas.

# A case for Food Safety

#### **Date and place:** Year 2005, Andalgalá

Minera Alumbrera's nutrition and food experts have developed a comprehensive food safety programme that includes nutrition and food safety training.

#### Direct and Indirect beneficiaries:

400 inhabitants from Barranca Molle and Alto de las Juntas (Aconquija district), Villavil and Amanao.



Food safety programme for catering services at Minera Alumbrera's pumpstation in Andalgalá

#### **Objectives:**

Train teachers and students on safe food practices to avoid foodborne illnesses, improve local infrastructure and train local people on how to prepare nutritional dishes with products from local school greenhouses and farms.

#### Minera Alumbrera's contribution:

Ar\$50,000 was invested during 2005 for the construction and repair works in four school greenhouses and farms. Minera Alumbrera also supports the repair works in local schools –once experts evaluate messing facilities and restrooms as well as manpower skills. The quality of catering services is monitored by Minera Alumbrera's food expert Karina Amayo, who is also in charge of training issues.

#### Community and other organisations involved:

INTA Pro-Huerta provides technical assistance. A school programme is being developed by Minera Alumbrera and primary schools from Andalgalá and Aconquija with a view to roll it out to the community. An external food consultant is responsible for long-term continuous programme evaluation.

#### Changes:

Student performance has improved as a result of improved food habits and training. In October 2005, the Amanao greenhouse and farm were opened and now supply fresh vegetables, meat and eggs to the school canteen. In the Villavil greenhouse, latrines have been replaced by toilets, the wood-burning stove has been repaired, the layout has been enhanced, tiles have been fixed and hot water supply has been installed.



# **Education**

MINERA ALUMBRERA SUPPORTS CATAMARCA'S EDUCATION DEVELOPMENT AND **REVALUES LOCAL CULTURE BY STRENGTHENING REGIONAL TRADITIONS.** 

ABOUT 20,500 STUDENTS FROM THE PROJECT IMPACT AREA, INCLUDING A NUMBER OF SCHOOLS FROM REMOTE AREAS, ARE THE ACTUAL BENEFICIARIES OF MINERA ALUMBRERA'S COMMUNITY PROGRAMME.

EDUCATION PROGRAMMES INCLUDE PROVIDING SCHOOLS WITH TEACHING AIDS AND SCHOOL MATERIALS AND TECHNOLOGY, SPORTS ACCESSORIES AND CONSTRUCTION MATERIALS. MINERA ALUMBRERA SUPPORTS MUSEUMS, LIBRARIES AND CULTURAL ORGANISATIONS THAT CONTRIBUTE TO THE SOCIAL AND INSTITUTIONAL DEVELOPMENT OF THE COMMUNITIES IN THE VICINITY OF THE MINE SITE.

# **Objectives for 2006:**

- Continue with Minera Alumbrera's Apprenticeship and Internship Programme for students of Catamarca and Tucumán.
- Train advanced Mining Engineering students from Universidad Nacional de Catamarca for an annual grant in Australian universities.
- Start a pilot plan to provide technical assistance to small projects in order to improve their productivity and efficiency.
- Continue with remote Environmental Training sessions for teachers, as organised by Los Algarrobos Civil Organisation.
- Extend Fundación Leer's "Leer es fundamental" programme to other towns.
- Maintain the existing internship programme for Tourism students to match future tourist development in the area.
- Continue with specialist training sessions for technical schools teachers and for neighbouring municipal workers.
- Train, promote and develop projects for archaeological and mineral museums.
- Assist public libraries.
- Extend the Andalgalá school brigade training plan.

#### Beneficiaries

ANDALGALÁ	Kindergarten	60
	Primary Schools	25
	Polytechnics & secondary schools	6
	Number of students	5,500

BELÉN	Kindergarten	34
	Primary Schools	62
	Polytechnics & secondary schools	13
	Number of students	9,600

SANTA MARÍA	Kindergarten	15
	Primary Schools	33
	Polytechnics & secondary schools	7
	Number of students	7,600

### Bajo de la Alumbrera

A case for Apprenticeship Programme

#### Date and place:

2004-2005, Bajo de la Alumbrera

Young people from neighbouring towns have joined Minera Alumbrera's Apprenticeship Programme (including 45,000 training hours) for two years.

#### **Beneficiaries:**

Eleven graduates from Catamarcan high schools.

#### **Objectives:**

Identify local talents and develop them with a view to improve their work prospects.

#### Minera Alumbrera's contribution:

Technical skills training to Catamarcan students in mine maintenance issues.

#### Community and other organisations involved:

Candidates are recommended for future selection by Universidad Nacional de Tucumán & Catamarca, high schools from Belén, Andalgalá, Santa María and San José.

#### Quantifiable and Non-Quantifiable Changes:

- Eleven out of sixteen apprentices trained during 2005 were recruited as Minera Alumbrera employees. - During the training period, students followed Minera Alumbrera's working practices and shared the related training workshops with Minera Alumbrera employees. This involved meeting the highest work standards. - Outstanding performance in all areas, in spite of being a tough proposal for high-school graduates who were far from home. The evaluation included acceptance of and compliance with personal safety rules. - A rewarding experience for local students, since they are part of a real work environment.

"The success of this programme is due to several factors: the use of Minera Alumbrera's huge employee-training infrastructure, cooperation from all areas and, certainly, the enthusiasm of local students. In addition to the knowledge we will provide, we are also interested in teaching them to be honest, reliable and committed to team work. If we achieve this goal, we will have most of the work done."

Felipe Torres Cuevas, apprentice trainer



Graciela Cabezas, Santa María José Monroy, Belén High School #19

Miguel Medina, Belén High School #19

#### **Graciela Cabezas**

High School #12

"We found it hard to adapt ourselves to the change since we turned from school to work, what involves additional responsibility, earnestness and dedication.

I would like to highlight that in these two years we learnt not only formal education but also personal issues since every experience has contributed to my development as a member of a team. I had never imagined I could have such an opportunity. I have always wanted to follow a university career but it was impossible due to our financial situation. So, this programme was the best alternative for me to join.

I really wanted to have a work contract, so I found it very rewarding. And I'm very proud of my first career steps in such a large company."

#### José Monroy

"I studied Natural Sciences and joined the polytechnics in the afternoons, where I learnt electricity and mechanics. I was selected by Minera Alumbrera because of my high grades. I was very glad to join a programme that would be developed for the first time in Argentina: I was being given a major opportunity, and I wanted to seize it.

I found it hard to take responsibilities that I had never been faced with before, but this fact also helped me mature in many aspects. When I learnt that I would become a regular employee of Minera Alumbrera, I could not believe it. I was very, very happy."

#### **Miguel Medina**

"As I could not afford my studies, when I first heard of this opportunity, I did not hesitate. For me, it was a challenge because my level of studies was poor and it was hard to assimilate what I was being taught. As time went by, I got used to it. I liked my team; at the end we were very close mates in spite of being from four different towns. I would like to highlight the support given by our instructors as well as the safety precautions to avoid risks. I knew we had a chance to be recruited by the company, but when I was confirmed in my job, I was really happy. Minera Alumbrera arranged a special celebration for us. I could share the news with my family and celebrate with them too."

#### Other education programmes

# Supportive Technology Workshops

A special team from Santa María High School performs repair and maintenance works in remote areas. Students and teachers visit schools to repair the tools used by small local producers and inhabitants. Minera Alumbrera joins this team and provides tools and equipment in addition to safety equipment and supplies.

Swings and fences have been built in local school workshops using the materials provided by Minera Alumbrera. Then, they were donated to mountain schools including San Antonio del Cajón and Ovejería (a small town with 100 inhabitants). A computer was also donated.

# An Incentive to Read

- For 5 years in a row, Minera Alumbrera has supported the "Reading Olympics", an event organised by the local library Biblioteca Popular Obispo Esquiú, and the schools from Belén district. This event is intended to encourage children and teenagers to read, write and understand texts. Prizes include teaching materials, school and sports accessories, books and a small lab kit.
- Fundación Leer 's "LEER ES FUNDAMENTAL" programme is organised with Minera Alumbrera support. 200 students are given books during the seminars organised every year. Local schools receive 80 books for their reading sites. "Jornadas Festivas de Lectura" reading festival was organised under the "PROYECTO A LIBRO ABIERTO" programme during 2005 by the commercial schools from Belén, Ejército de los Andes and School No. 6 Fray Mamerto Esquiú.

# Improvements to Andalgalá Schools

Works have been executed to improve the infrastructure of the Huaschaschi, Villavil, Amanao, Barranca Moye, Alto de las Juntas and La Aguada schools. Public areas have been expanded, pipes and ventilation have been installed, washbasins have been completed, latrines have been replaced by toilets (to ensure school hygiene) and sidewalks and protection fences have been constructed. Minera Alumbrera has provided water tanks and containers and donated furniture, stoves, fridges and freezers.



Third grade students from Villa Vil School #395

# Supplies and Materials

To satisfy the needs of each school, as identified by the principal, Minera Alumbrera continued providing critical supplies and medical instruments, disposable and routine materials during 2005. This work is performed jointly with provincial and municipal authorities, teachers, directors and professionals from each school.

# Prevention

Minera Alumbrera has sponsored a seminar to prevent drug-addiction in Hualfín schools and education centres. This seminar was organised by the municipal government, the local church, schools, hospital and magistrate's court.



New teaching materials for Londres Kindergarten #5



First-aid and fire-fighting training sessions by a multi-skilled team have been arranged in Andalgalá schools since 2002

# Health-care

MINERA ALUMBRERA PROVIDED GROWING SUPPORT AND ON-GOING ACTIONS TO APPROXIMATELY 120 LOCAL HEALTH CENTRES DURING 2005.

SUCH SUPPORT INCLUDED CRITICAL MEDICAL SUPPLIES AND TECHNOLOGICAL EQUIPMENT AS WELL AS CONSTRUCTION MATERIALS FOR INFRASTRUCTURE IMPROVEMENTS.



Medicines and medical instruments for the Husai Ciénaga health centre

Assistance to build six new surgery rooms at Santa María Regional Hospital

Support to children undergoing oncological treatment

Beneficiaries

Minera Alumbrera's programme is focused on the needs identified by the local health-care professionals. Team work, continuous dialogue and cooperation with provincial and municipal authorities, teachers, directors and representatives are essential for the success of Minera Alumbrera's initiatives.

# Objectives

- Assist regional and local hospitals and health centres by providing medicines, equipment and infrastructure improvements.
- Supply construction materials for infrastructure works in local health centers and hospitals.

ANDALGALÁ	Local Health Centres	23
	Local Hospitals	1
	Regional Hospitals	1
	Local Health Centres	42
BELÉN	Local Hospitals	9
	Regional Hospitals	1
	Local Health Centres	23
SANTA MARÍA	Local Hospitals	1
	Regional Hospitals	1
	Local Health Centres	9
TAFÍ DEL VALLE	Local Hospitals	1
	Regional Hospitals	1
	Local Health Centres	-
SAN FERNANDO DEL		

Local Hospitals

**Regional Hospitals** 

**VALLE DE CATAMARCA** 

### **Inland Catamarca**

# A case for Ambulances

### Date and place:

Year 2005, Inland Catamarca

By virtue of Minera Alumbrera's expanded Corporate Social Involvement Programme including Ar\$12 million contribution for health and education works, the ambulances donated by Minera Alumbrera to the local health system represent major support to the province.

#### Direct and Indirect beneficiaries:

Residents in Santa María, Andalgalá, Aconquija, San José, Antofagasta de la Sierra, Termas de Villa Vil and Corral Quemado.

#### Objectives:

Upgrade health-care services in inaccessible inland areas.

#### Minera Alumbrera's contribution:

Seven four-wheel drive ambulances with state-of-the-art technology have been donated by Minera Alumbrera to the government of the Province of Catamarca.

#### Changes:

Expansion of health-care services in inland Catamarca.

#### Beneficiaries:

Santa María Regional Hospital
San José Local Hospital
Antofagasta de la Sierra Local Hospital
Termas de Villa Vil Local Hospital
Andalgalá Regional Hospital
Aconquija Local Hospital
Corral Quemado Local Hospital

Minera Alumbrera provides the following supplies to local health-care centres:

#### CRITICAL SUPPLIES

Serum, antibiotics, antipyretics, corticoids, rehydration salts, eye drops, physiological solution, alcohol, disinfectants.

#### MEDICAL INSTRUMENTS

Nebulisers, stethoscopes, thermometers, pressure meters, Philadelphia collars, stretchers, emergency equipment, blood sugar meters.

#### DISPOSABLE MATERIALS

Syringes, gloves, bandage, adhesive tape, wooden tongue depressors, cotton, needles, reactive strips for diabetics.

# **Direct Actions**

# **Belén District**

#### Belén Regional Hospital

The hospital laboratory was equipped with a spectrophotometer, which is used for accurate diagnosis studies. Minera Alumbrera improved the Neonatology, Laboratory and Emergency Units by providing an incubator, fetal heartbeat detectors, lab processors and emergency equipment.

#### Londres Local Hospital

Minera Alumbrera provided local first-aiders with elements for field activities. Minera Alumbrera also helped remodel their facilities and provided a vacuum pump for the laboratory and a fetal heartbeat detector for the Neonatology Unit.

#### New Health-Care Center in Puerta de Corral Quemado

This health center was opened in 2005. Minera Alumbrera provided construction materials and miscellaneous equipment such as stretchers, cabinets, medicine, stove, orthopedic beds, medicine carriage and repaired furniture.

#### X-rays in Hualfín

Minera Alumbrera supplied specific equipment and support (including the appointment of an X-ray expert) to provide the community with X-ray services.

# Santa María District

#### Santa María Regional Hospital

Minera Alumbrera provided windows, doors and concrete to expand offices, waiting rooms and access to the emergency area. Minera Alumbrera is also funding the construction of a multiple-purpose room and a hospital chapel.

# San Fernando del Valle de Catamarca

#### Hogar Soles

Minera Alumbrera provided home appliances and bed linen to a local center for children with cancer. Minera Alumbrera also refurbished camp furniture for children use in order to equip this local center for children from different towns.



# Suppliers

MINERA ALUMBRERA SUPPLIERS ARE AN INTEGRAL PART OF THE COMPANY VALUE CHAIN THAT SUPPORTS OUR BUSINESS OBJECTIVES AND PROCESSES. FOR THIS REASON, MINERA ALUMBRERA FOSTERS SUPPLIER DEVELOPMENT BOTH AT THE LOCAL AND NATIONAL LEVELS.



Suppliers visiting Bajo de la Alumbrera

Concentrator operators

An operator checking a haul truck



# Working Practices

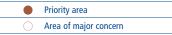
Minera Alumbrera's purpose and values are applicable throughout the business. Suppliers are therefore required to observe these in their day-to-day activities.

During the contracting process, suppliers become aware of Minera Alumbrera's fraud, recruitment and safety policies as well as the company's environmental standards.

labour for Minera Alumbrera's contractors, based on company guidelines and priorities:

		PRIORITIES					
	Injury-free work environment	Effective monitoring practices	Ensure sustainable environment	Compliance with the laws	Respect for human rights	Safety awareness	Responsible performance
AREAS OF INTEREST							
SAFETY							
Compulsory safety training sessions.	0					•	
Provision of personal protection equipment.	•			•		0	
Joint development of a contingency plan for hazardous activities.	•					0	0
ENVIRONMENT							
Establishing procedures for activities that may imply potential environmental risks.		0	•	•			
Responsible waste management.		0	•	•		0	0
Preservation of water resources.		0	•	•			0
HUMAN RESOURCES							
Compliance with labour regulations.		•		•	0		
Enforcement of collective bargaining agreements.				•			
Non discrimination / no child labour.					•		
No corruption.				•			•

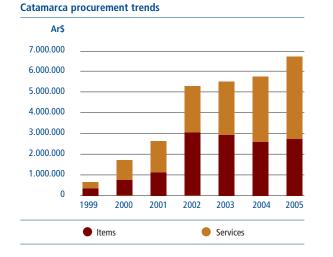
# References



# The following chart shows some standard terms and conditions on safety, environment and

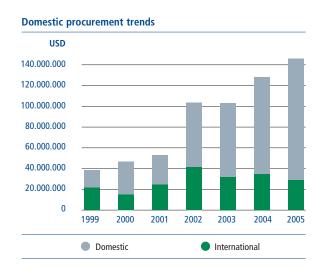
# **Supplier Development Programme**

- To ensure sustainability both in terms of community and company operations, Minera Alumbrera put in place a specific programme to encourage local business growth. Local businesses with development potential are supported to service local miners and other industries as well.
- Since project inception, Alumbrera has implemented a strong Supplier Development Policy in Catamarca, also expandable to other areas in Argentina. To this end, local business opportunities are identified jointly with the provincial authorities and mining requirements are reported to ensure the development of local businesses.
- The growing demand of local businesses for supplier development initiatives led Minera Alumbrera to set up offices in San Fernando del Valle de Catamarca with a view to identify and develop existing and future suppliers. At equivalent prices, quality and services, local business are given first priority. Thus, it is important for local businesses to be competitive through personal contact and error analysis following an unsuccessful tender.
- This policy increased local procurement levels, as shown in the following chart:



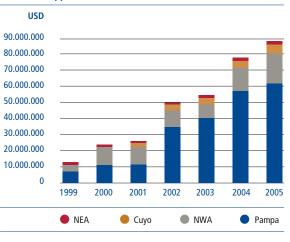
#### Changes

The local supplier database is expanding and Minera Alumbrera is working not only to develop new suppliers but also to consolidate existing suppliers. Whereas imported goods and services accounted for 55% in 1999, they barely reached 29% of total purchases. These percentages include major accounts with economies of scale such as tyres, lime, fuel, energy and telephone services, that were included in the national supplier register.



The trend of goods and services regionally purchased is shown below:

#### Domestic supplier trends



### Opportunities

Based on the geographic location of Minera Alumbrera procurement offices, Minera Alumbrera keeps regular contact with local suppliers through personal contact, seminars, workshops, site visits and company-sponsored road shows.

Minera Alumbrera further sponsors the Annual Meeting of Mining Suppliers in Catamarca, where not only major miners but also national and provincial authorities gather to discuss the features, impact and opportunities derived from mining operations. Road shows are also organised in order that local proposals and expectations be exchanged by key industry players.

Additionally, Minera Alumbrera keeps a Programme of Site Visits in order that new business opportunities are identified by local suppliers and alternative proposals are discussed on site by Minera Alumbrera management.

### Leadership Workshops

Taking into account that contractors are essential to ensure successful business management, Leadership Development workshops are organised in order that Minera Alumbrera practices and procedures are strictly followed in their respective workplace.

#### Objective:

Ensure integrated contractor operations through shared experiences and leadership guidelines in line with Minera Alumbrera business practices.

#### Scope:

Aimed at contractor employees in supervisory roles. Six Leadership Workshops have been organised for 69 contractor employees in supervisory positions during 2005.

#### A case for Di Bacco

Place:

Tucumán

### Industry:

Metal mechanic operations, construction & agribusiness

#### Manpower:

180 employees in 2005

Established in 1955, Di Bacco was involved in local orchards, including sugar cane developments and public works in Tucumán. Di Bacco first started to supply local miners by providing 50,000-litre diesel fuel storage tanks to Minera Alumbrera. Services have now been expanded to include special engineering services, shovel and truck repair works. Di Bacco is further involved in Minera Alumbrera expansion projects –in particular Minera Alumbrera grinding capacity expansion project. Di Bacco products are exported to Chile and business enquiries are made from Australia.

"I remember our initial concerns about Tucumán's potential to manufacture some structures. We were reluctant to demonstrate our skills. Our challenge was to do a quality job at internationally competitive prices. We have many expectations as it requires continuous improvement. Minera Alumbrera helps develop local businesses."

Di Bacco Commercial Mgr., Raúl Middagh

# A case for CCE Ingeniería

# Place:

Catamarca

#### Industry: Electrical and civil construction

# Previous projects:

Electrical works for the third grind and flotation line

#### Manpower:

40 employees during 2005

CCE Ingeniería was awarded the electrical contract for Minera Alumbrera third grind line in 2001. Even though CCE Ingeniería first started to work for Minera Alumbrera in 1998, this project was a special challenge for CCE Ingeniería as it meant expanding their installed capacity, employing additional manpower or meeting the highest safety standards. However, Minera Alumbrera's advise and training helped them meet harder operational requirements. CCE Ingeniería has now expanded their business to the public works and construction industry, subject to the highest safety standards applied in Minera Alumbrera.



"Local businesses should seek Minera Alumbrera's advice and assistance to supply goods and services to the mining industry. Our company grew from small works into more complex projects. This helped us become a mining supplier focused on the safety of our employees."

CCE Ingeniería CEO, Luis A. Romero

# Reader's Opinion

- Liaising with our stakeholders is one of Minera Alumbrera's key priorities.
- You can send us your comments or suggestions to improve this Sustainability Report. We will appreciate your opinion on our responsible management initiatives.

Please write down your opinion in the attached form and:

- Fax it to: (54-11) 4316-8399 or
- Post it in our website at: www.alumbrera.com.ar or
- Mail it to: Apartado Especial N°140 Correo Central 1000 Ciudad Autónoma de Buenos Aires Argentina, or
- E-mail it to: informe2005@alumbrera.com.ar

# **SURVEY FORM**

How did you find the report in general	?		
Very interesting	Interesting	Somewhat interesting	Uninteresting
It reported on Minera Alumbrera Corpo	rate Social Involvement initiative	s in detail:	
Great	Sufficient	Little	No
How would you rate the information in	cluded in the following chapters:		
	Insufficient	Sufficient	Superior 🔺
A word from Xstrata Copper CEO Minera Alumbrera Vice President Our Purpose & Values Corporate Social Involvement About Minera Alumbrera Our People Safety and Health Environment Community Programme Production Development Education Health-care Suppliers Additional comments and/or suggestion	Is:		
Name		address	
District Telephone	Cour E-ma	•	
Your relationship with Minera Alumbre	ra:		
Customer	Shareholder	Employee Other (specify)	Supplier

Fax: (54-11) 4316-8399 - E-mail: informe2005@alumbrera.com.ar This Sustainability Report will also be available in our website at: www.alumbrera.com.ar

Sustainability Rep	port for	2005
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