



WE WILL GROW AND MANAGE A DIVERSIFIED PORTFOLIO OF METALS AND MINING BUSINESSES WITH THE SINGLE AIM OF DELIVERING INDUSTRY-LEADING RETURNS FOR OUR SHAREHOLDERS. WE CAN ACHIEVE THIS ONLY THROUGH GENUINE PARTNERSHIPS WITH EMPLOYEES, CUSTOMERS, SHAREHOLDERS, LOCAL COMMUNITIES AND OTHER STAKEHOLDERS, WHICH ARE BASED ON INTEGRITY, CO-OPERATION, TRANSPARENCY AND MUTUAL VALUE-CREATION.



## SCOPE OF THIS REPORT

This is Xstrata's second Health, Safety, Environment and Community (HSEC) report covering the period 1 January to 31 December 2003, providing information to its stakeholders about the performance of its Commodity Businesses.

The report includes the Group HSEC performance followed by reports on the separate Commodity Businesses covering case studies, social investment, performance targets and verification.

The following acquisitions, divestments and closures occurred during 2003:

- Xstrata purchased MIM Holdings, increasing the scale and diversity of the Group's portfolio through:
  - the addition of a new Commodity Business, Xstrata Copper;
  - the addition of a thermal and coking coal business unit to Xstrata Coal, Xstrata Coal Queensland; and
  - Xstrata Zinc expanding to include zinc and lead operations in the UK and Australia.
- Xstrata Alloys acquired the Chartech facility in South Africa and the Maloma anthracite mine in Swaziland and Xstrata Zinc acquired the Nordenham Refinery in Germany;
- Xstrata Zinc's Reocin zinc lead mine in Spain closed;
- the USA magnesium recycling plant was sold; and
- the Windimurra vanadium mine in Western Australia was placed under care and maintenance.

In early 2004 the sale of Ravenswood Gold Mine in Queensland was announced and the Vantech vanadium plant in South Africa was placed under care and maintenance.

While Xstrata Zinc is responsible for the zinc lead operations at Mount Isa, given their location and integrated facilities, day-to-

day running of the operations is devolved to Xstrata Copper and as such, the 2003 HSEC performance of the Mount Isa zinc lead operations is reported within the Xstrata Copper report. From early 2004, McArthur River Mine reports solely into the Zinc Business and the report text reflects this. Early in 2004, the two copper business units in Australia and Americas combined into one business, as reflected in the Xstrata Copper report. Additional details, case studies, data and graphs on a range of HSEC issues are available on [www.xstrata.com](http://www.xstrata.com).

All operational information is presented on a 100 percent basis of the operation unless otherwise stated. Similarly, all financial data is presented in US dollars, unless stated to the contrary.

All sites have collected HSEC data over time. However, only externally verified 2003 data relating to safety, complaints, incidents and some environmental aspects e.g. energy and water use are included in this report. In some cases it is possible to compare commodity business performance against 2002. However, significant expansion of the Group means that for some Xstrata plc data, comparison with the previous year is not relevant and could be misleading. In 2004 Xstrata intends to report a more comprehensive suite of data that is aligned with the Global Reporting Initiative™ 2002 Sustainability Guidelines reporting framework.

Exchange rates used in the report to the US\$  
 AUD 0.6494  
 ZAR 7.5391

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## CHIEF EXECUTIVE'S REVIEW

The long-term success of Xstrata's Mission, to create industry-leading returns for the owners of the Group, depends on our ability to work safely and responsibly in partnership with the communities and environment in which we operate. This is Xstrata's second HSEC report and builds on the work started in 2002 to provide a comprehensive review of the Group's activities in the areas of health and safety, environment and community (HSEC).

While I am pleased that the Group has made significant progress in a number of areas, the report also recognises areas where a great deal of work remains to be achieved. In particular, during the year ahead, Group HSEC management standards and a process to measure compliance to these standards will be implemented across all of Xstrata's operations, ensuring that each commodity business unit reports HSEC performance according to standardised methodology. We are committed to improving the quality and scope of HSEC reporting across the Group and aim to adopt the Global Reporting Initiative™ 2002 Sustainability Guidelines reporting framework in our 2004 HSEC report.

2003 was a year of significant change and progress for the Group. The size and scope of Xstrata's operations were substantially increased through the acquisition of MIM Holdings in June 2003, which gave Xstrata meaningful entry points into two new commodity businesses, copper and coking coal, as well as geographical diversification.

Clearly the additional commodity businesses and geographical locations that Xstrata now operates bring with them additional responsibilities towards local communities, as well as distinct environmental and health and safety considerations. These considerations have been a key focus of the integration process, successfully completed in September 2003. The performance of businesses acquired in 2003 are included in this report, although the Group's rapid expansion means that data has not been integrated. Future reports will provide data for each commodity business unit, according to the Group's revised structure.

I am pleased to report that Xstrata made good progress on several fronts in 2003. Progress was made in reducing the Group's lost time injury frequency rate (LTIFR) and total recordable injury frequency rate (TRIFR) by 34% and 20% respectively, compared to 2002. These improvements are largely due to enhanced safety management systems with specific targeted initiatives, which have been implemented for each Commodity Business Unit. However, by far the most important target for safety is to achieve zero fatalities and zero injuries across our operations. I am deeply saddened to report that five of our colleagues lost their lives in workplace incidents at our operations in 2003. Any workplace injury is avoidable and it is unacceptable that any colleague should lose their life or sustain an injury while working at Xstrata's operations. Safety will continue to be the primary focus at all our operations and I will work with the management teams at each of our businesses to redouble our efforts to ensure a safer working environment in 2004.

HIV/AIDS continues to present the most urgent health issue for our South African Business Units, which operate awareness and education programmes, voluntary counselling and testing, together with anti-retroviral treatment programmes. In 2003, 82 occupational disease cases were reported, an increase of 19% over 2002. Employee working conditions are a priority for our operations and a number of strategies are in place to improve working environments, particularly to protect employees against noise and dust pollution.

As a consequence of the MIM acquisition, greenhouse emissions increased by some 56% compared to 2002. As detailed in this report, the Group has a number of

strategies in place to address this important issue. Xstrata Coal plans to spend in excess of US\$9 million over the next five years on clean coal technology, methane utilisation and carbon sequestration to combat excess greenhouse emissions and is also active in a number of Australian industry greenhouse gas initiatives. At the Mount Isa copper smelter, sulphur dioxide emissions were reduced through increased uptake of waste gases by the WMCF acid plant. Elsewhere across the Group, a number of methane reduction initiatives were either implemented or planned including the use of methane emissions for power generation.

In 2003, Xstrata received commendations from both the local community and NGOs for its rehabilitation of the Sandspruit stream near Kroondal in South Africa. Our Commodity Businesses continued to monitor and refine our knowledge of the biodiversity in and around operations, with water recycling and reuse schemes also reflected the Group's commitment to use resources efficiently and with as little impact on the environment as possible. Mount Isa Mines has reduced fresh water use by over 40% since April 2002. In Coal, the Bobadeen Irrigation Scheme, which was opened in 2003 to irrigate 242 hectares of cattle pastures through surplus water from the Ulan Colliery, achieved a place in the finals of the Hunter Coal Industry Environmental Management Awards.

Community interaction remains an important part of Xstrata's operations. Xstrata continued its policy of contributing at least 1% of Group profit before tax, with some US\$3.6 million distributed to community initiatives in 2003. Approximately 90% of this amount was spent in South Africa, under the guidance of Eric Rathshikhopha, the newly appointed Director of Corporate Development in South Africa, who is also responsible for Xstrata's programmes to comply with the SA Department of Minerals and Energy Empowerment Charter. In Australia, Xstrata engaged with local communities at Mount Isa, undertaking a survey of attitudes and perceptions, the results of which are helping us to provide the local community with relevant and timely information.

Operations throughout the Group support community sustainability projects, initiatives and cultural events, including programmes to improve literacy, support economic growth in local communities, provide access to

sports and recreational facilities and supply local schools and hospitals with vital equipment.

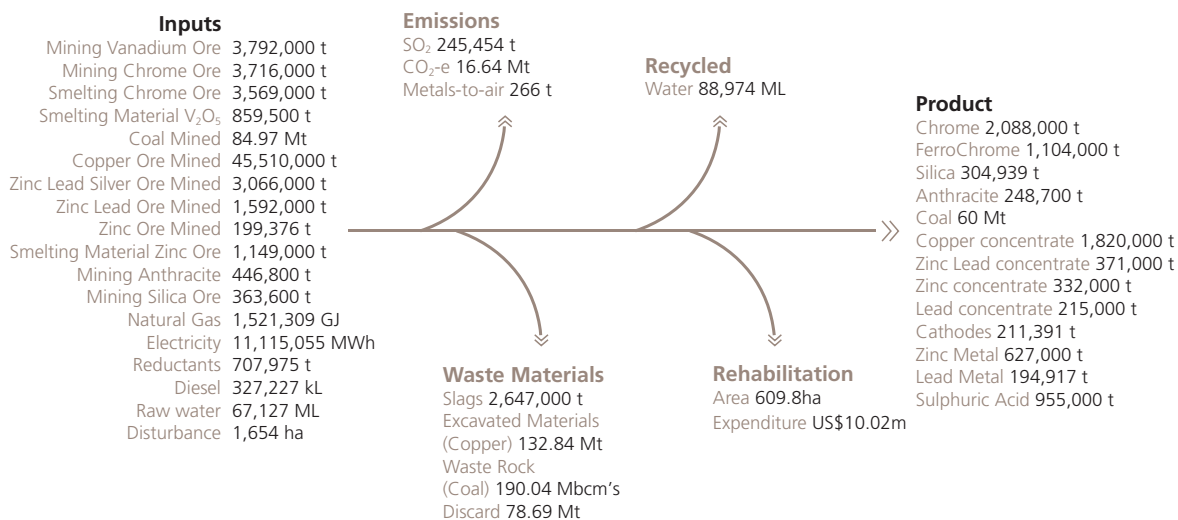
The Group continues to make progress with new projects from its existing pipeline. Biodiversity impact assessments are prepared for each new project and form a vital part of the approval process. The Rolleston project was approved in February 2004, following a Cultural Heritage Management Plan negotiated with the local traditional owners, and a Bluegrass Management Plan, to protect the biodiversity present at the site.

In the relatively short time since Xstrata plc was established, much good progress has been made with HSEC initiatives. The commitment of Xstrata's Executive Committee to continuous assessment and improvement remains absolute, and we recognise that there is still much to achieve. We have continued to set ambitious targets for the year ahead and I am confident that further progress can be achieved in 2004, as we strive to continuously improve our environmental, health and safety and community initiatives and performance in partnership with our stakeholders.



**Mick Davis**

## KEY 2003 STATISTICS



### Economic (Pro forma US\$m)

Turnover 4,412.4  
(includes other businesses and unallocated)  
EBIT (pre-exceptionals) 431.1  
(includes other businesses, Corporate and unallocated)  
Dividend per share USc 20  
Wages and salaries 413.9  
Social Security Costs, Pensions and others 63.6

### Health and Safety

Fatalities 5  
TRIFR 26.5  
LTIFR 7.9  
DISR 648.8  
Prosecutions 0  
Fines US\$200,000  
Occupational diseases 82  
(includes one case from forestry)

### Environment

Total Raw water use (ML) 67,127  
Total energy use 58.74  
Total CO<sub>2</sub>-e (Mt) 16.64  
Land disturbed (ha) 1,654  
Land rehabilitated (ha) 609.8  
Regulatory actions 1  
Prosecutions 0  
Fines US\$974

### Community

Number of employees and full time contractors 23,462  
Total Donations US\$3.6m  
Complaints 299

### Governance

6 independent non-executive directors out of a total of 12

We commit ourselves to the principles of sustainable development by striving to meet equitably the developmental, environmental and economic needs of the present with those of the future.

### Xstrata Business Principles

## CORPORATE GOVERNANCE

### Group Structure

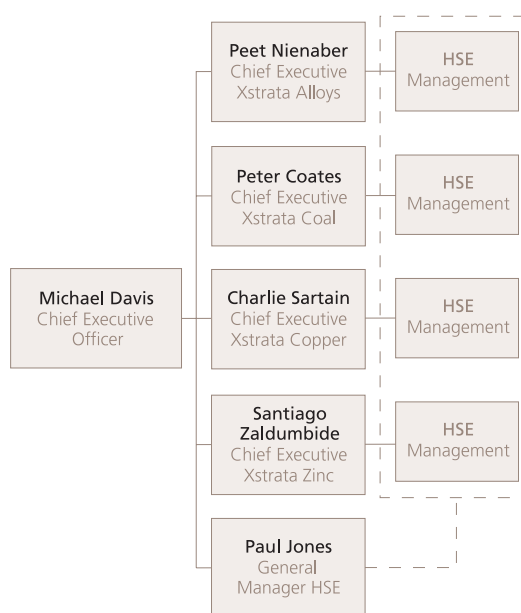
The Xstrata plc Board ('the Board') establishes the strategic direction of the Group which the executive management team then implements. The Board meets at least five times each year during which it receives comprehensive reports from management.

The Board is also responsible for approving the annual business plans of each Commodity Business. While Commodity Businesses are given a high degree of autonomy to pursue their business objectives, once their plans are approved by the Board, they operate within the Business Principles and Group Policies governing:

- risk management;
- health, safety, environment and community; and
- corporate social involvement.

### HSEC Structure

The Group is committed to ensuring that the health, safety, environmental and social commitments of its businesses are managed appropriately, and to a high standard. The implementation, review and assurance of Xstrata's Health, Safety, Environment and Community Policy and Standards globally, and the management of the Group's interface with stakeholders in the areas of HSE, is the responsibility of the Group's General Manager Health, Safety and Environment (HSE). The General Manager HSE reports to the Chief Executive Xstrata plc.



It is the responsibility of management throughout the Group, as detailed in the accompanying diagram, with the assistance of specialists where appropriate, to oversee the implementation of HSEC policies and systems and monitor HSEC performance.

The Xstrata General Manager Corporate Affairs is responsible for managing Xstrata's overall Corporate Social Involvement (CSI). With a large proportion of social investment funds being invested in South Africa, a Director Corporate Development has been appointed to oversee the Xstrata commitment in South Africa.

### Policies Standards and Systems

The Group Health, Safety, Environment and Community Policy and the Group Corporate Social Involvement Policy are in place and can be found on the website. During 2004, Xstrata will introduce 17 HSEC standards that are aligned to Xstrata's Business Principles, the International Council on Mining and Metals (ICMM) Sustainable Development Framework and internationally recognised management system standards, e.g. OHSAS 18001, AS4801, ISO 14001. Assurance of Xstrata's corporate responsibility will be demonstrated in assessments of commodity business performance against these standards.

HSE controls are put in place via Xstrata's HSE Policies and management systems, internal resources and expertise and the use of independent, expert advice. HSE management performance and systems compliance throughout the group is internally and externally audited and regulators do periodic reviews.

### Risk

As part of the business planning process, each Commodity Business identifies the risks associated with the achievement of its business plan and the actions they propose to manage that risk to an acceptable level. This process is set out in a risk management framework that has been established across the Group, implemented in each Commodity Business and externally audited. In 2004, this will be refined further to include an on-going self-assessment process, risk reviews and updating of risk registers. These processes allow key business risks to be communicated by the Commodity Businesses to the corporate centre, providing the Board and Executive Committee with the assurance that the key risks are being identified and managed effectively.

### Targets

During 2003, a number of Group targets were set. Due to the major acquisition of MIM Holdings it is not possible to set out the Group's performance against these targets in this report. Commodity business targets now in place across the new Group will be reported on in the 2004 report.

### Reporting

Operations report monthly HSEC performance against a number of key indicators including:

- number and type of injuries;
- injury frequency rates per one million hours worked;

- critical and high potential risk HSE incidents;
- occupational diseases;
- environmental incidents; and
- community complaints.

The monthly HSEC report is reviewed by the Group Executive and specific actions taken as required, while a quarterly report, on all significant HSEC incidents, is reviewed by the Board.

Most Australian sites are required to report annually to the National Pollutant Inventory while both Northfleet and Nordenham report to similar schemes in the UK and Germany respectively. Northfleet is required to report on its progress in meeting the Climate Change Levy targets every two years. In Argentina, Alumbreira provides environment impact report updates to the Tucumán and Catamarca provincial governments every two years. In Australia, progress reports are submitted annually to the voluntary Australian Minerals Industry Code for Environmental Management. In South Africa, annual Environmental Management Programme Report (EMPR) performance reports are submitted to the DME.

### Closure Plans

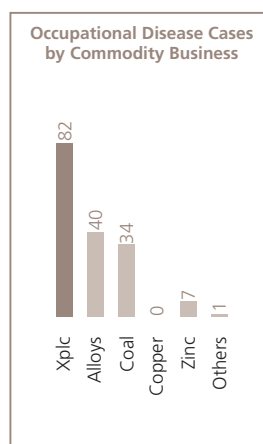
Closure plans exist for all Xstrata mines, and a number of operations have completed detailed closure cost estimates. These plans form the basis for financial provisioning for closure. Appropriate approvals for the closure, decommissioning and final rehabilitation of three discontinued operations in New South Wales (New Wallsend, Cumnock underground and Great Greta) are currently being sought.

### New Projects

All new projects undergo biodiversity impact assessments. During 2003, a Cultural Heritage and Bluegrass Management Plan for the Rolleston Coal Mine project were developed. A proposed open-cut expansion at McArthur River Mine triggered environmental and socio-economic feasibility studies for an Environmental Impact Statement. The Goedgevonden open-cut coal mine opened in South Africa in 2003 after regulator approval of the EMPR.

We manage our operations as safely as possible, with the objective of achieving zero injuries and work related illnesses

#### Xstrata Business Principles



## HEALTH

As part of its commitment to achieving zero work related illnesses, Xstrata continues to develop and implement systems and strategies to improve employee working environments, particularly in the areas of noise and dust protection. Occupational hygiene monitoring carried out by sites includes:

- gravimetric dust sampling;
- noise monitoring;
- diesel emissions monitoring (mines only);
- underground ventilation quality and quantity;
- illumination surveys; and
- personal hygiene facilities audits.

During 2003, 82 occupational disease cases were reported, a 19 percent increase on 2002. The occupational diseases recorded included:

- noise induced hearing loss 56;
- occupational asthma/bronchitis 13;
- musculoskeletal injuries 7;
- pneumoconiosis 5; and
- hernia 1.

The biggest single health issue for Xstrata's South African operations is HIV/AIDS. The fight against HIV/AIDS is addressed on two fronts. First it is important to have awareness programmes in place to prevent the spread of HIV/AIDS and second, it is vital to have testing and treatment programmes also in place. Xstrata's South African operations are involved in both phases. The HIV/AIDS programmes established by Xstrata Alloys continue to provide testing, medical treatment, and other support including anti-retroviral treatment and treatment for the prevention of mother to child transmission. In addition, the Employee Assistance Programme provides access to voluntary counselling and testing.

Xstrata Coal South Africa's (XCSA) HIV/AIDS committee, consisting of senior executives, employee and local government representatives, made significant progress during 2003. Across the company, 'knowledge, attitude and practice' and HIV prevalence surveys were carried out at all collieries. XCSA continued to be an active participant in the HIV/AIDS PowerBelt Initiative together with communities and other coal mines located in the same area.

Xstrata Copper began preliminary work on the reinvigoration of the community blood lead testing programme at Mount Isa focusing on the 0 to 60 month age group. The blood lead management system at Mount Isa was reviewed in 2003 confirming the effectiveness of the current employee blood lead programme.

## SAFETY

The Group Lost Time Injury Frequency Rate (LTIFR) and Total Recordable Injury Frequency Rate (TRIFR) in 2003 reduced significantly by 34 percent and 20 percent respectively compared to 2002. The enhancement and implementation of safety management systems with specific targeted initiatives has led to an improvement in the injury rate trends of most of the Commodity Businesses (see table).

For detailed commentary on the injury performance between different countries please refer to the Xstrata website.

As detailed in the Commodity Business reports, five Xstrata employees were fatally injured in 2003. Two other employees were critically injured, one losing an arm below the elbow and another suffering paralysis. These fatalities and critical injuries are completely irreconcilable with Xstrata's commitment to achieve zero injuries across the Group, and while they have shocked and distressed all employees, they have also deepened Xstrata's resolve to increase efforts to improve safety by developing strategies to avoid future similar incidents. Across the operations, all critical and high potential risk HSE incidents are reported to the Group Executive and investigated by a team of senior operations and HSE personnel to determine underlying causes and to develop the necessary actions to prevent recurrence.

Each Commodity Business is required to develop a comprehensive safety management system aligned to Xstrata's Business Principles and HSEC policy. Xstrata operations continue to work towards certification of their systems to international HSE standards. All sites hold Occupational Health and Safety (OHS) risk registers that are regularly reviewed, while ongoing job specific HSE risk assessments are conducted as required. Safety training, inspections, audits and pre-shift safety talks are in place at all operations.

Comprehensive internal and external audit programmes assessed both OHS systems and performance throughout the Group. During 2003, Xstrata's General Manager HSE, accompanied by a senior safety and senior operational manager from each of the three Xstrata Coal divisions, audited the high-risk areas of energy isolation, ventilation, critical equipment, hazardous tasks, and strata control at 12 sites across the Coal Commodity Business. This proved an exceptionally useful exercise and its outcomes are discussed in the Xstrata Coal section of the website.

During the year in review, none of the commodity businesses incurred any regulatory actions or prosecutions in relation to OHS issues. United Colliery was fined US\$180,000 for a fatal incident which occurred in 1997, five years prior to Xstrata assuming management responsibility for this operation.

Safety related issues are discussed in more detail in the separate Commodity Business sections.

Commodity Business	2003 LTIFR	2002 LTIFR	%	2003 TRIFR	2002 TRIFR	%
<b>Alloys</b>	5.7	10.6	-46	15.7	34.6	-55
<b>Coal NSW</b>	15.4	23	-33	45.2	62	-27
<b>Coal Queensland</b>	13.4	9.5	+29	43.5	59.8	-27
<b>Coal South Africa</b>	2.0	2.4	-16	5.2	7.2	-29
<b>Copper Americas</b>	4.3	4.3	nc	26.0	28.4	-8
<b>Copper Australia</b>	5.5	6.7	-18	57.9	151.4	-62
<b>Zinc</b>	35.0	46.7	-25	58.2	98.1	-41
<b>Xstrata Total</b>	<b>7.9</b>	<b>12</b>	<b>-34</b>	<b>26.5</b>	<b>33</b>	<b>-20</b>

In addition to minimising the impact of our own operations on the environment we use resources as efficiently as possible reducing waste and input material in order to limit the environmental impacts associated with our supply chain.

Xstrata Business Principles

## ENVIRONMENT

### Land and biodiversity

All of Xstrata's Commodity Businesses are implementing systems and procedures to ensure that the disturbance of land on and around their operations is minimised and that disturbed land is rehabilitated to an agreed land use. Furthermore, many sites maintain digital land ownership and disturbance registers. The rehabilitation of the Sandspruit stream near Xstrata Alloys Kroondal Mine in South Africa attracted community and NGO commendation.

During 2003, a number of Xstrata sites increased their knowledge regarding biodiversity in and around their sites:

- a management plan to protect an endangered ecological community of Bluegrass at the Rolleston Coal Project was approved by Environment Australia;
- an environmental impact assessment undertaken for a new oleum plant at San Juan classified more than 70 species of water birds around the Avilés estuary;
- a Copper Refinery study on the impacts of historic contaminant releases on downstream aquatic environments found there to be limited impacts; and
- the biological baseline studies associated with the proposed McArthur River Mine expansion identified 730 species of fish, plants and reptiles within the study areas.

### Water

The management of water is critical for Xstrata to maintain the sustainability of its businesses and water conservation is therefore a key objective of all Xstrata operations, particularly those in remote and dry locations. Due to the increase in the number of Xstrata's operations, total raw water usage increased by 266 percent.

Xstrata's commitment to use resources efficiently is reflected in efforts to reuse and recycle water throughout the Group. Highlights in water resource initiatives during 2003 included:

- the commissioning of Bobadeen Irrigation Scheme, a finalist in the Hunter Coal Industry Environmental Management Awards, which utilises surplus Ulan Coal mine water to irrigate 242 hectares of cattle pastures;
- a successful conservation programme has reduced fresh water use at Mount Isa Mines by > 40 percent (24 to 14 ML/day) since April 2002; and
- Townsville Copper Refinery has reduced the generation of waste water from 50,000 litres to around 3,000 litres per day over the past three years;
- Xstrata Coal South Africa achieved a 65 percent reduction in raw water consumption since 2002.

### Air emissions

The major source of Xstrata's air emissions is the copper-lead-zinc mining and processing complex at Mount Isa. Emissions include sulphur dioxide (SO<sub>2</sub>), lead, zinc, arsenic and cadmium. The installation of an acid plant by Western Mining Corporation Fertilisers (WMCF) in 1999 to convert waste gases from the copper smelter to sulphuric acid, for use in fertiliser production, dramatically reduced the amounts of gas and particulates being emitted. During 2003, increased uptake of waste gases from the copper smelter by the WMCF acid plant reduced SO<sub>2</sub> emissions by a further 15 percent relative to 2002 emissions.

In 2001, the Queensland Environmental Protection Agency (QEPA) released the findings of a three-year Panel Assessment Study into the environmental impacts of SO<sub>2</sub> emissions from the Mount Isa smelters. The recommendations of the panel included repeating a series of studies similar to those undertaken during the original panel assessment once the WMCF acid plant had operated at, or near, capacity for at least 12 months. This is now occurring and Xstrata Copper has commenced preparations

## ENVIRONMENT

to initiate the required studies in collaboration with the QEPA in 2004.

Xstrata Alloys processing plants all implemented major engineering projects to improve air quality in and around their operations during 2003, including expenditure of some US\$1 million at the Wonderkop plant.

With the acquisition of the MIM operations, Xstrata's 2003 greenhouse emissions rose by 56 percent over 2002. Xstrata Coal is involved in a number of Australian industry greenhouse gas initiatives including COAL21, the Australian Greenhouse Gas Abatement Programme and the Cooperative Research Centre for Coal in Sustainable Development. It also participates in various industry education and research programmes. The primary objective of COAL21 is to develop an action plan for achieving major reductions in greenhouse gas emissions. Xstrata Coal plans to spend in excess of US\$9 million over the next five years on clean coal technology, methane utilisation, and carbon sequestration.

### Energy

Due to the inclusion of the MIM operations, the total energy used by Xstrata in 2003 increased by 23 percent compared with 2002. Sixty-seven percent of the energy consumed is supplied by local electricity networks. Hydroelectric power makes up a component of the electricity supplied in Argentina and Spain.

Energy Use Source	GJ
Electricity	40,014,198
Diesel	12,630,961
Coal	3,601,640
Natural Gas	953,039
Coke	830,763
Fuel Oil	401,846
LPG	105,658
Naphtha	95,139
Polyfuel	55,123
Anthracite	32,422
Petrol	14,806
Wood	5,524
<b>Total</b>	<b>58,741,118</b>

### Waste

Operations are focused on improving the quantification, collection, and recycling of waste material. Used oil, paper, steel, oil filters, batteries, old conveyor belts, and tyres are recycled by reliable contractors, while slimes dams and slag heaps are reworked where feasible.

### Environmental systems

All Xstrata's operations continue to develop and implement Environmental Management Systems (EMS) consistent with the principles of the international environmental standard ISO 14001. In line with the requirements of ISO 14001, sites maintain aspects and impacts registers identifying key environmental risks. Currently Rustenburg, Wonderkop, Lydenburg, Rhovan, Northfleet, Nordenham, Ravensworth East and Narama are certified to the standard while a number of operations have targeted certification from 2004 through to 2006.

Environmental performance at all Xstrata operations is assessed by regular internal reviews of performance and systems compliance, while a number of external audits are conducted annually by independent auditors and regulators. Inductions for new employees and contractors at all operations include an environmental component and many operations have introduced environmental awareness programmes.

The Australian operations of Xstrata Coal and Xstrata Copper are signatories to the Australian Minerals Industry Code for Environmental Management. During 2003 the industry, together with the Australian Minerals Council, worked to develop a new framework. All Xstrata's Australian operations are committed to adopting and implementing the framework following its launch in 2004.

### Environmental Incidents

Xstrata operations reported a total of 806 environmental incidents during 2003, an increase on the previous year, largely due to the addition of the MIM operations. There were 26 Category 3 incidents and no Category 4 or 5 incidents. Further details regarding the Category 3 incidents can be found in the Commodity Business reports.

Category	1	2	3	4	5
	427	353	26	0	0

At Xstrata we are committed to cooperating with employees, local communities and other stakeholders in order to deliver industry-leading returns to our shareholders.

Xstrata Business Principles

## COMMUNITY

Xstrata is committed to diversity in the workplace, and engaging with local communities to assist them in becoming more stable, prosperous and sustainable. As reported in 2002, Commodity Businesses developed Social Involvement Plans detailing their community initiatives, and individual sites have begun developing site-specific plans. The former MIM Holdings operations will prepare Social Involvement Plans in 2004.

Xstrata is committed to setting aside one percent of the Group's annual profit before tax to facilitate its engagement with communities and society. In 2003, this equated to US\$1.78 million. Including MIM expenditure prior to integration the total spent on CSI support during 2003 was US\$3.6 million.

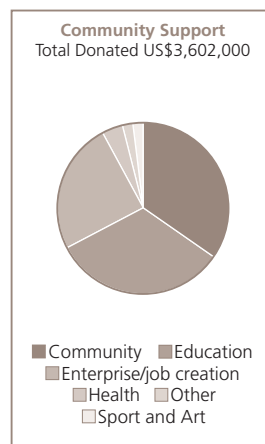
Recognising the complex social issues, such as health and education, facing both South Africa and Xstrata's employees working there, Xstrata appointed a Director Corporate Development in 2003. This role is responsible for implementing Xstrata South Africa's programmes developed to meet the requirements of the South African Minerals and Petroleum Resources Development Act.

In 2003, the Xstrata South Africa Transformation Committee approved a set of community development guidelines emphasising the development of communities, as opposed to a strategy of welfare and charitable donations, and highlighting the importance of consulting

local governments and other interested parties about implementing plans and projects. The objective of the community and rural CSI projects is to develop and enhance economic viability during, and after, the life of the business operations.

XCSA continued to align the business with the intent of South Africa's new Mineral and Petroleum Resources Development Act and mining empowerment charter by pursuing meaningful participation of historically disadvantaged South Africans (HDSAs) in its business. In the past 18 months, the company has more than doubled the number of HDSAs in its upper-management levels. Several colliery management positions, department heads, mine overseers, plant superintendents and human resources managers are also held by HDSAs. In addition, discussions are being held with empowerment groups to facilitate participation by HDSAs in the ownership of assets of XCSA. The company has also established a HDSA economic enterprise procurement team and implemented a revised accommodation scheme whereby employees are encouraged and financially supported to move from hostels to own their own homes.

Three years ago XCSA commenced a programme creating small and medium-sized enterprises in response to significant unemployment rates in and around the town of Breyten, close to the Mpumalanga Division mines. Together with other entrepreneurs, XCSA provided investment capital and business advice to a manufacturing company that is currently growing its successful business with the help of Xstrata.



## COMMUNITY

To make education more accessible to employees and members of its communities XCSA intends to establish new Adult Basic Education and Training (ABET) Centres in local townships in the vicinity of the Tweefontein and iMpunzi Divisions. The first community ABET Centre will be located in the Kwa Guga township.

The promotion of improved education and the support of education projects was a high priority for Xstrata Alloys during the year and a number of projects were initiated including the identification of potential Adult Basic Education and Training (ABET) practitioners who, once trained, move into the community to educate the illiterate. Xstrata Alloys continues to support two day care centres for orphans in the Rustenburg area and is involved in a number of school infrastructure projects, including a school hall and other infrastructure being installed at the Rutanang Enrichment Centre and the Marifaan primary school being built in the Lydenburg area.

By promoting the principle of 'the best help is self help', Xstrata Alloys management is engaged in a number of local Black Economic Empowerment initiatives. Examples of how operations are helping local community businesses include establishing and supporting the local 'Bethanie Recruitment Agency' that recruits employees for the Alloys operations, as well as helping in the establishment of a viable cleaning services business by assisting with tendering, business planning and training.

Other examples of engagement during 2003 include:

- Xstrata being invited to be a member of the Swiss Business Council, set up to reduce poverty and unemployment in South Africa;
- Xstrata Alloys operations, Thornccliffe and Vantech attended meetings of the greater Sekhukhune Municipal Council, administering the local area around these operations, while participating in the Steelpoort Valley Joint Producers Forum;
- Xstrata Alloys will involve all other stakeholders and contributors in the establishment of sports and recreational activities in Bethanie and adjacent villages, a project identified in 2003 by the Community Development Forum;
- Xstrata Coal and the local traditional owners negotiated a Cultural Heritage Management Plan for

the Rolleston Coal Project in Queensland allowing the granting of a mining lease over the area;

- XCSA was accepted as a full member of their Local Municipality's Integrated Development Structure Plan (IDP). The company is also playing a facilitative role in the establishment of the Emalahleni Development Initiative to stimulate economic growth by implementing the IDP directives;
- XCN sites distributed newsletters, fact sheets and held community information days, inviting community feedback via the distribution of feedback forms; and
- a survey of community attitudes and perceptions at Mount Isa revealed that two-thirds of residents would like more news and information about employment and environmental issues.

Operations throughout the group support community sustainability projects, initiatives and cultural events. Some examples include:

- Xstrata Copper's support for indigenous businesses in North Queensland;
- the construction of vegetable gardens, hot-houses and farms in rural Argentina and supporting small farm producers near Xstrata Copper's Alumbrera operation;
- Australian operations supporting Landcare, local community groups, schools and disadvantaged members of the community;
- South African operations offering scholarships as well as supporting education facilities such as computer centres; and
- continued provision of equipment and medical supplies to local schools and hospitals in more than 90 communities near the Alumbrera site.

### Complaints

Xstrata responded to 299 complaints during 2003 from stakeholders that live or work at or around the operations, up from 68 in 2002. The increase is largely due to the inclusion of complaints about sulphur dioxide emissions at Mount Isa. All complaints are investigated and the complainant contacted to explain the action taken to prevent recurrence or to address their concerns.

Noise	Blasting	Dust	Traffic	Fumes	Water	Other	Total
36	36	42	11	148	9	17	299



## ALLOYS

- » Servicing and maintenance of respirators is done on a 24 hour basis by dedicated mask room attendants
- » The Lydenburg Chrome smelter wetlands
- » Elias Mokwena checking the condition and storage of the self-contained self-rescuers in the lamp room at Thorncliffe Mine





## CHIEF EXECUTIVE XSTRATA ALLOYS

The Xstrata Alloys leadership team is totally committed to rapid improvement in our safety performance and to continuing our successful environmental improvement programmes. In 2003, we have been particularly pleased with the positive impact of our health and community initiatives, especially those addressing HIV/AIDS and of our ongoing support for the communities in which we operate to improve their standard of living and to build a sustainable future.

A key component in all our HSEC improvement initiatives is the involvement of our people in the design and implementation of our programmes.

An unremitting focus on empowering our employees to take responsibility for addressing hazards and developing a 'Safety First' culture, combined with other initiatives related to safety systems, plant and equipment has resulted in our Total Recordable Injury Frequency Rate reducing by 55 percent and our Lost Time Injury Frequency Rate reducing by 46 percent this year.

Mick Davis, our Chief Executive, has mentioned the tragedies that distressed the Alloys family deeply and all efforts have been made to ensure these incidents do not recur.

We have established comprehensive HIV/AIDS programmes over the past number of years, providing voluntary testing,

medical treatment and other support at all of our operations. These programmes include anti-retroviral treatment and treatment for the prevention of mother to child transmission. Our Employee Assistance Programme complements our HIV/AIDS programmes providing access to voluntary counselling.

We are making significant headway in enhancing the protection of the environment in and around our operations. We have delivered on our commitment to rehabilitate the Sandspruit stream near our Kroondal operations and the results have attracted community and NGO commendation. All our operations continue to improve their environmental performance. Sites are monitoring and remediating the effect of water sourced from their operations and major engineering works completed in 2003 will improve the quality of air around our operations.

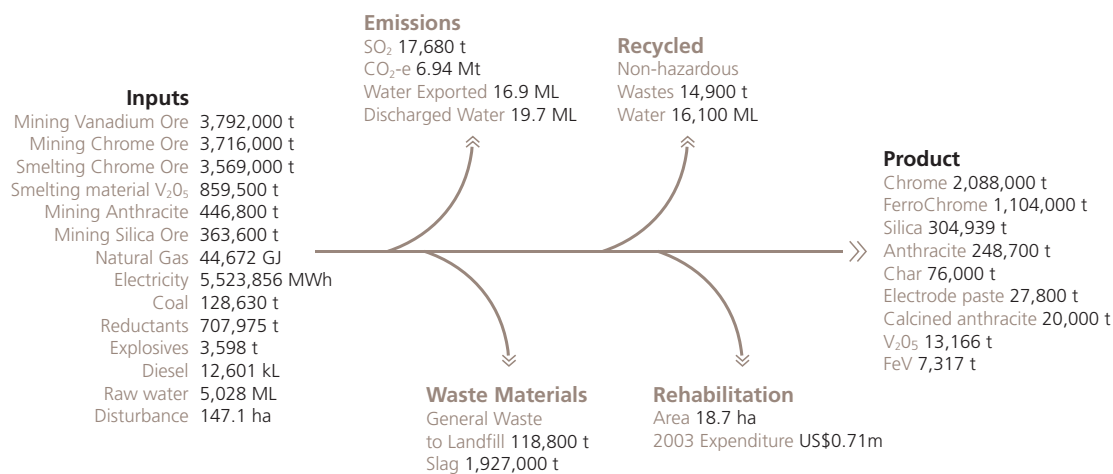
Our operations remain an integral part of their communities through their support for initiatives, programmes and local community forums. We invested over US\$890,000 in community projects and other community initiatives, including supporting two orphan care centres in Rustenburg (please refer to case study for further details) and improving the washroom facilities at five village schools near our operations.

Our challenge is to continue to progress our safety efforts to further reduce our injury rates and eliminate fatalities from our operations. We look forward to building on our substantial social investment, thus enhancing the sustainability of the communities in which we operate and continuing with our significant environmental improvements.

A handwritten signature in brown ink that reads "Peet Nienaber". The signature is fluid and cursive, with a period at the end.

**Peet Nienaber**

## KEY 2003 STATISTICS



### Economic (Pro forma US\$m)

Turnover 543.0  
EBIT (pre-exceptionals) 54.1

### Health and Safety

Fatalities 4  
TRIFR 15.7  
LTIFR 5.7  
DISR 326.0  
Prosecutions 0  
Fines US\$0  
Occupational diseases 40

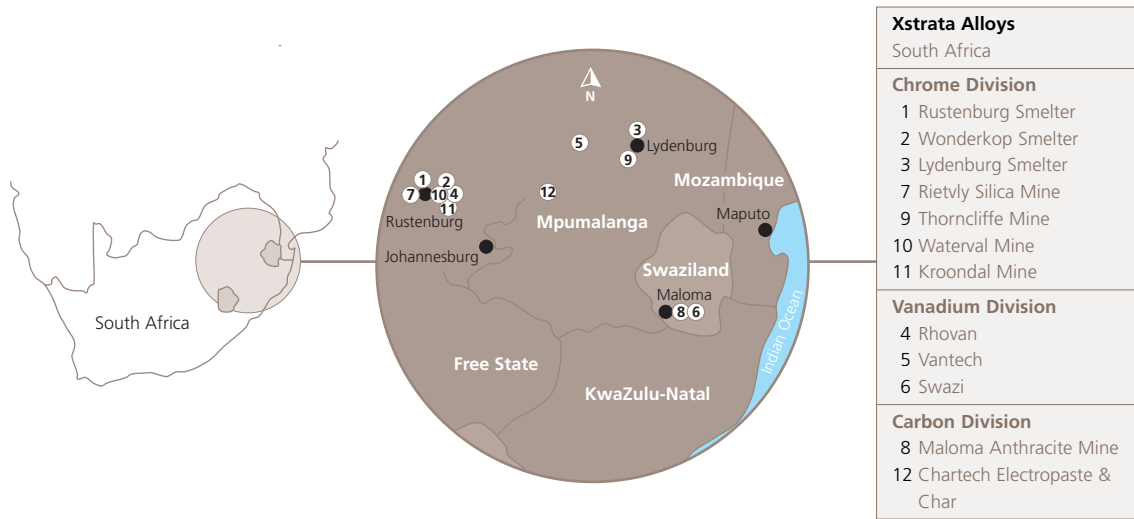
### Environment

Total Raw water use (ML) 5028  
Total energy use (PJ) 24.09  
Total CO<sub>2</sub>-e (Mt) 6.94  
Land disturbed (ha) 147.2  
Land rehabilitated (ha) 18.7  
Regulatory actions 0  
Prosecutions 0  
Fines US\$0

### Community

Number of employees and full time contractors 6,813  
Total Donations US\$0.90m  
Complaints 25

OPERATIONS



KEY PERFORMANCE INDICATORS

Alloys	2003 Target	Performance	2004 Target
<b>Health and Safety</b>	Reduce the number of new cases of occupational diseases	<b>Not achieved</b> (Occupational diseases increased from 31 to 40)	Conduct impact study and implement HIV/AIDS programmes
	Zero Fatalities	<b>Not achieved</b> (four fatalities, 3 – Cr Mining, 1 – Rustenburg)	Zero Fatalities
	Reduce TRIFR by 20 percent from 2002	TRIFR reduced by 55 percent	20 percent reduction in TRIFR
<b>Environment</b>	Increase efficiency of water usage through recycling	<b>Not achieved</b> (total water usage increased from 21.5 million kL to 23.1 million kL due to increased production) Efficiency unchanged	5 percent reduction in potable water consumption
	Reduce number of Category 3 incidents to zero	<b>Not achieved</b> (Category 3 incidents reduced from 3 in 2002 to 1 in 2003)	Zero Category 3, 4, 5 incidents
<b>Community</b>	Provide 1 percent of pre-tax profit to support local communities	<b>Achieved</b>	Reduce number of community complaints
	Reduce community complaints	<b>Achieved</b> (26 reduced to 25)	Implement site-specific stakeholder engagement plans

## HEALTH AND SAFETY

### Health Performance

During 2003, Xstrata Alloys recorded 40 occupational diseases of which 28 were related to noise induced hearing loss and 12 involved occupational asthma or bronchitis. The main occupational health hazards at Xstrata Alloys operations are noise and dust. The operations continued to provide training for employees in the recognition and avoidance of occupational health hazards and have in place extensive occupational health monitoring programmes. The results are linked back to the occupational health centres and medical records to determine personal exposures.

Annual medical checks of all employees complement the monitoring programmes below:

- gravimetric dust;
- noise;
- diesel emissions (mines only);
- underground ventilation quality and quantity;
- illumination surveys; and
- hygiene facilities audits.

Awareness campaigns for hearing conservation were implemented and the introduction of custom-made hearing protection for exposed employees continued.

A Principal Inspector of Mines Health and Safety audit found that Vantech has implemented measures beyond

those recommended at the Department of Minerals and Energy (DME) public hearing inquiry. The improvements were verified by occupational hygiene monitoring data. Three DME occupational health audits found Vantech complying with the recommendations of the DME public hearing.

Xstrata Alloys' HIV/AIDS programmes provide medical treatment and counselling support. The programmes include anti-retroviral treatment and treatment for the prevention of mother to child transmission. The Employee Assistance Programme also provides for access to voluntary counselling and testing.

Wonderkop developed an HIV/AIDS management plan based on good corporate governance and the Global Reporting Initiative HIV/AIDS Protocol. With the support of management and the unions, more than 90 percent of workers participated in a very successful HIV/AIDS prevalence test. The results will be used to conduct an impact study and to improve the HIV/AIDS management plan.

HIV/AIDS awareness at Rhovan forms part of the general induction training, while the Vantech awareness programme consisted of musical stage displays on site and at nearby schools and villages, supported by information booklets and pamphlets. Feedback from unions and community leaders noted that the attendees gained substantial benefit.

### Safety Performance

By empowering Alloys employees to take responsibility for risks and safety management processes and promoting a behaviour-driven 'Safety First' culture within the operations, the Total Recorded Injury Frequency Rate (TRIFR) reduced by 55 percent from 34.6 to 15.7 while the Lost Time Injury Frequency Rate (LTIFR) dropped by 46 percent from 10.6 to 5.7 compared to 2002.

Tragically, four Alloys employees lost their lives at work in 2003. Two fatalities occurred at the Kroondal Mine in an underground fall of ground incident. A number of procedural and design strategies have been introduced to try to prevent similar falls of ground from occurring in the future. In late 2003, a worker at the Rustenburg pelletising plant was fatally injured maintaining a paddle mixer. New warning systems and additional procedures have been installed to prevent a recurrence. One Waterval employee died in early 2003 due to complications from an incident

## ALLOYS

occurring in late 2002. Actions taken to prevent similar incidents included reviewing the design of both the tip excavations and protection devices on the Load Haul Dumpers (LHD) (see case study).

There were three high potential risk safety incidents recorded at Kroondal and one at Maloma, all of which were investigated, analysed and actions incorporated into the risk management programme.

No regulatory actions, fines or prosecutions were imposed on the Alloys Commodity Business due to safety issues.

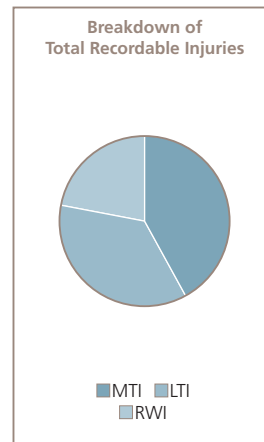
### Health and Safety Systems

Xstrata Alloys continues to work towards the integration of the Safety, Health, Environment and Quality functions and compliance to ISO 9000, 14001 and OHSAS 18000 systems at all the operations. It is planned that compliance will be achieved at all sites by 2005. The mining division training centres achieved ISO 9001 certification and Mining Qualification Authority certification in 2003.

All sites are implementing a Health and Safety Management System compliant with the OHSAS 18001 standard and the Alloys Health and Safety Policy. The system involves establishing legal and risk registers and implementing programmes focusing on changing health and safety related behaviours.

Qualified safety practitioners manage the occupational safety programmes with the active involvement of safety representatives elected by employees. The programmes include safety risk assessments, plant inspections, development of safe work procedures, incident investigations and training of employees. The introduction of a Safety Incentive Scheme rewarding each section for their contribution against set criteria was a major influence in the significant improvement in Vantech's safety record. They achieved a LTIFR improvement of 76 percent and a TRIFR reduction of 69 percent over 2002.

At Wonderkop, separate health and safety drives were launched to increase the awareness on health and safety matters and to improve management and union involvement, which was facilitated through the establishment of both management and employee HSEQ committees.



Regular internal safety audits and inspections of both operations and systems by safety personnel and other employees continued with audits generally indicating improvements in safety management systems during 2003.

Audits occurring in 2003 included:

- regular DME inspectorate audits at various sites;
- investigations by the inspectorate of Mines, Health and Safety regarding incidents that took place at Lydenburg in 2003, 2002 and 1998;
- Rhovan was audited by the Principal Inspector of Mines, Health and Safety. A follow-up audit found that Rhovan has implemented measures beyond the DME recommendations; and
- a Principal Inspector of Mines, Health and Safety audit found that Vantech has implemented measures beyond these recommended at the DME public hearing inquiry.

Safety training combined with work place inspections by safety officers and pre-shift safety talks are ongoing at all operations.

V<sub>2</sub>O<sub>3</sub> reactor No.1 storage bin ⌘

Petrus Choma, trialling a prototype fall of ground protection device »

## HEALTH AND SAFETY CASE STUDIES

### » Health, safety and environmental advantages of producing ferrovanadium from $V_2O_3$

In late 2003, Xstrata Alloys began commissioning of a new ferrovanadium production process that involves the production of vanadium trioxide ( $V_2O_3$ ) followed by its reduction. The older process used vanadium pentoxide ( $V_2O_5$ ) to produce ferrovanadium.  $V_2O_3$  is less soluble in water than  $V_2O_5$  and is therefore less hazardous to health and the environment. In addition the process used for  $V_2O_5$  production results in relatively high levels of ammonia being released into the workplace and emitted into the air. The lower ammonia generation of the  $V_2O_3$  greatly improves the working environment and lowers emissions to the atmosphere. The plant has also been designed with totally enclosed pneumatic product transfer systems and high efficiency dust collection equipment. As a consequence independent sampling has confirmed major improvements in stack emission levels of particulates and ammonia. Full commissioning will be completed early in 2004.

### » Fall of Ground Protection Devices on Load Haul Dumpers (LHD)

After the two fatal incidents in 2002 the Xstrata Chrome Mining division began a process to improve the protection for the LHD drivers from potential falls of ground. In early 2003, a prototype protection device, designed with input from engineering, safety and operators, was installed. Staff soon realised that the prototype did not allow for effective operation due to restricted working height and inadequate ergonomic design and the team revisited the design. In 2004 the team will be testing an innovative hydraulic system for the canopies and seats that for the first time will allow easy adjustment to accommodate variations in the working height.



## ENVIRONMENT

### Land and Biodiversity

Sites have developed procedures to minimise land disturbance. Rehabilitation and eventual decommissioning at the South Africa mines will take place in accordance with environmental management programmes approved by the Department of Minerals and Energy (DME). The long-life profile of the operations has limited the current availability of land for rehabilitation. (See case study of rehabilitation of the Sandspruit River).

A number of biodiversity studies were carried out in 2003, including an in-depth study of the natural biotic diversity downstream of the Lydenburg operation. The local Nature Conservation officer found the plant has had no detrimental impact on the natural environment.

### Water

All operations continually focus on conserving water. The majority of operations do not discharge at all and wherever possible, water is recycled. This focus reduced raw water use by 33 percent compared to 2002.

Due to historical pollution by the previous owners and to a minor degree, current impacts, extensive groundwater pollution exists at Rhovan. An external investigation has determined the extent of the sulphate plume and a groundwater management plan has been drawn up to stop its movement and prevent further pollution. One strategy has been to seal the calcine tailings dump floor

with a double lining of high density polyethylene (HDPE). Sulphate contaminated groundwater will be pumped out from 2004.

At Lydenburg a detailed groundwater study identified pro-active measures to treat the water leaching from old slimes dams and recirculate it into process water. Forty-seven boreholes and 23 surface water sampling points are monitored to ensure that groundwater pollution does not spread beyond operational boundaries.

### Air quality

On mines, dust is generated by the movement of material, gravel roads and wind blown from stockpiles, tailings dams and other disturbed areas. Dust control measures are in place as per approved environmental management programmes and dust monitoring programmes are in place. Strategic programmes for the management of air emissions at Rustenburg and Wonderkop have been approved by the Chief Air Pollution Control officer and Rhovan uses fixed water sprays to minimise dust on haul roads (see case study).

The Xstrata Alloys processing plants have completed air dispersion modelling to determine the extent of airborne emissions around their operations and these emissions are monitored using deposition gauges and high volume PM<sub>10</sub> monitors. The processing plants, including Wonderkop spending over US\$1 million, have all implemented major engineering projects to improve air quality in and around their operations.

The Lydenburg plant has achieved a major improvement in air pollution as a result of the installation of pollution prevention equipment such as the 'LiquiCell' unit installed on the Brandt filter. Further improvements are expected in 2004 with:

- improved dust control around the furnace hot loading systems; and
- minimising the release of fugitive gases and dust around the smelting furnaces.

## Waste

Operations are focused on improving the quantification, collection and recycling of waste material. Used oil, paper, steel, oil filters, batteries, old conveyor belts and tyres are being recycled by reliable contractors while slimes dams and slag heaps are being reworked where feasible. Rhovan repaired 1,406 damaged wooden pallets, previously sold, for reuse on site, while the local community collect ash generated from the Rhovan boilers to make bricks.

## Noise

Operations monitor every blast, and any noise and vibration non-compliances are reported to the relevant regulators and stakeholders. Blast techniques have been refined to reduce their impact and consultative forums are in place to discuss any noise concerns.

Crusher noise at the Waterval Mine beneficiation plant exceeds the recommended national noise levels.

Cladding the crusher building with a noise absorption material in 2004/2005 will solve this issue.

## Energy

Electricity, coal and diesel are the primary sources of energy for Xstrata Alloys.

Energy Use	
Source	GJ
Electricity	19,885,882
Coal	3,601,640
Diesel	486,383
Polyfuel	55,123
Natural Gas	44,672
Fuel Oil	10,823
LPG	6,562
Petrol	3,448
<b>Total</b>	<b>24,094,533</b>

## Environmental incidents

During the year there were 85 Category 1 (negligible) and 2 (minor) environmental incidents reported at Xstrata Alloys sites. One Category 3 incident occurred when a fire damaged an 11 KV cable causing downtime on the bag houses at Rustenburg. The loss of power meant an extended period of venting of air containing high levels of particulates. The cables and transformer were replaced.

Category	1	2	3	4	5
	43	42	1	0	0

No operation attracted environmentally related regulatory actions, fines or prosecutions.

## Management Systems

Most Alloys operations are managed according to their respective Environmental Management Programmes as required by the Minerals Act, and each operation is required by Xstrata Alloys to establish an environmental management system consistent with ISO 14001. The Chrome smelters and Rhovan have achieved certification to this standard. Kroondal, Waterval and Thornccliffe plan to be fully compliant with ISO 14001 by the end of 2004. Operations at Vantech have been suspended and the plant placed under care and maintenance in January 2004.

In accordance with Xstrata policy, Xstrata Alloys operations maintain risk registers incorporating key HSEC risks. Sites also maintain aspects and impacts registers identifying key environmental risks in line with requirements of ISO 14001.

Environmental performance at all Xstrata Alloys operations was assessed by regular internal reviews of performance and by systems compliance and systems reviews, while a number of external audits were carried out. The South African Bureau of Standards conducted two ISO 14001 certification audits of the Rustenburg Plant. Nine minor findings were raised during the audits.

Closure plans are detailed in the Alloys mine's approved Environmental Management Programmes Reports. Rehabilitation closure costs are calculated annually and a bank guarantee is lodged with the regulators.

Inductions for new employees and contractors at all operations include an environmental component while many sites have developed environmental awareness programmes. Rhovan delivered awareness training to 637 personnel during 2003.

An occupational exposure study on vanadium initiated by the vanadium plants is being conducted under the auspices of the Vanadium International Technical Committee.



## ENVIRONMENT CASE STUDIES

### ⌘ **Sandspruit rehabilitation**

Xstrata Alloys has delivered on its commitment to rehabilitate the Sandspruit stream. In 2002, complaints were received from a local NGO and a landowner that material and contaminated water from the Kroondal plant was polluting the Sandspruit stream. Management consulted with government and independent experts to devise a plan to address the issue in 2003. This involved Kroondal Mine moving accumulated silt to avoid further run-off and digging trenches to prevent contaminated water from reaching the Sandspruit. Stormwater control channels and catchment areas will be constructed to ensure no run-off enters the Sandspruit and to recycle water back to the Beneficiation Plant, thus saving water. Excess silt in the Sandspruit has been removed and gabions will be installed to control the waterflow. This was implemented in accordance with a wetland biologist's advice to assist in the re-establishment of the wetland's natural biodiversity.

### ⌘ **Innovative spray system**

A permanent dust suppression system using irrigation sprayers was installed on portions of the haul and entrance roads nearest to the Rhovan plant. This method has a number of advantages compared to the conventional method of using water carts to suppress dust including:

- less water is used to achieve the same result as the sprays wet the roads with less volume but more frequently, keeping the roads permanently damp. The sprays are computer controlled allowing their timing to be altered and the system includes sensors which stop the sprays during rain;
- the water cart now concentrates on sections of the haul road where no irrigation sprayers are installed, wetting areas where the large articulated dump trucks generate the most dust; and
- the sprays use water from Stormwater Dam No. 1 ensuring levels are kept low, providing spare capacity in case of heavy rainstorms.

⌘ Regrowth in the Sandspruit stream

⌘ Dust suppression sprays next to the Rhovan haulroad

## COMMUNITY

### Local Community and Stakeholders

All Xstrata Alloys operations have identified their stakeholders. Stakeholders in the North West Province include the relevant state departments, neighbouring farmers, mining companies and environmental groups and local residents including those in Informal settlements that have been established around some of its operations. Frequent meetings are held with local residents to discuss issues relating to noise, air blast, ground vibration and other environmental issues.

Rhovan operates in terms of a lease agreement on ground belonging to the Bakwena-Ba-Mogopa Tribal Authority and is surrounded by five villages. Rhovan and the Tribal Authority are the two main stakeholders in a number of community development aid schemes, together with the Rustenburg Metropolitan Council. Granite quarries in the tribal area are also involved.

### Engagement

Xstrata Alloys is a member of the greater Rustenburg Community foundation and participates in discussions and decisions that lead to better integrated development in the area. Meetings are arranged with all stakeholders to discuss issues and to provide a forum to discuss complaints.

The following are some examples of how Xstrata Alloys engages with the community:

- Thorncliffe and Vantech staff attend meetings of the greater Sekhukhune Municipal Council, and participate in the Steelpoort Valley Joint Producers Forum. Thorncliffe Mine is one of the founder members of the proposed De Bergh conservancy that includes several surrounding farms and mines covering an area of approximately 20,000 hectares; and
- at Wonderkop, quarterly newsletters were introduced to keep stakeholders informed of improvement programmes. Also, 250 stakeholders participated in an open day involving a site tour by senior management, displays and a public meeting.

### Community complaints

Twenty-five complaints were received by Xstrata Alloys during 2003. Wonderkop attracted nine complaints about stack and fugitive emission dust and to address these problems the operation spent over US\$1 million in 2003. Blasting at Kroondal and Rietvly prompted seven complaints about ground vibrations, air blast, noise, dust and damage. Blasting techniques were altered to minimise the impacts and regular environmental meetings are held with stakeholders to discuss concerns and resolve environmental problems.

Noise	Blasting	Dust	Traffic	Fumes	Water	Other	Total
2	7	13	1	0	2	0	25

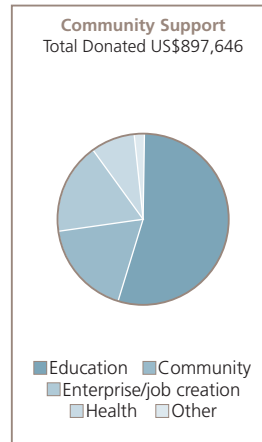
### Community Support

In 2003, Xstrata Alloys invested over US\$890,000 in support of community projects and other initiatives detailed below.

The promotion of improved education and the support of education projects was a high priority for Xstrata Alloys during the year.

- Rhovan provided support to enable members of the Community Development Forum to attend training courses to equip them with business management skills as well as providing other financial support for schools, churches and other community events.

- Adult Basic Education and Training (ABET) practitioners teach adults to read and write. Vantech continued to respond to the challenge to educate the illiterate by supporting ABET facilitators and two facilities in the local community. Ten learner practitioners will complete ABET level 1 exams during November 2003. Rhovan recently recruited a further two ABET learner practitioners from the local community. Training will commence under the auspices of the MQA (Mining Qualifications Authority).
- the Vantech Human Resources Manager was appointed as a Council Member for the Sekhukhune Further Education and Training College. The Steelpoort producers' forum was consulted to determine local industry labour needs so as to train and develop members of the local community.



Vantech has supported a water development programme in the Phasha and Kalkfontein communities, which has seen four additional boreholes drilled in the local area and the boreholes equipped with electric pumps and water storage tanks.

**Swiss SA Cooperative initiative**

The Swiss SA Cooperative received US\$35,680 towards development projects from Xstrata Alloys. As an invited member of the Swiss Business Council, Xstrata South Africa is in a position to be directly involved in the identification and selection of the organisation's projects going forward.

**Rhovan Community Projects**

The Community Development Forum (CDF), initiated by Rhovan in 2000, held regular meetings with management during 2003 to determine and plan community development projects and needs. Attempts were made to involve other stakeholders including the local quarries and the representative councillor of the Rustenburg Metropolitan Council. Meetings with the Community Development Forum were held quarterly to discuss new ventures, initiatives, problems, and progress on projects. Projects initiated by the CDF included:

- upgrading washroom facilities in five Ba Magopa villages schools at a cost of US\$95,500; and

- planning for a centralised sports and recreational facility in Bethanie and adjacent villages. The CDF and management will implement the project in stages with the involvement of all other stakeholders and contributors.

Rhovan management is maintaining the principle of 'the best help is self help', with the skills transfer required to manage and implement local projects a meaningful example of local Black Economic Empowerment.

Some examples of Rhovan's support of local community businesses included:

- establishing and supporting the local 'Bethanie Recruitment Agency' that provided 814 fixed term employees during 2003;
- hiring the Ipelegeng Bus Services to transport local employees to work;
- using the Bethanie Taxi Association to transport employees outside normal working hours;
- awarding the tender for running the company cafeteria to a Historically Disadvantaged entrepreneur; and
- helping a cleaning and landscaping business become operational by assisting with tendering, business planning and training (see case study).

Nonyameko Mxatihule and Didinye Bothalezi from the Ratanang Care Centre 2 enjoy their daily lunch

The 'Bethanie Landscaping and Cleaning Services' is creating jobs »



## COMMUNITY CASE STUDIES

### » Ratanang Care Centre 2

The success of the Ratanang 1 Care Centre (refer to case study 2002 HSEC report) led to the establishment of another Care Centre in the Sunrise Park area in September 2003. Community meetings in this area, (a main area supplying labour to the Rustenburg plant), indicated that there was a dire need to establish another orphan's centre. Therefore a house and the adjacent property was purchased for US\$15,920. The company worked with the Department of Social Welfare to work through the list of over 240 applicants to identify those in most need. A total of 100 orphans are currently accommodated each day throughout the week. The centre's main objective is to provide nutritious meals and stimulation as well as a safe environment. The Department of Education is currently investigating the possibility of providing the 'Grade R' curriculum in order to prepare the children for Grade 1. Both Care Centres operate on a monthly budget of US\$2,650. Xstrata is trying to make the centres more sustainable as well as enhance the current qualifications of the carers through further education.

### » Empowering the Local Youth of Bakwena-Ba-Mogopa

Like many other historically disadvantaged communities, the Bakwena-Ba-Mogopa Community faced the problem of jobless youth. In close cooperation with the Tribal Authority, Xstrata Alloys facilitated the establishment of the 'Bethanie Recruitment Agency', through which the Company has contracted to employ all fixed term employees. To date some 1,300 workers have been employed, contributing US\$729,530 to the community. The Agency is now expanding beyond the immediate Company and tribal area. A non-related company in Brits has requested the Agency to submit a tender for 'Gardening and Cleaning' for their entire plant, which will create jobs for 20 workers and generate an income in the excess of US\$159,000 annually. Rhovan has assisted the Agency in putting together the business plan, budget and presentation required to secure this tender and will also provide the necessary business training. One of the additional outcomes of the establishment of the Agency has been the identification of further projects to facilitate local empowerment of disadvantaged groups. One example is provided by 'Bethanie Landscaping and Cleaning Services', a company that received start-up and tender advice from Rhovan and which was subsequently awarded the plant and offices cleaning contract.





## CHIEF EXECUTIVE XSTRATA COAL

In last year's report, Xstrata Coal extended its reporting to include our South African operations and this year's report sees the inclusion of our Queensland coal operations. Xstrata Coal is now the world's leading exporter of thermal coal as well as being a significant exporter of coking coal, and this has led to increased HSEC responsibilities, commensurate with our expanded operations.

2003 was a year characterised by growth – not only growth in our operational base, but also growth in our HSEC achievements and commitments. Most importantly, there was an improvement in safety performance across our operations, year-on-year. Xstrata Coal New South Wales (XCN) exceeded its target of a 20 percent reduction in both LTIFR and TRIFR by 13 percent and 7 percent respectively, while Xstrata Coal Queensland's (XCQ) TRIFR improved by 27 percent. Xstrata Coal South Africa's (XCSA) LTIFR improved by 16 percent and TRIFR by 29 percent.

Despite our unremitting focus on maintaining a safe and healthy workplace, one of our employees was fatally injured at XCSA's Boschmans Colliery. This sad event is unacceptable and I retain my belief that injuries are preventable. As a result of a subsequent investigation, the risk management process for fall of ground hazards has been enhanced, which I trust will make our workplace a safer one.

Two years ago I introduced the Chief Executive's Annual Safety Award at our NSW operations. Bulga Coal was this year's recipient of the Award following its stellar safety performance, which saw a reduction in LTIFR and TRIFR by 74 percent and 61 percent respectively. This demonstrates it is always possible to improve our safety performance and I commend Bulga Coal on setting this impressive benchmark. 2004 will see the expansion of this Award to include our other operations.

In the latter part of the year I commissioned a comprehensive safety audit focused on major hazards. Outcomes of this review are being incorporated into our Safety Management Systems and I am confident they will flow through to our safety performance in 2004.

Employee health continues to be a priority particularly at our South African operations where HIV/AIDS remains the most significant health issue. 2003 saw the undertaking of 'knowledge, attitude and practice' surveys, which received



exceptional employee support. This information will be the foundation for the next phase of our focus on HIV/AIDS.

We set ourselves some challenging targets for the continued implementation of the Xstrata Coal EMS in South Africa during 2003, and I am pleased to report that these goals were achieved. XCN also made significant progress in respect to environmental performance, with the successful commissioning of the Bobadeen Irrigation Scheme at Ulan Coal Mine being a stand-out achievement.

Sustainable development is crucial to our industry and we have made a firm commitment to this with the creation of a new position of General Manager Sustainable Development. We look forward to adopting an increasingly proactive role in this area, in terms of industry projects and research, with a focus on clean coal technologies, water conservation and conservation of biodiversity.

A key focus area going forward, in terms of community support and development, is youth education. Late in 2003, Xstrata Coal committed to sponsoring the NSW Premier's Teacher Scholarships and contributing to the AusIMM Education Endowment Fund. We will also be introducing an apprentice training programme at XCQ, following the success of a similar programme at XCN.

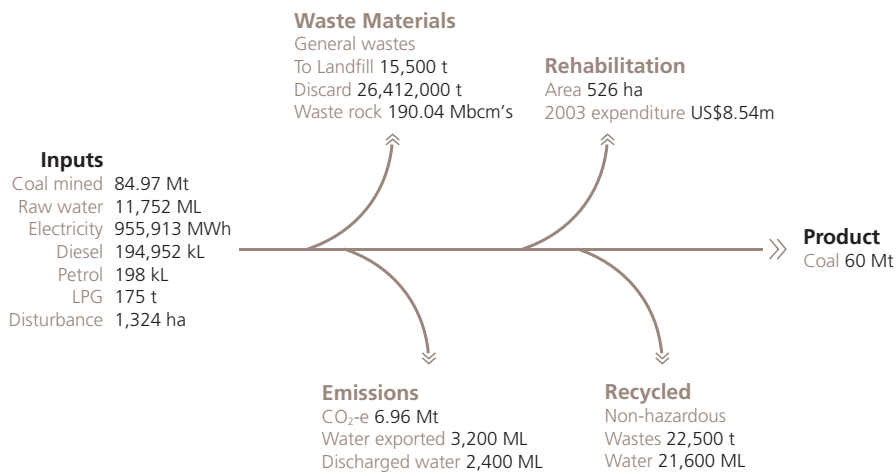
As our business expands, we find that there are increasing opportunities to share information and to learn from each other's experiences. During 2004 we will be working hard to improve our HSEC performance across the business, rather than at any one operation in isolation. Meanwhile my unchanging priority is to achieve an injury-free workplace and I am confident of the support of all our people in achieving this.

A handwritten signature in dark ink, appearing to read 'Peter Coates'. The signature is fluid and cursive, written over a light-colored background.

**Peter Coates**

# COAL

## KEY 2003 STATISTICS



### Economic (Pro forma US\$m)

Turnover (own production)  
1,757.9

EBIT (pre-exceptionals) 137.9

### Health and Safety

Fatalities 1  
TRIFR 20.0  
LTIFR 6.7  
DISR 803.0  
Prosecutions 0  
Fines US\$180,000  
Occupational diseases 34

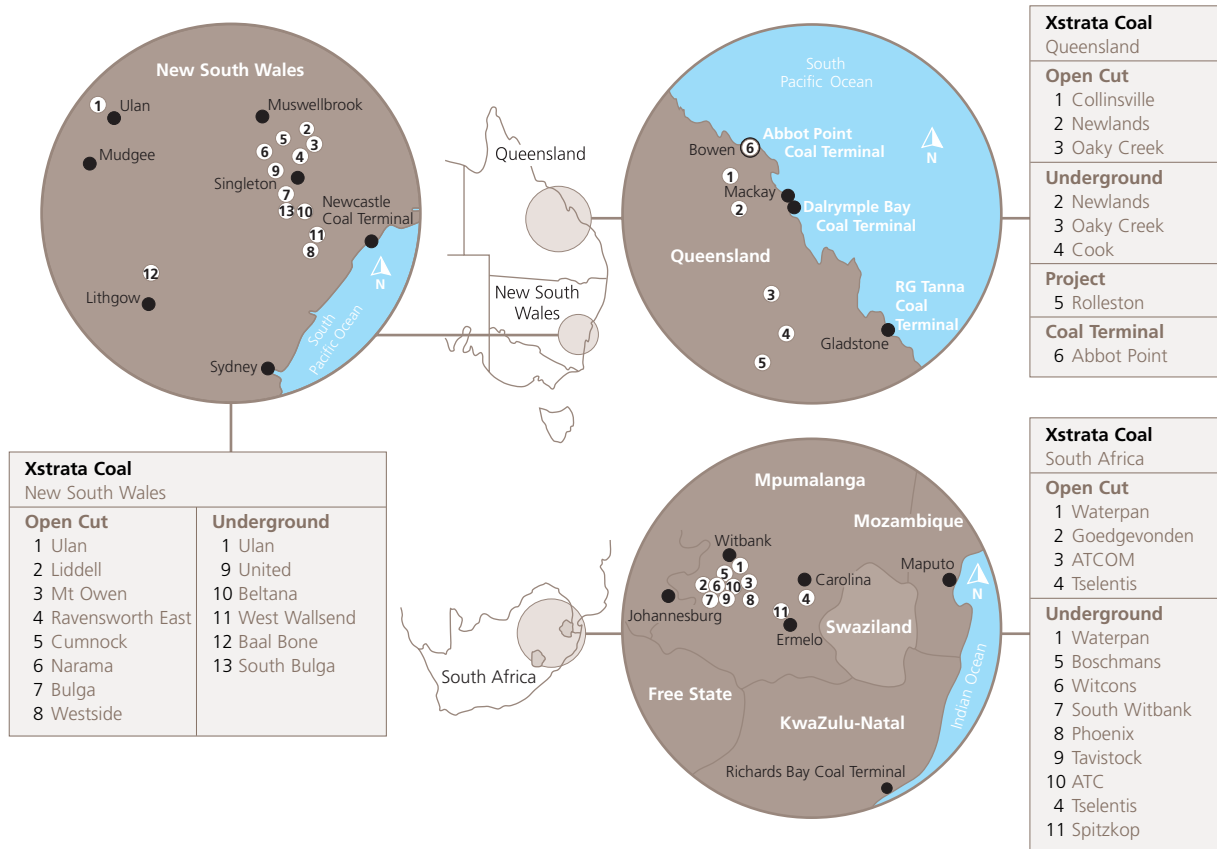
### Environment

Total Raw water use (ML) 11,752  
Total energy use (PJ) 10.99  
Total CO<sub>2</sub>-e (Mt) 6.96  
Land disturbed (ha) 1324  
Land rehabilitated (ha) 526  
Regulatory actions 1  
Prosecutions 0  
Fines US\$974

### Community

Number of employees and full  
time contractors 9,945  
Total Donations US\$1.45m  
Complaints 115

OPERATIONS



KEY PERFORMANCE INDICATORS

Coal	2003 Target	Performance	
<b>Xstrata Coal's key objective is zero fatalities. With 1 fatality in South Africa in 2003, this was not achieved.</b>			
<b>Health and Safety</b>	New South Wales	Achieve a further 20 percent reduction in TRIFR on 2002	
	Queensland	No 2003 targets set	
	South Africa	LTIFR less than 1.7 per million hours worked	<b>Not achieved</b> (LTIFR of 2.04 per million hours worked)
<b>Environment</b>	New South Wales	No Category 3 environmental incidents	<b>Not achieved</b> (one Category 3 incident)
	Queensland	No 2003 targets set	
	South Africa	Complete external review of mine closure cost assessments	<b>Achieved</b> (developed an auditable closure cost assessment database)
<b>Community</b>	New South Wales	Reduce community complaints	<b>Not achieved</b>
	Queensland	No 2003 targets set	
	South Africa	Establish community interaction structures	<b>Achieved</b> (XCSA joined existing community structures i.e. Economic Development forums)

2004 Target
Zero fatalities
Achieve a further 20 percent reduction in TRIFR on 2003
Achieve a further 20 percent reduction in TRIFR on 2003
Achieve a further 20 percent reduction in TRIFR on 2003
No Category 3 environmental incidents
Complete implementation of the EMS
Complete implementation of the EMS
Implement site Social Involvement Plans
Develop a Social Involvement Plan
Advancing Black Economic Empowerment farming concept schools development programme

## HEALTH AND SAFETY

### Health Performance

Xstrata Coal believes that work-related illnesses are preventable through the implementation of appropriate control strategies. During 2003, 35 occupational disease cases were reported. XCSA continued to introduce programmes specifically to reduce noise induced hearing loss and dust induced health risks.

At the South African operations, HIV/AIDS remains the largest employee health issue. In 2003 'knowledge, attitude and practice' and HIV prevalence surveys were carried out at all collieries. Employee support for these programmes has been exceptional and the information obtained through these projects provides an excellent foundation for the next phase of this work.

In 2004, a HIV/AIDS intervention programme will be implemented, that will include voluntary counselling and 'Know Your Status' testing. Employees participating in voluntary counselling and testing will be provided with appropriate clinical services, which will include antiretroviral treatment where applicable.

XCSA continued to be an active participant in the HIV/AIDS Powerbelt Initiative together with communities and other coal mines in the area. 2003 saw a focus on prevention education with over 140 peer educators conducting community education meetings. As a result of this success the number of peer educators will be increased in 2004.

The majority of XCQ injuries relate to sprains and strains predominantly arising from poor manual handling practices and previous musculoskeletal issues. Physiotherapy has been arranged to accelerate recovery from these injuries and, in 2004, prevention of manual handling issues will be targeted and individual biomechanical capabilities assessed.

As part of its employee health programme, XCN introduced a Fitness for Work Policy and a range of associated standards, covering areas such as Drugs & Alcohol, Medicals, Fatigue Management and Rehabilitation.

### Safety Performance

At the end of 2003, the Xstrata Coal Lost Time Injury Frequency Rate (LTIFR) was 6.7 and the Total Recordable Injury Frequency Rate (TRIFR) was 20. The implementation of key safety initiatives identified in the 2002 HSEC report led to a substantial improvement in safety performance within XCN with the target of a 20 percent reduction significantly exceeded in both LTIFR (33 percent) and TRIFR (27 percent). XCSA's LTIFR improved by 16 percent to 2.0 while its TRIFR dropped by 29 percent to 5.2. XCQ's TRIFR improved by 27 percent.

Three critical injuries occurred at Xstrata Coal's operations in 2003. At XCSA's Boschmans Colliery, a roof bolter assistant was fatally injured in a roof fall incident. Following this tragic event, steps were immediately taken to enhance the risk management process for fall of ground hazards. Strata control is one of a number of catastrophic hazards XCSA has focused on, with a dramatic reduction in fall of ground incidents over recent years.

The other critical injuries were the paralysis of an employee at XCSA's Arthur Taylor Colliery (ATC) who was driving a light delivery vehicle when it overturned on a public road after another vehicle pulled in front of him. At XCN's West Wallsend Colliery, an operator had his lower arm amputated when the load haul dump machine he was driving tipped over. Extensive analysis, which involved independent advice, has led to the implementation of various actions to enhance the safe operation of load haulers.

During 2003, Xstrata Coal achieved a number of notable safety highlights including:

XCN:

- a dramatic improvement in Bulga Open Cut's safety performance, including a 74 percent reduction in LTIFR and a 61 percent reduction in TRIFR;
- Cumnock Coal improved on its 2002 performance by recording its lowest number of Lost Time Injuries (4) over the life of the mine;
- a new common incident management database was introduced across the XCN operations.

XCQ:

- extensive work was carried out at XCQ's Oaky Creek underground mine to reduce the risk from frictional ignition on the longwall (see case study).

XCSA:

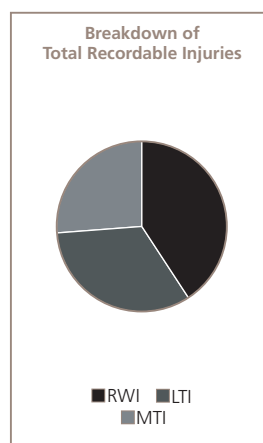
- Phoenix Colliery achieved an outstanding 90 percent improvement in its LTIFR from 7.15 in 2002 to 0.73 in 2003, while Tavistock Colliery reduced its LTIFR by 58 percent from 2.99 to 1.26 for 2003;
- Tselentis Colliery achieved its second year of operation without a lost time injury, while both Waterpan and Witcons Collieries did not incur a single lost time injury during 2003.

There were no incidents in 2003 that are subject to possible future fines or penalties by regulatory authorities.

### Safety Management Systems

Xstrata Coal's vision for safety is to operate injury free and be recognised as a leader in effective health and safety management. The reporting period saw XCN and XCSA building on their respective health and safety management systems and XCQ aligning its systems with the Xstrata Coal policy. All sites manage Health and Safety risk registers that are reviewed on an annual basis, while ongoing job specific risk assessments are carried out as required.

Each division has a comprehensive internal and external OH&S audit programme which assesses both compliance with the relevant system and performance. During 2003, Xstrata's General Manager HSE, accompanied by a safety and senior operational manager from each of the three divisions, audited the high-risk areas of energy isolation, ventilation, critical equipment, hazardous tasks and strata control at 12 sites across the coal business.



XCN's Safety Management framework consists of 43 standards, of which 42 were developed by year end and are being progressively implemented at all XCN operations. During the year, two XCN sites commenced a behavioural change training programme which proved highly successful (see case study). Other operations will consider introducing similar programmes on the back of this success. To build on the work already undertaken in the important area of human behaviour, XCN plans to conduct random surveys of employee attitudes in respect to safety in 2004.

The integration of XCQ included a compliance review of the operations' safety management systems to ensure alignment with the Queensland Coal Mining Act and Regulations. During 2004, the XCQ Safety Management System will be aligned with the Xstrata Coal OH&S Policy, and site Environment and Safety Management Systems will be integrated.

XCSA expanded its successful Health and Safety System, INSIKA by implementing an inspection and observation process to manage the hazards on their fatal risk registers. In addition, external engineers were utilised to carry out extensive audits on rail sidings, structures and electrical distribution systems. During 2004, the focus on behavioural change will continue with safety teams developing a culture of safe behaviour.



## SAFETY CASE STUDIES

### « Frictional Ignition at Oaky No. 1 Mine

Frictional ignition is a significant risk that many coal mines across the world have to manage. Frictional ignition occurs when high levels of methane in the coal seam are ignited by a spark, usually a result of the cutting tool striking the rock above or below the seam. The ignition source has to have sufficient energy and be in contact with a flammable mixture of gas for a sufficiently long period of time for the gas to ignite.

Four frictional ignitions have occurred in the longwall at XCO's Oaky No. 1 operations. With known control methods proving inadequate to reduce the risk of further occurrences, Oaky Creek Coal commenced research, trials and monitoring in an attempt to further minimise the risk of frictional ignition. The scale and nature of the research has not been previously conducted anywhere in the world.

The work has seen modifications to the equipment and mining sequence, as well as increased gas drainage via both underground in-seam gas drainage and, over the longer term, surface in-seam gas drainage. Employees have been provided with training regarding frictional ignition management, which will be ongoing while the control methods are enhanced. These increased controls have reduced the risk of frictional ignition to the point where production levels have returned to that prior to the incidents. Additional or improved controls are expected to further reduce the risk.

### « West Wallsend and Ravensworth Operations Behavioural Management Training

During the year in review, both West Wallsend and Ravensworth operations conducted a behavioural training programme for all employees. The philosophy behind this programme is that it is necessary for an individual to understand and personally commit to changing their attitude towards working safely. This knowledge enables them to change their overall behaviour where necessary. The training requires all participants to complete a questionnaire that assesses an individual's safety attitudes in respect to:

- safety control (a measure of how much 'control' an individual believes they have over their own and other people's safety);
- risk avoidance (a measure of an individual's ability to perceive a safety risk);
- stress tolerance (a measure of an individual's stress awareness, recognition of its effects and how effectively an individual copes);
- driver attitude (a measure of attitude towards safe driving and the use of all machinery); and
- quality orientation (a measure of an individual's attitude towards quality management).

Qualified facilitators conducted the training and, during the session, provided personal feedback to each individual on the results of their questionnaire. Individual results are confidential; however group results are shared and re-surveyed a number of times as the programme progresses. Following the encouraging results of these programmes, XCN intends to randomly survey attitudes across all its operations in 2004 to learn more about their attitudes to safety, and encourage greater awareness.

≈ Paul Bryan, Longwall Superintendant Oaky No. 1, together with other members of the Oaky No. 1 team attending training on frictional ignition

« West Wallsend employees attended a series of interactive behavioural management workshops in 2003

## ENVIRONMENT

### Land and Biodiversity

Xstrata Coal requires each operation to have procedures in place to ensure minimal land disturbance, with any land that is disturbed to be rehabilitated to an agreed land use. The majority of operations maintain digital ownership and disturbance registers. A key achievement for the year was Newlands Mine securing regulatory approval of its innovative rehabilitation landform design after five years of monitoring and design improvements.

XCN uses Flora and Fauna Management Plans to manage biodiversity resources potentially affected by its mining activities. For example, Mt Owen Mine is proposing a comprehensive Biodiversity Offset Strategy as part of its current EIS for the extension of existing operations. This strategy involves the establishment and long-term conservation of an additional 415 hectares of woodland.

All new projects are required to undergo biodiversity impact assessments. The Rolleston Coal Project serves as an excellent example whereby Environment Australia approved a management plan to protect an endangered ecological community of Bluegrass. The Rolleston rehabilitation programme will include the re-establishment of at least 130 hectares of Bluegrass. In South Africa fauna and flora studies are included in environmental impact assessments undertaken for regulatory approval purposes. To date no endangered species have been identified on any XCSA operation.

### Water

Xstrata Coal's operations focus on reducing fresh water consumption by reusing and recycling water wherever possible, with some sites sharing water to further reduce water consumption. For example, within XCN, Beltana underground mine pumps water to the adjacent Bulga Open Cut. With the integration of the XCQ operations Xstrata Coal's total raw water consumption of 11,752 ML increased 161 percent over 2002.

Where mine water accumulated on site exceeds mine water consumption, water may need to be discharged under licence, as is the case at Newlands, or discharged under the Hunter River Salinity Trading Scheme by those XCN operations that participate in the Scheme. An innovative water management programme has been developed and implemented at Ulan Coal Mine where the Bobadeen Irrigation Scheme uses surplus mine water to irrigate 242 hectares of cattle pastures commissioned at a cost of US\$4.5 million. The Scheme was officially opened by the NSW Minister for Mineral Resources in late 2003 and was a finalist in the Hunter Coal Industry Environmental Management Awards.

Other significant water management achievements included:

- XCQ developed a computer-based surface water management modelling tool to improve the reuse of stored water and enhance flood level knowledge;
- XCSA achieved a 65 percent reduction in raw water consumption since 2002; and
- XCSA developed an electronic groundwater balance system to improve modelling and improve the reuse of stored underground water.

### Air

With the addition of the XCQ operations, Xstrata Coal's greenhouse emissions rose by 31 percent over 2002. Xstrata Coal recognises that methane is the major contributor to its greenhouse gas inventory and sites are focused on minimising the release of methane to the atmosphere. Xstrata Coal is involved in a number of Australian industry greenhouse gas initiatives including GGAP, CCSD, CO2CRC and COAL21, and has recently joined the Australian Emissions Trading Forum. XCSA is a member of CoalTech 2020, a coal industry initiative promoting relevant industry research including the measurement of greenhouse gas emissions.



## ENVIRONMENT CASE STUDIES

### ⌘ XCSA's Waste Management Programme

To ensure XCSA operations are adopting a best practice approach towards waste management, an assessment was conducted at five operations, grouped into the Tweefontein division, to collect information on the generation of waste and current methods of storage, transport, treatment and disposal.

An independent waste management company has since been appointed to improve the handling and recycling of waste.

This measure has seen a marked improvement in waste management at these operations. Drums are situated at most points of waste generation at the mines and are emptied into waste collection bins for collection by the waste removal company. All the drums and bins are colour coded according to the types of waste generated. With this management at the source system the collection, storage and recycling of waste at Tweefontein has substantially improved.

Also, two bioremediation landfarms were established at ATCOM (iMpunzi Division) to manage oil spills, oil and grease waste. Soil contaminated with hydrocarbon waste is transported to the landfarm and bacteria and nutrients are worked into the soil in order to break down the oil products into CO<sub>2</sub> and H<sub>2</sub>O. At present approximately 213 litres per month of hydrocarbon waste is being successfully converted through the landfarms, thus avoiding the necessity to dispose hazardous waste at a licensed hazardous waste facility while enhancing environmental awareness and responsibility among employees. The landfarm has been implemented on a trial basis and is continuously monitored to assess its performance.



### ⌘ Beltana Vineyard Research Project

Beltana underground mine is currently undertaking a research programme in conjunction with NSW Agriculture, the University of New England and Smart Viticultural Services to assess the impact of underground mining on vineyards. The programme involves the collection of baseline data from vineyards overlying the underground mining operation to determine the effect, if any, on vine production and physiology. This programme will be continually refined, following ongoing consultation with local viticulturalists and vignerons.

Specifically, the programme includes:

- measuring fruit yield, quality and canopy pruning weights to determine individual vine response;
- determining trellis distortion by measuring wire strain;
- monitoring soil characteristics using electromagnetic soil survey techniques;
- monitoring vine productivity via yield mapping;
- monitoring vine canopy vigour via satellite imaging; and
- regular grower forums to communicate outcomes and assist with interpreting baseline data response.

The local community, in particular viticulturalists and vignerons, has been highly supportive of this innovative research programme. Beltana hopes the programme will be a blueprint for other mining operations facing similar challenges.

« Piet Wessels, Environmental Co-ordinator iMpunzi Division, inspecting the bioremediation landfarm at ATCOM

» David O'Brien, Environmental Co-ordinator Beltana Mine, and Ken Bray, local vineyard manager, inspecting one of the vineyards involved in the Beltana Vineyard Research Project

A number of methane reduction initiatives are currently under way or planned, including:

- using fugitive methane emissions from old workings to power the proposed Envirogen Power Station at Teralba, reducing emissions by 250Kt CO<sub>2</sub>-e per year;
- Bulga and United Colliery undertaking waste gas utilisation studies; and
- potential power generation projects identified at United, West Wallsend and Oaky Creek.

Xstrata Coal plans to spend in excess of US\$9 million over the next five years on clean coal technology, methane utilisation and carbon sequestration.

### Waste

Xstrata Coal's operations all focus on reducing waste to landfill, while maximising the recycling of scrap metals, oil and batteries. XCSA is using bacteria to remediate waste oil (see case study).

### Noise/Vibration

All open-cut operations have systems in place to monitor overpressure and vibration following blasting, with any exceedences immediately reported to relevant regulators. At XCO's Collinsville Mine, a voluntary blasting environmental management programme was agreed with the Queensland Environment Protection Agency and subsequently implemented. The successful programme has resulted in no further vibration issues occurring.

### Energy

Xstrata Coal's energy consumption increased by 31 percent primarily due to the addition of XCO's operations.

Energy Use	
Source	GJ
Diesel	7,525,154
Electricity	3,441,285
Fuel Oil	11,734
LPG	8,665
Petrol	6,762
<b>Total</b>	<b>10,993,600</b>

### Environmental Incidents

During 2003, Xstrata Coal's operations reported 215 environmental incidents. The three Category 3 incidents related to:

- slumping of XCSA's Arthur Taylor Colliery discard dump with no serious environmental impact;
- cracking an Aboriginal axe grinding groove site in NSW due to longwall subsidence; and
- drilling too close to areas designated as endangered regional ecosystems in Queensland.

Xstrata Coal did not attract any notices, fines or prosecutions during 2003, however, the NSW Department of Environment and Conservation issued Ravensworth East with a Penalty Infringement Notice for a blast overpressure exceedence recorded at a nearby residence in 2002.

Category	1	2	3	4	5
	149	63	3	0	0

### Environmental Management Systems

The Environmental Management Systems (EMS) at each of the three divisions are consistent with the principles of ISO 14001 and all sites have developed environmental aspects and impacts registers consistent with the standard. The XCN operations of Ravensworth East and Narama are currently certified to the ISO 14001 standard.

Regular internal and external audits, as well as routine inspections, were conducted at all operations during the year assessing the EMS and the operations' performance in this respect. These audits showed a substantial improvement in EMS development and implementation and no serious issues were raised during external compliance and regulator audits. In addition, the EMPR for all the XCSA operations were independently assessed.

Appropriate approvals for the closure, decommissioning and final rehabilitation of three discontinued XCN operations are currently being sought. During 2003, XCSA completed a detailed closure cost assessment for each of its operations.

A number of operations either support or are involved in research projects. For example, Beltana is currently studying the impact of underground mining on vineyards (see case study).

## COMMUNITY

### Local community and stakeholders

Xstrata Coal is committed to fostering open and honest two-way interaction with the communities in which it operates, while contributing to the sustainability of these communities. Following a commitment made in 2002, XCSA and XCN have each developed Social Involvement Plans, with individual operations now in the process of developing site-specific plans. XCQ will prepare a Social Involvement Plan in 2004.

XCSA is adopting a proactive approach towards the complex social issues facing both the country and its employees, namely health and education. XCSA's longer-term vision is to make education more accessible to employees and members of its communities by establishing new Adult Basic Education and Training (ABET) Centres in local townships in the vicinity of Tweefontein and iMpunzi Divisions. The first community ABET Centre will be established in the Kwa Guga township in 2004 at a cost of US\$159,000.

Xstrata Coal is committed to diversity in the workplace. As part of this focus, XCSA has programmes in place to assist employees with career and personal planning and also offers gender-specific bursaries to women. An important initiative implemented by XCSA during the year was the provision of financial incentives to help employees move out of hostels and either buy or rent their own home in nearby towns (see case study).

### Engagement

The majority of XCN operations have established their own Community Consultation Committees as effective forums to discuss community complaints and any other issues. These Committees usually comprise community members, government agencies and operational personnel and are regarded by the wider community to be a proactive and useful initiative. A number of XCN and XCQ sites also use newsletters to keep their local community informed about developments at the operation. Information from XCN's operations is also publicly available in Annual Environmental Management Reports at local councils.

From time to time, operations also host Community Information Days. For example, in late 2003 Mt Owen hosted a Community Information Day as part of its comprehensive community consultation programme regarding the proposed extension of the mine. XCN was pleased to support a 'Teacher Mine Tours Programme', conducted by the NSW Minerals Council, aimed at informing teachers and students about the mining industry. At Bulga, a successful community engagement programme conducted over the last seven years resulted in the receipt of only two community objections, following the lodgement of the Development Application for the extension of underground mining.

In Queensland, Oaky Creek and Newlands continued to conduct their respective stakeholder meeting programmes with neighbouring landholders, regulators and local councils, while Collinsville introduced a specific programme to improve communication and interaction with the local community (see case study). XCQ and the traditional owners negotiated a Cultural Heritage Management Plan for the Rolleston Coal Project allowing the granting of a mining lease over the area.

XCSA operations hold regular meetings with interested and affected parties to discuss new developments and general issues. XCSA's involvement in local community structures is driven by a set of guidelines that include:

Schoolchildren from the local Collinsville State School planting trees with Joel May, Environmental Adviser Collinsville Coal Mine

Timothy Makwakwa, Training Instructor Tavistock Colliery, with his daughter Carol at their new house in Witbank, which they have moved to as part of XCSA's employee housing programme



## COMMUNITY CASE STUDIES

### ⌘ XCSA assists employees live in their own homes

XCSA's operations are situated in historically rural areas. In the past, this required employees to be located close to the operations where they were accommodated in hostels or company-owned housing. However, as mining and associated industrial activity increased, the area has evolved into an established coal mining region. This has resulted in the development of established towns and facilities, thereby removing the need for company hostels and housing. In response, XCSA has developed a sustainable domestic model to provide financial assistance to enable employees to live in their own homes with their families.

Since September 2003, more than 80 previous hostel residents have acquired two to three bedroom houses in the residential housing programme in the suburbs of Witbank. The movement of employees out of hostels in the past few months has confirmed that employees are supportive of the model to facilitate this. XCSA aims to give all employees this option by 2005.

### ⌘ Collinsville implements a Community Relations Programme

In 2002, Collinsville Coal implemented a Community Relations Programme to foster a more transparent and meaningful relationship with its local community. The community welcomed Collinsville's effort to improve stakeholder relationships. Face-to-face meetings were held with residents, schools and the Retired Miners Association to discuss community concerns and complaints, and prioritise requirements. In addition to this tailored programme Collinsville also has a scheme in place whereby a local high school student can do work experience at the mine to learn about environmental management.

Specific environmental concerns included spontaneous combustion to which Collinsville responded by implementing a daily monitoring programme of spontaneous combustion, with particular focus on the 'hot spots'. To reassure the community, the mine also conducted an assessment of spontaneous combustion in 2003. The results have been presented to both the workforce and concerned residents. In the latter part of 2003, Collinsville commissioned an independent company to conduct a community survey of both Scottsville and Collinsville. The survey was designed to provide insights into community perceptions and identify any issues not yet addressed. Collinsville plans to address any issues raised through community meetings, employee awareness training and school presentations. Plans are also in place to continue school group tours and presentations and encourage the participation of local schools in environmental monitoring projects. Collinsville is committed to raising community awareness of the mine and, in turn, a greater awareness at the mine of the community's needs.

## COAL

- focusing primarily on geographical areas close to the operation and communities where employees reside, with a secondary focus on areas that provide contract labour to the operations;
- concentrating on education and training, entrepreneurship, business development, infrastructure and healthcare (including HIV/AIDS); and
- alignment with the broader development plans of the areas, e.g. Integrated Development Plans of Local Municipalities.

### Community Complaints

Most of the 115 complaints received from local residents around Xstrata Coal operations related to noise and dust, followed to a lesser extent by blasting and water-related concerns. All complaints were investigated, with complainants personally contacted regarding the outcome of the investigation. Specifically, Mt Owen is working closely with its surrounding community following an increase in complaints regarding noise, dust and blasting. A number of controls have been implemented to address the community's concerns.

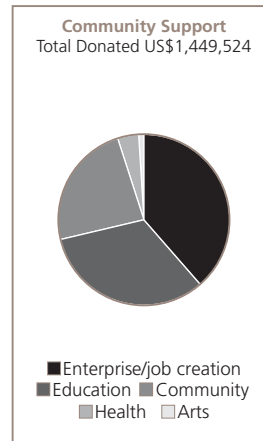
Noise	Blasting	Dust	Traffic	Fumes	Water	Other	Total
29	23	28	10	6	7	12	115

### Community Support

Xstrata Coal employs 9,945 people, including full-time contractors. This generates positive flow-on benefits for the communities in which it operates in the form of employment, goods and services. In 2003, Xstrata Coal invested US\$1.45 million in supporting community projects and events (see pie chart). Forty-six percent of XCSA's corporate development expenditure was directed towards supporting education initiatives.

A number of initiatives supporting the community during the year included:

- Xstrata Coal's Australian operations continued to support environmental programmes such as Landcare, local community groups, schools as well as recognised community events such as village fairs and festivals. Disadvantaged members of the community such as the Singleton Neighbourhood Centre also benefited;



- Oaky Creek committed US\$26,600 to fund the installation of air conditioning at the local Primary School allowing the school to access further funding from the State Government through the 'Cool Schools' programme; and
- XCSA donated 72 hectares of land and a large building to the Mpumalanga Department of Education and over US\$13,000 towards university bursaries for historically disadvantaged South Africans.

### Small to Medium Sized Businesses

Four years ago, XCSA introduced a programme to foster the creation of small and medium-sized enterprises in and around the town of Breyten. The purpose of this initiative was to help stem significant growth in unemployment.

The South African Productivity Institute is currently working with Xstrata Coal to assess the performance of these businesses and, where possible, to identify opportunities to improve their long-term viability. In 2003, XCSA provided additional investment capital and business advice to assist the Silidekuhle overall manufacturing project in expanding its successful business. In addition, XCSA is currently assessing the viability of initiating farming projects on land adjacent to mining operations owned by XCSA. The company believes that a number of skills can be imparted to members of the community, ranging from farming management through to produce marketing, equipment operation and general employment.



## COPPER

- « A pupil from Hualfin school No 288, preparing soil in the school hot-house
- » Peter Allum, Copper Smelter Manager, Mount Isa Mines, outside the copper smelter
- » Lamps and battery packs for underground workers at Mount Isa



## CHIEF EXECUTIVE XSTRATA COPPER

During 2003, Xstrata Copper Australia and Xstrata Copper Americas were formed following the acquisition of MIM Holdings. In January 2004, a single global copper business, Xstrata Copper, was formed. Xstrata Copper operates the Mount Isa underground mining and processing operations, the Ernest Henry open pit copper-gold mine and processing plant, the Townsville copper refinery and port operations, Bowen Coke and the Minera Alumbrera copper-gold mining and processing business in Argentina.

We are constantly striving to improve our safety and environmental performance and to increase our level of corporate social involvement (CSI). Xstrata Copper demonstrated an improvement in several health and safety key performance indicators in 2003. The Business recorded no fatalities and safety performances particularly at Alumbrera and Ernest Henry Mine (EHM) were noteworthy. Alumbrera reduced its Disabling Injury Frequency rate by 15 percent against 2002 performance and EHM received the top safety award in Queensland from the Department of Natural Resources and Mines.

However, we recognise that there is no room for complacency in our business and we are targeting a further improvement across all measures in 2004. The safety of our employees is paramount and we will continue to be vigilant in generating a safety culture in all our operations.

During 2003, the copper operations made significant progress in the area of environmental management. Over the next three years, progressive alignment of environmental management systems with the ISO 14001 standard will occur. This will include conducting internal and external audits during 2004.

Sulphur dioxide emissions from the Mount Isa copper smelter are continuing to reduce. Last year, emissions were down by 15 percent due to acid plant capture and process gas treatment. There were also 15 percent fewer community complaints about air quality this year over the previous year. Looking forward, we are investigating further opportunities to improve air quality in Mount Isa.

Due to drought conditions during 2003, a great deal of focus was placed on water recycling and fresh water conservation initiatives at the Australian operations. This resulted in a reduction in fresh water consumption



at Mount Isa by > 40 percent against 2002 performance. Environmental highlights from Alumbrera for 2003 included the construction and transfer to the Tucumán government of the first of three Urban Waste Treatment Plants as part of the power-line environmental compensation agreement.

Xstrata Copper's CSI focuses on local community support and development, stakeholder engagement, training initiatives, indigenous affairs and support for local health services. During 2003, key community development and training initiatives by Alumbrera included support to local agribusinesses to assist in improving their market competitiveness and providing scholarships for local students. Alumbrera continued to support the improvement of health services in areas near the mine site.

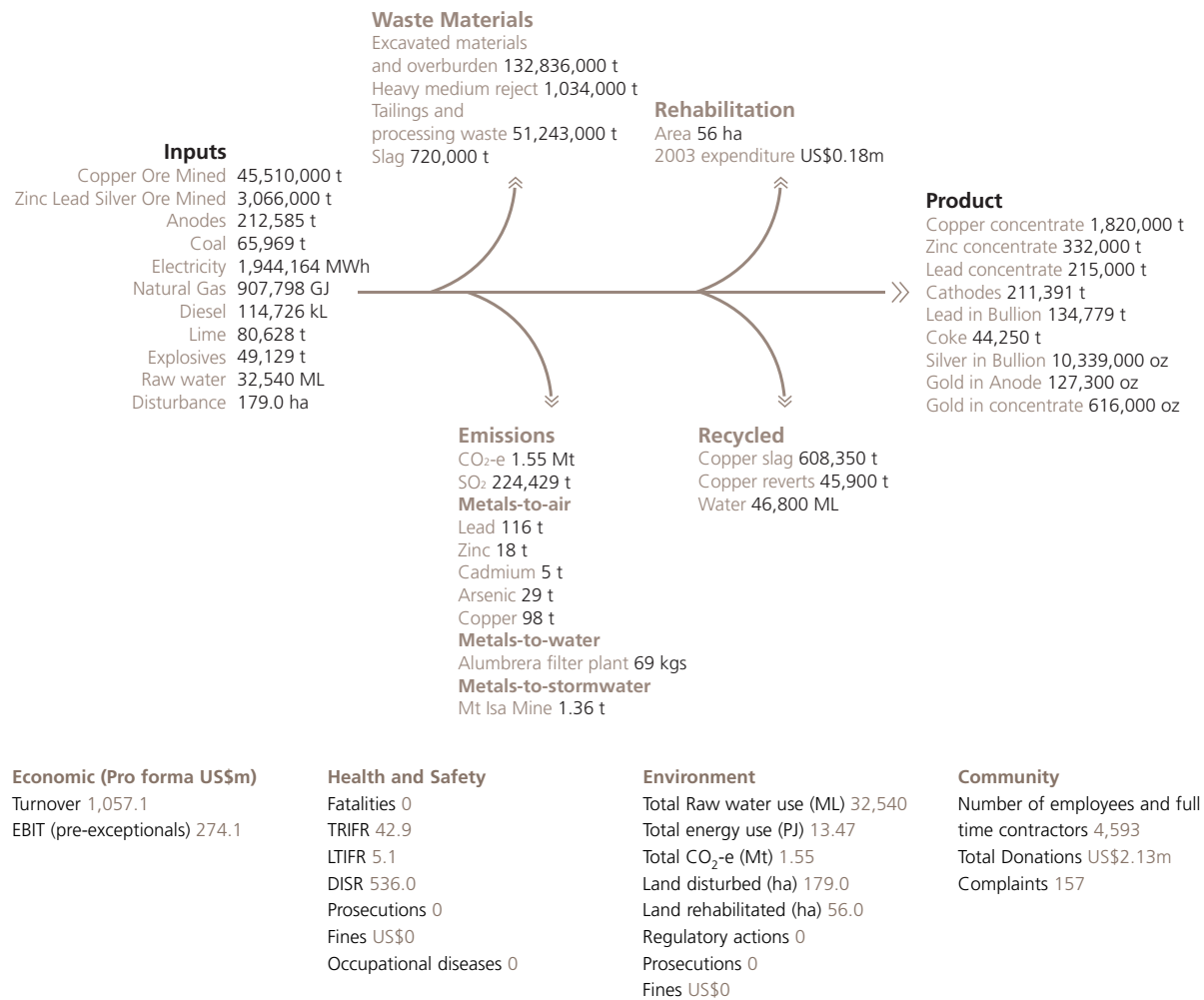
Our Australian copper operations are involved in a range of stakeholder engagement activities including regular meetings with local environmental authority representatives and school visits. Several of the operations conduct regular community briefings on their business and environmental performance. In Mount Isa, the community is also updated on the latest sulphur dioxide emission data at these briefings. At EHM we are involved in a community business partnership with local indigenous groups for concentrate transportation from the mine.

We see the integration of Xstrata's copper businesses as a further opportunity to accelerate improvements in our health, safety and environmental performance and to continue our commitment to the sustainable development of the communities in which we operate.

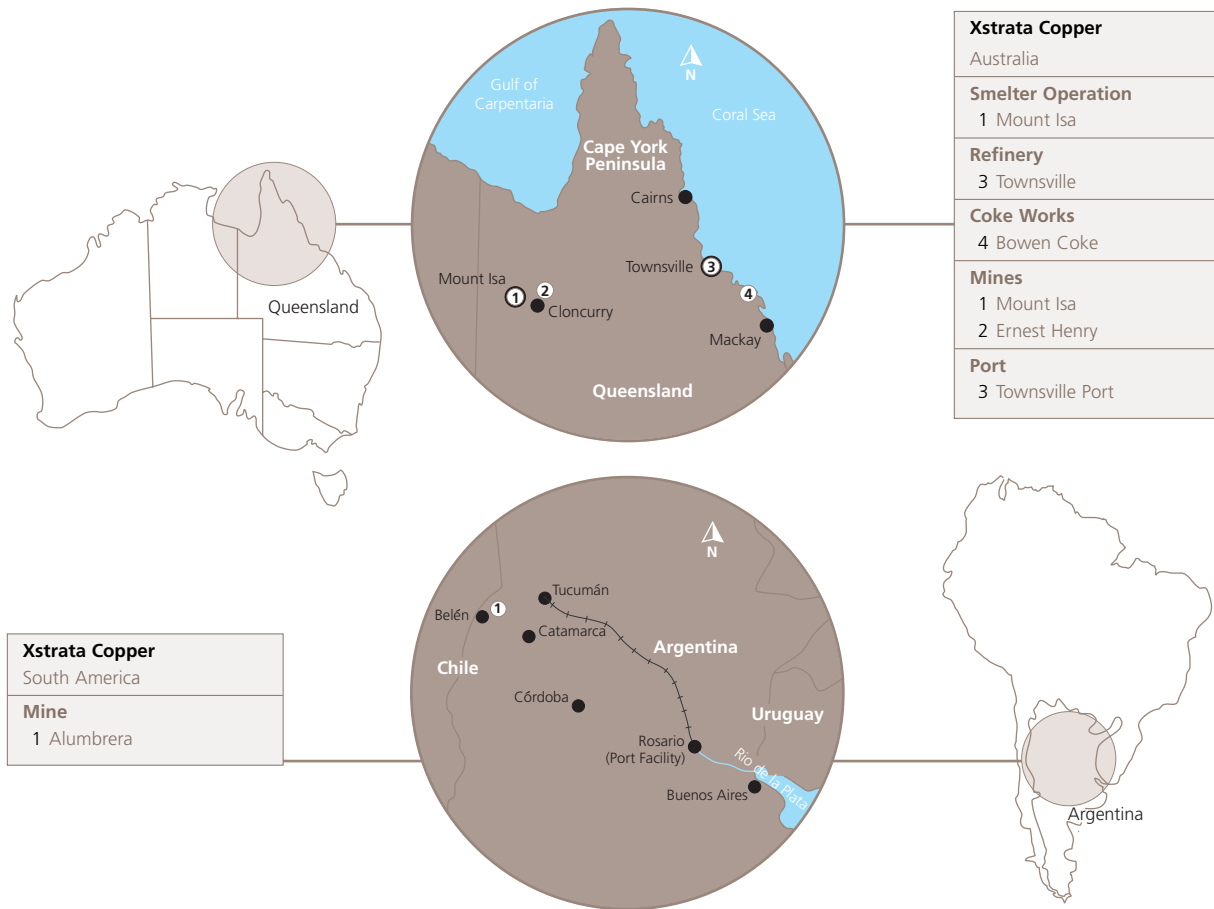
A handwritten signature in dark ink, appearing to read 'Charlie Sartain', written in a cursive style.

**Charlie Sartain**

## KEY 2003 STATISTICS



## OPERATIONS



<b>Xstrata Copper</b>
Australia
<b>Smelter Operation</b>
1 Mount Isa
<b>Refinery</b>
3 Townsville
<b>Coke Works</b>
4 Bowen Coke
<b>Mines</b>
1 Mount Isa
2 Ernest Henry
<b>Port</b>
3 Townsville Port

<b>Xstrata Copper</b>
South America
<b>Mine</b>
1 Alumbra

## KEY PERFORMANCE INDICATORS

Copper		2003 Target	Performance
<b>Health and Safety</b>	Xstrata Copper	Zero fatalities	<b>Achieved</b>
	Australia	Achieve a 20 percent reduction in TRIFR	<b>KPI not measured in 2002 (2003. actual 57.9)</b>
	South America	LTIFR of less than 2 per million hours worked (LTIFR < 2)	<b>Not achieved (4)</b>
<b>Environment</b>	Australia	Reduce fresh water consumption by 25 percent at Mount Isa Mines	<b>Achieved</b>
	South America	Complete capping simulations for the tailings dam storage facility and waste rock dumps.	<b>Achieved</b>
<b>Community</b>	Xstrata Copper	na	

2004 Target
Zero fatalities
Achieve a 20 percent reduction in TRIFR
To achieve a LTIFR of less than 3 per million hours worked (LTIFR < 3)
Review and update decommissioning plans to conform with current Life Of Mine plans;
Re-calibrate the Vis Vis river groundwater model
Develop a Social Involvement Plan

## HEALTH AND SAFETY

### Health Performance

Minera Alumbra's (Alumbra) Quarterly Health Monitoring Programme includes noise, dust, lighting and ergonomic surveys that go beyond the minimum standards required by law. The results of those surveys allow for preparation of a risk map that forms the basis for the employees' annual medical examination.

Activities related to health and hygiene at Australian operations in 2003 included:

- baseline reviews of inspirable and respirable dust and noise at Mount Isa;
- review and upgrade hygiene monitoring programmes at Ernest Henry Mine (EHM) and the Townsville Operations;
- preliminary work on implementation of a special community blood lead programme at Mount Isa focusing on the 0 to 60 month age group; and
- the blood lead management system at Mount Isa was reviewed concluding that the current blood lead programme is effective. Removal levels of 38 µg/dl (end 2004) and 35µg/dl (end 2005) for female workers of non-reproductive capacity and all male workers have been targeted.

During 2004, Alumbra plans to develop a number of health training programmes that will include workplace fatigue management and the correct use of personal protective equipment. The medical centre facilities were extended and upgraded and noise and dust surveys were carried out in specific locations.

No occupational diseases were recorded during the year.

### Safety Performance

During 2003, Ernest Henry Mine won the Queensland Department of Natural Resources and Mines overall award for Best Safety Management for Queensland and received a commendation in the MINEX Excellence Awards for Safety and Health awarded by the Australian Minerals Council.

There were no serious or permanent disabling injuries during the year. In 2003, Xstrata Copper's Lost Time Injury Frequency Rate (LTIFR) was 5.1. The Australian operation's LTIFR of 5.5 was down from 6.7 in 2002 while the 2003 LTIFR at Alumbra was 4.3. Alumbra has set a target of achieving a LTIFR of less than 3. The majority of LTI's related to musculoskeletal, sprain and strain type injuries. During 2004 a series of sprain and strain injury prevention strategies will be implemented.

A total of 117 High Potential Risk Incidents occurred during 2003. All critical and high potential risk incidents are investigated and remedial actions commensurate with the risk are implemented to prevent recurrence. There were no Health and Safety related fines, regulatory actions or prosecutions imposed on the business.

There was a large amount of work undertaken to map the previous MIM Holdings data to the Xstrata definitions. This has resulted in a number of changes to the way incidents are reported, classified and investigated and has set a clear pathway for future improvement in performance.

## HEALTH AND SAFETY CASE STUDIES

### Ernest Henry Internal Safety Awards

The intent of the Ernest Henry Internal Innovations Awards Scheme is to encourage both contractors and Ernest Henry employees to submit 'initiatives and innovative ideas focusing on the exchange of safety and health improvement or solutions to specific safety and health problems'.

Quarterly nominations promoting innovative ideas or initiatives are called for from individuals or crews indicating the benefit, originality, application, transportability to other industry and cost-effectiveness of the initiative. During 2003, 19 nominations were received and four awards were presented. Quarterly finalists, who are judged by their peers and rewarded for their efforts, qualify for an annual internal award and nomination in the Minerals Council of Australia National Safety and Health Innovation Awards.

A notable achievement was the development of a platform to assist replacing grader cutting edges by the Mine Maintenance Contractors. The use of a fork lift to lift the platform reduces manual handling and the potential for back injuries while the time taken to perform the task is reduced by approximately 30 percent. The platform would be suitable for mining, heavy earthmoving equipment operations and the construction industry.

### Townsville Port Operations – Risk Reduction

The Port Operations at Townsville are responsible for loading of a number of concentrate products onto ships destined for overseas markets. The product arrives by rail with each wagon unloaded (or tipped) into a hopper and then stored in a shed. Due to their high usage, the arms that support the rail wagons gradually wear and need to be replaced periodically.

The current procedure for changing the tippler arms involves extensive manual handling in a confined area providing the potential for injury. A risk assessment was undertaken to investigate the potential to eliminate the use of the wagon altogether. From this risk assessment and the implementation of its findings, several hazards were eliminated and additional benefits gained by using a lift. The modifications have allowed a team of three employees to remove and replace two tippler arms in eight hours, manual handling has been reduced and inspections for wear and corrosion are easier.



- « Copper cathode is exported from Townsville port
- » Luke Hilton, Haskings Deering, removes grader blades at the Ernest Henry Mine Maintenance Workshop

### Management Systems

The Health, Safety and Risk management framework within Xstrata Copper's Australia operations is delivered through 17 standards consistent with Australian and internationally recognised standards that support the implementation of the Xstrata Copper Vision and Policy. The Alumbraera Safety and Risk Management Plan is supported by 30 Safe Work standards consistent with the International Five Star Safety System.

Both sets of standards form the basis for the development and application of the operational management systems and cover all operational aspects and activities that have the potential to affect the health and safety of people, risk to operations, or the community.

The Australian operations have a number of formal Occupational Health and Safety committees containing elected workplace representatives and nominated management representatives. At Mount Isa, a senior management safety meeting is conducted on a weekly basis to review high potential risk incidents and site-wide safety initiatives. At Alumbraera's daily Positive Attitude Safety System meetings, safety issues are reviewed with employees and safety improvements and action plans are discussed. Employees also participate in the revision of the safety procedures, standards and risk registers.

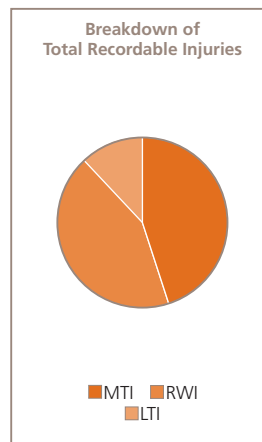
During 2003, internal audits were held at Ernest Henry and Mount Isa where nine of the 15 elements of the safety system were audited. At Ernest Henry, strengths included the management of contractors, suppliers and visitors, while there was room for improvement in hazard and risk management. Incident management amongst other elements at Mount Isa was sound, while change management required more work. Alumbraera's internal

audits focused on a number of issues including emergency preparedness and the storage and usage of hazardous substances, while an external audit indicated greater than 80 percent compliance with a range of standards including hazard and incident management.

All sites utilise Health and Safety risk registers that are regularly reviewed, while job-specific risk assessments take place as required. A full review of the Australian operations high level risk registers was undertaken during the transition from MIM Holdings to Xstrata, and a competent assurance reporting process is now in place across all operations which clearly links risk management with planning and budgeting activities.

Training at Alumbraera during 2003 included a hazard identification and risk assessment workshop as well as a course focusing on attitudes necessary to do tasks in a safe manner. The safety observation training module developed and run by Alumbraera facilitators in 2003 will continue in 2004. Managers and superintendents in Australia underwent competency training in the areas of risk management, incident investigation and communications.

A number of safety-related initiatives were introduced during 2003. Ernest Henry introduced a safety innovative awards scheme to promote safety ideas throughout the operation (see case study). Townsville Port has developed a safer way to maintain rail wagon tippler arms (see case study), while an Evans roller frame developed at the Ravenswood gold mine to address the issue of replacing worn return idlers has attracted broad industry interest.



## ENVIRONMENT

### Biodiversity and Land

All new projects undergo biodiversity impact assessments. Xstrata Copper mining sites have systems in place to ensure that disturbance does not occur without prior assessment and approval. Furthermore, all sites maintain digital land disturbance registers.

At the Copper Refinery in Townsville, an external investigation of the impacts of historic contaminant releases on downstream aquatic environments was prepared for the Queensland Environmental Protection Agency (QEPA). The study found limited impacts, and a formal environmental management plan to improve overall stormwater management at the operation was accepted by the QEPA.

### Water

The continuing drought in 2003 reinforced the importance of ongoing fresh water conservation. The most successful programme has reduced fresh water use at Mount Isa by greater than 40 percent since April 2002 (see case study). Ongoing initiatives at the Copper Refinery have reduced the generation of waste water from 50,000 litres to around 3,000 litres per day over the past three years.

Based on findings of the 2002 Rio Vis Vis groundwater model at Minera Alumbrera, one pumpback well and six monitoring wells were installed downstream of the tailings facility wall. The data collected from these wells, including

information on the geology, water quality and flow information from pump tests, will be included in the planned recalibration of the model in 2004.

### Land

Rehabilitation of disturbed land has been limited to date by the availability of suitable areas. Mount Isa continued progressive site cleanup and ongoing rehabilitation of stockpile and laydown areas on the lease and development of the greenbelt continued.

### Air Emissions

The Mount Isa processing facilities are the major source of air emissions in the Xstrata Group. Increased uptake of waste gases from the copper smelter by the WMCF acid plant reduced sulphur dioxide and arsenic emissions by 15 percent and 66 percent respectively relative to 2002 emissions. In the lead smelter, a US\$1.3m refurbishment of the main baghouse and sinter plant modifications reduced arsenic emissions from the lead smelter by 77 percent. Further emission reduction initiatives to be trialled in the lead smelter during 2004 include modifications to increase the bag-to-air ratio in the main baghouse.

Modified operating protocols for the Air Quality Control system at Mount Isa led to ambient ground level SO<sub>2</sub> concentrations declining. Concentrations of both SO<sub>2</sub> and lead in community areas of Mount Isa were within current licence limits.

### Waste

All Xstrata Copper sites have management systems to ensure compliance with all local, state and national regulations concerning general and regulated waste. Scrap metal and hydrocarbon recycling is a priority.

Waste rock characterisation associated with the proposed open cut expansions at Mount Isa will be used in the design of a waste rock block model enabling selective handling and encapsulation of acid generating waste rock types. The acid potential of future Alumbrera waste rock has been classified into seven categories, helping to determine the volumes of chemically reactive and benign waste rock, and assisting in life of mine scheduling of waste rock movement. Tailings and waste rock dump cover revegetation trials began in 2003 and tailings dam and

waste rock dump surface capping simulations were completed (see case study).

### Energy

Electricity, diesel and natural gas are the primary sources of Xstrata Copper's energy while 55 percent of Alumbrera's electricity is sourced from hydroelectric power.

Energy Use Source	GJ
Electricity	6,998,991
Diesel	4,428,435
Natural Gas	907,798
Coke	810,162
Fuel Oil	161,660
Naphtha	95,139
LPG	62,265
Wood	5,524
Petrol	4,130
<b>Total</b>	<b>13,474,104</b>

### Environmental Incidents

During the year there were 330 environmental incidents reported at Xstrata Copper sites. The 15 Category 3 incidents involved:

- fresh water overflowing from the Alumbrera Pipeline Pump Station emergency pond and the pH in the Filter Plant final effluent was marginally out of specification for less than one hour;
- three sewage releases and six stormwater releases at Mount Isa;
- water quality issues at Bowen Coke and the Townsville Port; and
- concentrate and tailings spills at Ernest Henry.

No operations attracted any environment related regulatory actions, fines or prosecutions.

Category	1	2	3	4	5
	154	161	15	0	0

### Management Systems

The environmental management systems (EMS) at the Xstrata Copper operations are based on ISO 14001. The Australian operations are targeting certification by 2006. During 2003, internal system implementation audits were undertaken at Mount Isa, Alumbrera and Ernest Henry. Consistent with the goal of ISO 14001 certification, comprehensive environmental aspects and impacts registers were completed by all the Xstrata Copper operations.

A QEPA audit of the Bowen Coke works found the site compliant. Alumbrera environmental personnel audited a licensed cement plant that is disposing of most of Alumbrera's hydrocarbon wastes and compliance was verified.

Ernest Henry and Alumbrera maintain a decommissioning plan and closure liability assessment. After a closure liability reassessment in 2003, Mount Isa substantially increased its closure provision. Decommissioning plans and associated financial provisions for all Xstrata Copper operations will be reviewed during 2004.

Environmental awareness training is presented annually to all Townsville operations personnel and their competency assessed. Alumbrera presents environmental re-inductions and has developed an Environmental Awareness Workshop for employees. At all other Xstrata Copper sites environmental awareness is a component of inductions and environmental personnel give presentations at toolbox talks and Health, Safety and Environment meetings.

During 2003, Xstrata Copper sites jointly sponsored two research projects by the Australian Centre for Mining Environmental Research into the application of indicators of rehabilitation success derived from the Landscape Functional Analysis approach as well as the application of the 2001 ANZECC water quality guidelines to ephemeral streams.

## ENVIRONMENT CASE STUDIES

### » Water Recycling at Mount Isa

To achieve a reduction in fresh water consumption at Mount Isa, operating departments nominated a fresh water conservation 'champion' accountable for driving fresh water conservation initiatives throughout their department.

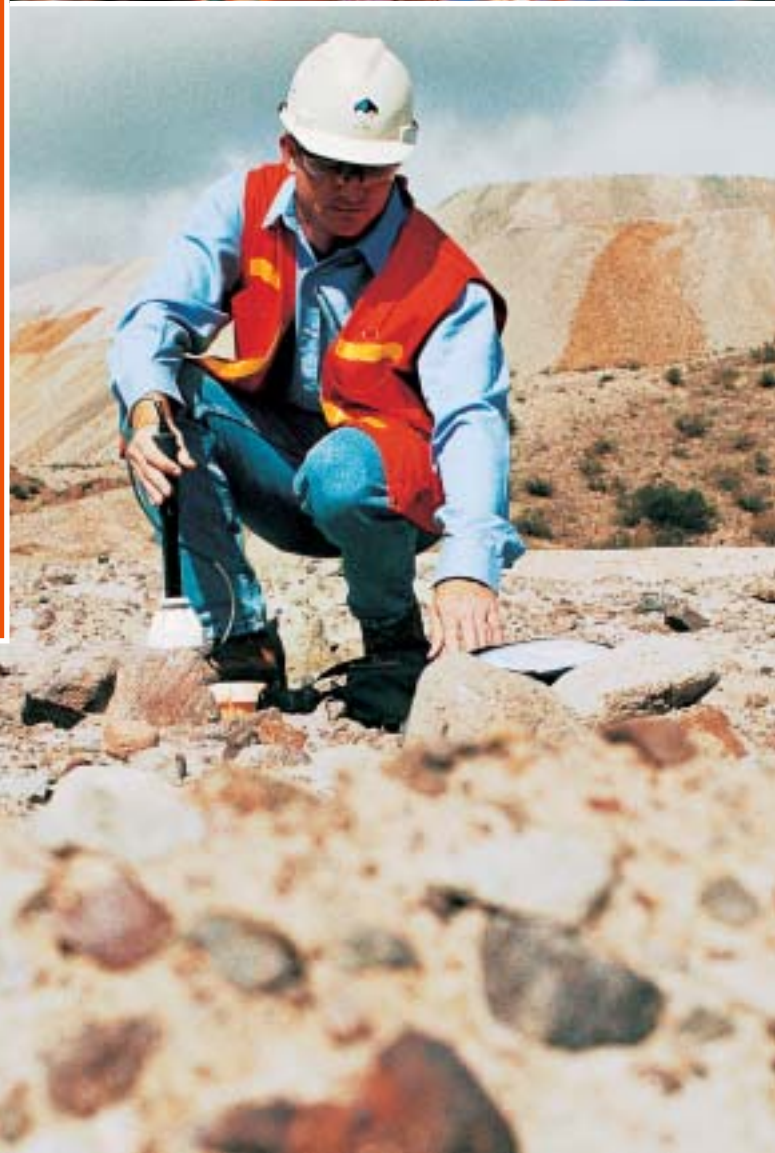
Some of the major initiatives were:

- the Mount Isa Lead and Copper mines have progressively replaced fresh water with recycled and aquifer inflow water reducing daily fresh water demand by 1.5-2 ML;
- George Fisher and Hilton underground mining operations have reduced fresh water consumption by between 2-2.5 ML/day by using recycled water;
- changes to the reagent addition quantities have allowed a fresh water reduction in the zinc and lead cleaner banks in the Lead Zinc Concentrator from 5.2 ML/day to 1.7 ML/day;
- capturing and reusing the Acid Plant's blowdown water has reduced fresh water usage by around 1 ML/day;
- the capture of Mica Creek Power Station blowdown and wastewater for road dust suppression and slag cooling saves between 1-1.5 ML of fresh water per day; and
- reviewing and updating the water metering system has greatly reduced the quantity of unaccounted water use and improved the reported usage for each department.

Through the promotion of fresh water awareness and the implementation of conservation initiatives, the programme has reduced department water consumption by over 40 percent from 24 ML a day to 14 ML a day since April 2002, with 80 percent of that reduction occurring in 2003.

### » Alumbra Capping Simulations – Tailings Dam and Waste Rock

Alumbra capping simulations for the tailings dam and top surface of the waste rock dump were completed. It is proposed to cap the waste rock dump with non-acid forming run-of-mine material, while alluvial materials that exist naturally upstream of the tailings dam will be used to cap the tailings dam. Modelling determined that 0.5 m of the respective potential capping materials is considered sufficient to prevent the infiltration of rainfall into the final landforms. A total of four capping trials were constructed based on results from mathematical modelling for final capping designs. Two trials were established on the waste rock dump with a capping thickness of 0.5 m and 1.5 m respectively, and two were installed in the tailings dam area, one with a 0.5 m cap, and the other without a cap. The final objective of the capping design is to prevent the infiltration of rainfall into the waste rock dump and the tailings dam after mine closure.



- « Stewart Goodwin, Zinc Lead Concentrator Shift Supervisor, Mount Isa Mines, opens a valve to allow water into the gland water tank
- » The Environmental Projects Engineer monitoring moisture content within the tailings dam cap at Alumbra

school students regularly tour Mount Isa, Ernest Henry, the Townsville copper refinery and Bowen Coke. More than 1,200 pupils from local schools and universities and 300 local community members visited the Alumbra Mine site during 2003.

During the year, community information sessions sought community feedback about a number of initiatives undertaken by the Bowen Coke works to manage fugitive dust and gaseous emissions.

Alumbra regularly presents monitoring results, including surface and groundwater analysis and acid rock drainage tests, to YMAD (Alumbra's joint venture partner – a statutory corporation integrated by the Catamarca Government, the National University of Tucumán and the National Government – and owner of the mineral rights over the Bajo de la Alumbra deposit) and the Catamarca and Tucumán governments. Where appropriate, the Catamarca regulators and YMAD are consulted when developing environmental programmes. Together with site personnel, the Catamarca authorities completed quarterly water quality monitoring in the Rio Vis Vis and Campo Arenal area.

## COMMUNITY

### Local Community and Stakeholders

Some of Xstrata Copper Australia's operations, such as the Mount Isa operation, are located in close proximity to residential communities while others, such as Minera Alumbra and Ernest Henry Mine, are more remote.

### Engagement

Several operations produce regular newsletters which are distributed to local stakeholders. In addition, Ernest Henry Mine produces an annual community report. At Alumbra, community programme initiatives are released to the local media and detailed on bulletin boards and in the Alumbra magazine 'A Cielo Abierto.'

Mount Isa continued regular meetings informing the local community about its operational and environmental performance and seeking community feedback. A 2003 survey of community attitudes and perceptions revealed that two-thirds of residents would like more news and information about employment and environmental issues. The main environmental concern identified in the survey was sulphur dioxide emissions.

Neighbouring pastoralists and their families are regularly hosted on-site by Mount Isa senior management while Ernest Henry also maintains close relationships with local landholders. Local primary schools are regularly visited by Mount Isa personnel giving a greater understanding of both the company's operations and employee roles. Local

### Community Complaints

The majority of complaints (142 of 157) related to emissions of sulphur dioxide in the Mount Isa community. All complaints are logged and investigated and the complainant informed about current air quality weather conditions and the status of preventative controls at the Air Quality Centre.

Three complaints were received alleging structural damage due to blast vibration. These incidents were investigated and identified as being primarily due to factors other than blast vibration.

Noise	Blasting	Dust	Traffic	Fumes	Water	Other	Total
5	6	0	0	142	0	2	157

### Community Performance

While both the Mount Isa and Townsville Operations have developed formal community relations plans, Ernest Henry will formalise their already extensive community relations activities by developing a plan during 2004. A Social Involvement Plan for the Copper Commodity Business will be developed during the year.

Mount Isa has proactive community relations and indigenous affairs programmes. Since 2001, Mount Isa has employed a local indigenous ground maintenance team initially through the Koutha Aboriginal Development Corporation (Koutha) and more recently through the MIGATE Training organisation. During 2003, the training programme was expanded to include placements with the company's Transport Division.

A groundbreaking Indigenous Awareness Course recently developed at Mount Isa provides employees with a greater awareness and appreciation of Australia's indigenous cultures (see case study).

Ernest Henry continues to operate a community-business partnership with Queensland Bulk Haulage (QBH), a 24-hour haulage operation for copper and gold concentrate from Ernest Henry to Mount Isa. A registered training organisation promoting opportunities for employment to indigenous residents is a part owner in the QBH operation. Trainees are identified through this training organisation to undertake training at Ernest Henry operations with individual certified accreditation upon completion of training. Employment opportunities are also promoted more widely throughout the mining industry.

Xstrata Copper operations support a wide range of local community and development activities (see pie chart).

Examples of the education, agricultural, health and social projects Alumbra promotes in the provinces of Catamarca and Tucumán include:

- the continuation of the 'Pro-Huerta' programme through the construction of vegetable gardens, glass-houses and farms in schools (see case study); and
- supporting small food producers through the 'Agreement with Social Agricultural Programme'.

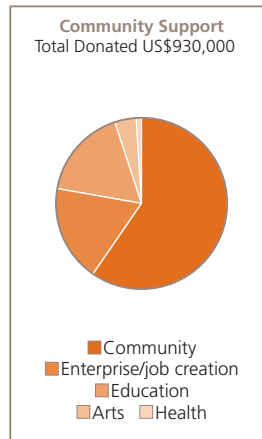
Alumbra continued to support local communities to recycle wood and metal from the site. Local community groups collected 645 tonnes of materials in 2003. Before entering the site all visitors undergo safety training and an environmental awareness presentation.

The 220 kV powerline environmental compensation agreement with the Tucumán government committed Alumbra to construct three Urban Waste Treatment Plants of which the first has been completed and transferred to the government. Progress on the remaining two plants is continuing.

Alumbra promotes the social development of communities in the area by supporting a number of education programmes and sponsoring small business management training courses. An example is the 'Reading is Fundamental' programme which promotes reading among primary school children.

The improvement of health services in the area is supported by Alumbra through a number of initiatives which include:

- assisting regional hospitals, health clinics and mini-hospitals;
- supporting the Ministry of Health and Social Action by providing ophthalmology assistance to children of the Department of Belén; and
- continued provision of equipment and medical supplies to local schools and hospitals in more than 90 communities near the mine site.



Demonstrating a 'warup' (a lizard skin drum) from the Torres Strait Islands at the Mount Isa Indigenous Awareness Course. »

Hualfin pupils collecting eggs from the poultry farm »



## COMMUNITY CASE STUDIES

### « Bridging Cultures – Mount Isa Indigenous Awareness Course

A groundbreaking Indigenous Awareness Course recently developed at Mount Isa provides employees with a greater awareness and appreciation of Australia's indigenous cultures. Around 4 percent of Mount Isa's employees are of indigenous Australian heritage. The Mount Isa Indigenous Awareness course covers a number of key areas including historical and contemporary issues, myths and stereotypes, Native Title, and indigenous cultural heritage management and protection. The course also improves employee awareness of company initiatives like the indigenous employment and training programme operated with the MIGATE Group. The course includes participation by a number of prominent indigenous community representatives who spend the day with employees sharing experiences and talking about their work in the Mount Isa community.

Mount Isa has become well known for its unique indigenous affairs initiatives within the local community. These include organising school visits by indigenous cultural acts and inviting a contingent of Torres Strait Islander dancers from Murray Island to commemorate the tenth anniversary of the Mabo High Court decision. The company also continues to work in close association with the Kalkadoon people and other native title claimant groups in the north-west Queensland region.

### « Social Impact of a Hot-house in a Local Town

In cooperation with the 'Pro Huerta' programme, the municipality of Hualfin and school N° 288, Alumbreira built a hot-house in the town of Hualfin, 25 km away from the mine site. A small poultry farm was built next to the hot-house. Both projects have had a positive effect on the school and community.

In the school:

- vegetables and more eggs were incorporated into the daily diet of the pupils, providing extra minerals, proteins and fibre;
- for the first time, vegetables were produced in winter time, thus extending the production season; and
- the sale of the surplus vegetables produced in the hot-house helped to buy goods for the school dining room.

In the town:

- the application of this new technology has raised the awareness of local people about the potential benefits for Hualfin; and
- a second hot-house is being built, and many residents have expressed an interest in the new technique.

The people who participated in the programme have developed skills in small farm management and hot-house construction and management.





## ZINC

- ≈ Manual valves with extended lifter for ergonomic operation in the Nordenham waste water treatment plant
- « Angel L. Suarez cleaning with pressurised water
- ≈ Steve Bridgeland operating the gantry crane at Northfleet





## CHIEF EXECUTIVE XSTRATA ZINC

In 2003, Xstrata Zinc acquired the Nordenham Zinc Smelter and through the MIM Holdings acquisition, expanded its operations to include the Northfleet Lead Refinery in the UK and the McArthur River Mine in Australia. Xstrata Zinc also controls the strategic direction of the zinc lead business at Mount Isa in Australia.

Xstrata Zinc exceeded its targets of a 20 percent reduction in both TRIFR (41 percent) and LTIFR (25 percent) through a number of targeted initiatives across the business and the continual development of our Occupational Health and Safety systems. Our focus on manual handling injuries and employee awareness of hazards has been particularly effective.

At the San Juan de Nieva smelter all of our 2003 environmental targets were exceeded and our long-term projects are progressing well, particularly the implementation of our Environmental Management System, expected to be certified under the ISO 14001 standard during 2004.

Our negotiations with the environmental authorities regarding the long-term development of the future phases of the Jarofix waste disposal site are expected to be successfully completed in 2004. There was one Category 3 incident which resulted from a non-controlled waste discharge that was immediately remediated.

Nordenham's environmental targets were successfully achieved and certification to the Environmental Management System ISO 14001 standard was retained. In accordance with the European landfill legislation, an application for the extension of the jarosite dump life has been submitted to the environmental authorities and we expect that it will be approved.

Through the ongoing implementation of the Northfleet five-year environmental improvement programme, the majority of our environmental targets have been achieved. Throughout the year, works have focused on providing the Environment Agency (EA) with additional information for the renewal of our environmental licence and improving our environmental management system and as a result, ISO 14001 certification has been maintained. Four Category 3 environmental incidents were reported through the year. Three of these incidents related to stack emission exceedences and one to a water discharge licence exceedence. These incidents were resolved and signed off by the EA.

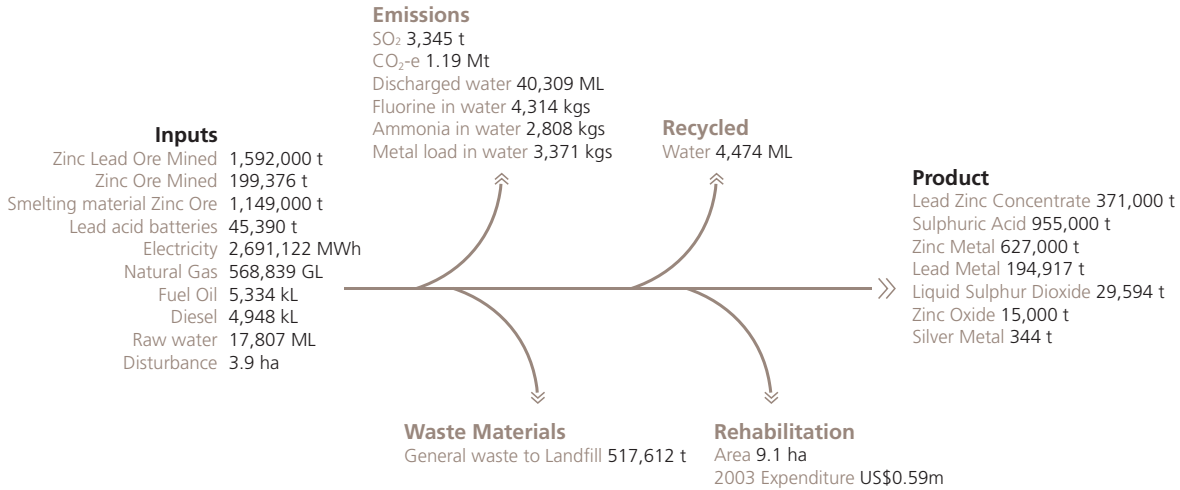
We continued to engage, support and respond to the needs of the local communities surrounding our operations. This commitment is highlighted by the fact that no community complaints were received and no environmentally related fines or prosecutions were imposed at any of our operations.

After operating for 147 years, our Reocín Zinc Mine in Spain ceased operations at the end of March 2003. The authorisation for the closure of the mine is in progress and presently being negotiated with the regulators.

Following the tremendous efforts made to integrate the new businesses into Xstrata Zinc in 2003, we look forward to further advances in our Health, Safety and Environmental performance through sharing our ideas and experiences across the expanded business and continuing with specific targeted initiatives within each operation.

**Santiago Zaldumbide**

KEY 2003 STATISTICS



**Economic (Pro forma US\$m)**

Turnover 915.3  
EBIT (pre-exceptionals) 17.7

**Health and Safety**

Fatalities 0  
TRIFR 58.2  
LTIFR 35.0  
DISR 1930.0  
Prosecutions 0  
Fines US\$20,000  
Occupational diseases 7

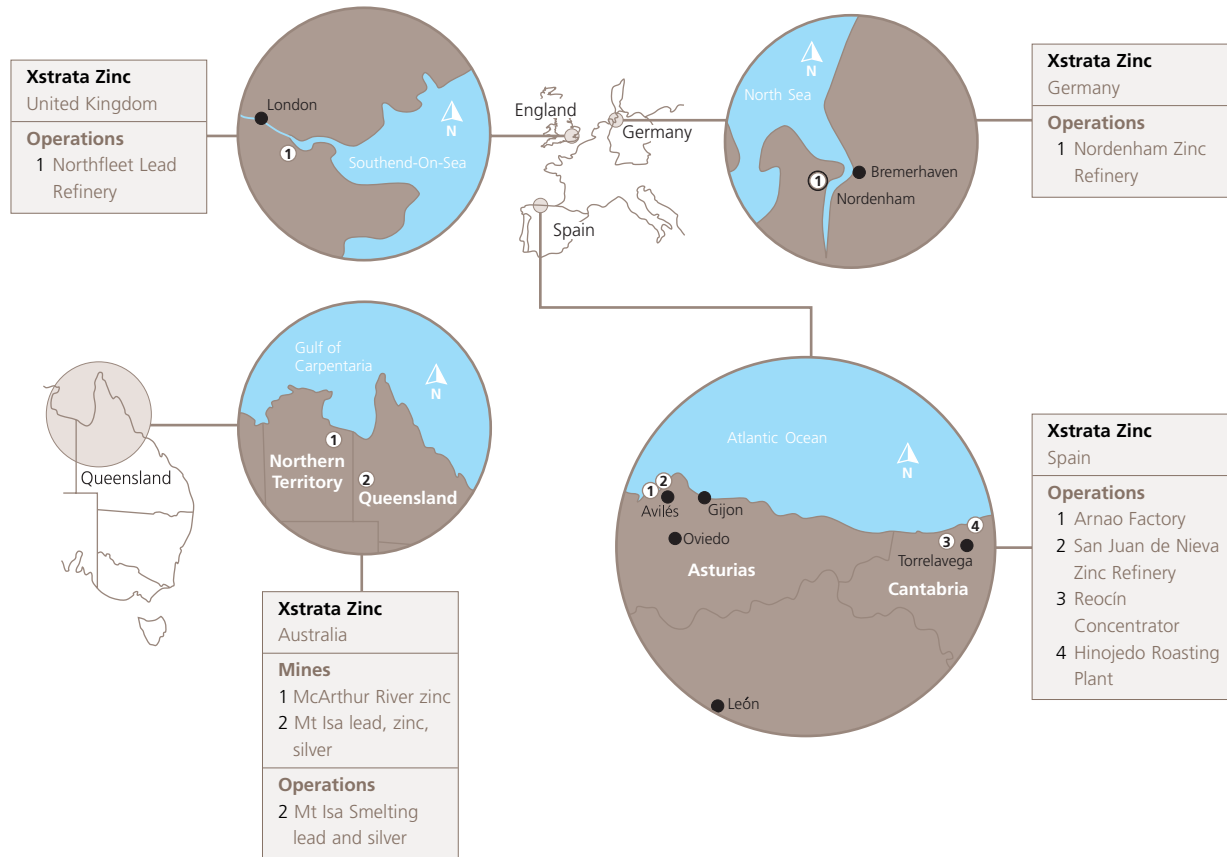
**Environment**

Total Raw water use (ML) 17,807  
Total energy use (PJ) 10.18  
Total CO<sub>2</sub> -e (Mt) 1.19  
Land disturbed (ha) 3.9  
Land rehabilitated (ha) 9.1  
Regulatory actions 0  
Prosecutions 0  
Fines US\$0

**Community**

Number of employees and full time contractors 2,111  
Total Donations US\$0.32m  
Complaints 2

## OPERATIONS



## KEY PERFORMANCE INDICATORS

Zinc		2003 Target	Performance
<b>Health and Safety</b>	Xstrata Zinc	Zero fatalities	<b>Achieved</b>
	Spain	Reduce TRIFR and LTIFR by 20 percent Focus on risk reduction in manual handling tasks.	<b>Achieved</b> (TRIFR 48 percent) (LTIFR 22 percent)
	Nordenham	LTIFR ≤ 15 for established personnel	<b>Not achieved</b> (LTIFR 17.7)
	Northfleet	LTIFR < 20	<b>Achieved</b>
	McArthur River	DISR ≤ 20	<b>Not achieved</b> (DISR = 43.7)
<b>Environment</b>	Spain	Continue the EMS implementation and ISO certification process (1-2 years)	<b>In progress</b>
	Nordenham	Continuous improvement of the Integrated Management System for labour safety, quality and environment, certified in 2002	<b>Achieved</b>
	Northfleet	Reduce the site's boundary lead-in-air concentration level to < 1.0 µg/m <sup>3</sup>	<b>Not achieved</b>
	McArthur River	Undertake tailings rehabilitation capping trial	<b>Achieved</b>

2004 Target
Zero fatalities 17 percent decrease of the TRIFR
Obtain ISO 14001 certification for the EMS at San Juan.
Review of ISO 14001 certification
Reduce the site's boundary lead-in-air concentration level to < 1.0 µg/m <sup>3</sup>
Develop a tailings dam rehabilitation design and methodology plan

## HEALTH AND SAFETY

### Health Performance

During the year San Juan de Nieva engaged ergonomic experts to conduct the third review of working areas where musculoskeletal injuries were most prevalent. The majority of the seven occupational diseases recorded at San Juan were musculoskeletal related to lifting and pulling loads while one asthma case was reported.

Nordenham confirmed its compliance through regular monitoring of the concentration of hazardous materials (i.e. sulphuric acid and cadmium) in air in the workplace in accordance to German legislation and through regular medical examinations and tests. No occupational disease was recorded.

### Safety Performance

Xstrata Zinc is committed to the objective of achieving zero work-related injuries and illnesses. Xstrata Zinc's progressive improvement in safety performance is reflected in a 25 percent reduction in the Lost Time Injury Frequency Rate and a 41 percent drop in the Total Recordable Injury Frequency Rate since 2002. An example of the initiatives developed to make the workplace safer is found in the case study about a safer system to remove cones from 'jumbos' after casting.

Two critical incidents took place in 2003. One occurred at San Juan de Nieva when a worker fell from a pipe-supporting platform and suffered several fractures.

The incident was reviewed by the labour authority, and a fine of US\$20,000 was imposed.

The second incident happened in the open pit at Reocín, when about 260,000 m<sup>3</sup> of rock slumped from the north wall. Fortunately, no one was injured as the hazard had been identified and all workers had been evacuated.

### Health and Safety Management Systems

During 2003, the Spanish operations improved the Xstrata Zinc Health and Safety Management System (locally called the 'Plan of Safety and Occupational Health') by building on the key components of improving on the quality and planning of preventative actions and their implementation through a greater number of employees in the workplace.

Other initiatives achieved in 2003 were:

- development of an inventory of unsafe working conditions;
- continuation of an incident study by the Mutual Industrial Injury Insurance Company into two departments at San Juan where workplace injuries were more prevalent and the progressive implementation of the study recommendations (see study case);
- informing contractors about the new Contractor Safety Plans procedure; and
- incident investigation training for every working team.

The existing safety management system of the Nordenham Zinc plant has been improved by focusing on:

- incorporating new regulations into machine operating instructions;
- upgrading the quality and content of monthly safety information to all employees;
- integrating safety information into the electronic integrated management system; and
- development of a general checklist for internal safety audits.

Zinc Ingot 

Attendees at an Injury workshop 



## HEALTH AND SAFETY CASE STUDIES

### « **Manual Handling Improvements in Nordenham**

Most of the production of the Nordenham Zinc Plant is cast as ingots of two to four tonnes each. For handling purposes most customers require one or more holes in the ingot. These holes are created by placing moveable cones in the molten material that are removed from the casting afterwards. In the past the cones were manually knocked out with a five kilogram hammer.

Removing the cones with a hammer can physically strain workers and risk impact injuries:

- older cones could disintegrate, and sharp fragments could injure persons working in the area;
- the worker could miss with hammer and endanger the worker; and
- the handle could break or the hammerhead could separate from the handle and endanger the worker and other persons. One incident in 2003 was caused by a broken hammer.

A special tool was developed, based on a pneumatic driven hammer without recoil that moves both horizontally and vertically. The top of the cone is covered by a metal ring to stop fragments from flying around. A positive side effect of the tool is that the cones have a longer lifetime.

### » **Workshops for employees with a high injury rate in San Juan**

A study of incidents at the plant in San Juan de Nieva identified a group of workers attracting more injuries than the factory average.

An analysis of incidents between 1998 and 2002 found that several workers had suffered more than 15 injuries with a variable degree of severity and that 56 workers had suffered 32.7 percent of the total industrial injuries.

A training course was organised for the group of targeted workers in collaboration with the Work Accident Association, with the following objectives:

- improving workforce awareness of the human influence on incidents;
- reiterating the importance of workers responsibilities in their own safety; and
- encouraging the workforce to communicate, participate and be motivated.

This course was designed for small groups, and 38 workers were selected for the first programme. The results will be analysed after a year and if judged successful will be repeated for a new group and if necessary some of the previous attendees.



## ZINC

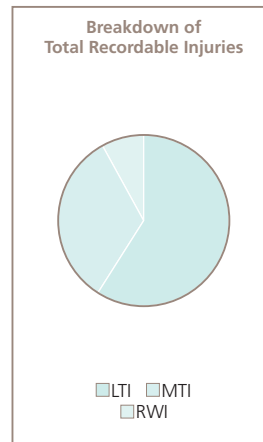
For the past 12 months, Britannia Refined Metals Ltd (Northfleet) has focused on developing a new Safety Management System based on 15 Principal Standards. These standards cover all key areas of Health and Safety and include Leadership, Training, Risk Management, Audits and Emergency Preparedness.

The focus in 2003 was on Risk Management, Workplace Controls, Change Management and Health and Hygiene. Some of the issues addressed during 2003 were:

- the completion of the critical risk management process;
- the development of new safe work systems such as those for Confined Space Entry and Electrical Isolation;
- development and implementation of a new Hazardous Substance and Dangerous Goods management system;
- development and implementation of a change management system;
- development of new blood lead management initiatives; and
- development and implementation of a new incident management system.

The McArthur River Mine (MRM) Health and Safety management framework is based on 15 standards consistent with Australian standards and internationally recognised standards.

All Spanish operations underwent external Health and Safety audits during 2003 where a limited number of insignificant risks were identified. Although the Occupational Safety regulations require audits every five years it is intended to plan them more regularly. In addition to the occupational safety audit, several inspections were carried out by the regional government labour authority.



After integration of the Nordenham Zinc smelter into the Xstrata Zinc Commodity Business an external risk audit took place and a specialist of the branch association for health and safety inspected the site three times during 2003. Furthermore, the Factory Inspectorate of the federal state carried out inspections. After inspecting the operation the site labour safety specialist reports quarterly to local management and the committee for labour safety.

Although historically annual internal and external audits were undertaken at Northfleet, there were no audits conducted during 2003 because of the change of ownership of the company and the closure of both the No. 2 Refinery and the Recycling plant and subsequent restructure of the operation. No regulatory audits were conducted.

All sites hold Health and Safety risk registers that are regularly reviewed, while ongoing job specific risk assessments take place as required.

## ENVIRONMENT

### Local Environment

The smelters and refinery in Europe are situated in industrialised areas near estuaries or the sea, while the McArthur River Zinc Mine is located in sparsely populated pastoral area of the Northern Territory of Australia.

### Biodiversity and Land

New Xstrata Zinc projects are subject to an environmental impact assessment that includes studying the existing biodiversity. During the environmental impact assessment for a new oleum plant at San Juan, more than 70 species of water birds were classified and identified around the Avilés estuary as well as many marine species. The conclusion of this study was that the metallurgical activities do not have a significant impact on vegetative and animal life. The biological baseline studies associated with the proposed McArthur River Mine expansion identified 730 fish, plant and reptile species within the study area.

At the end of March 2003, a highwall slump at the Reocín Mine accelerated the end of its operational life and it was closed in March 2003.

### Water

Xstrata Zinc is committed to reusing and recycling water where possible. As the San Juan and Nordenham plants use a hydrometallurgical process for producing zinc, the use and management of water is important and a measure of this commitment is that no environmental incident in connection with waste water discharges into the adjacent estuaries occurred.

All waste water from industrial processes generated in San Juan, Nordenham and Northfleet is treated before being discharged. Only 7.5 percent of the water used at Xstrata Zinc operations was discharged as waste. In addition, solid waste from treating waste water is sent to landfill through an authorised waste management company or, as in the case of San Juan zinc smelter, is retreated to recover the contained metals.

### Waste

Waste rock characterisation, associated with the proposed open-cut expansions at McArthur River, will be used in the design of a waste rock block model which would facilitate selective handling and encapsulation of potentially acid generating waste rock types.

Under European legislation, some of the hazardous wastes generated at Xstrata Zinc's plants, are:

- Jarosite: A precipitate produced during the leaching process from zinc sulphate bearing liquors. This material is treated and converted into a non-hazardous waste (Jarofix) at the San Juan zinc plant. Most (99.7 percent) of Xstrata Zinc's waste going to landfill is jarofix. A high proportion of the balance is Jarosite being landfilled at Nordenham.
- Cadmium sponge: A precipitate produced during the purification process used for removing cadmium from zinc sulphate bearing solutions. At the Nordenham zinc plant the sponge is processed to obtain pure cadmium metal.

### Air emissions

The main sources of Xstrata Zinc's air emissions are the sulphuric acid plants, smelting furnaces and the pyrometallurgical recovery of metals. With a sulphur dioxide removal efficiency rate of 99.5 percent to 99.8 percent, the sulphuric acid plants rank as Best

## ENVIRONMENT CASE STUDIES

### » **Landscape integration of a jarosite waste dump in San Juan**

During 1995, jarosite waste pond No 2 ceased operations and pond No 3 became the active pond. Until 2003, pond No 2 remained commissioned to recover the liquor contained in it. These liquids contained metals and were treated at the metallurgical plant to recover zinc, as well as replace water lost during evaporation. Leaving the pond open allowed the stored waste to reach an optimum consistency allowing for closure in 2003.

Since jarosite is classified by Spanish and European regulation as a hazardous waste, pond No 2 had to be closed using specific procedures for hazardous waste landfilling installations. A bentonite 'sandwich' layer was placed over the upper surface of jarosite to protect a 1 mm thick polypropylene membrane. This membrane fully encapsulates the jarosite to isolate it from the environment. A 30 cm thick sand layer was deposited on the plastic membrane and a geotextile membrane was placed over it. In addition, over this geomembrane, a 35 cm thick layer of clay soil was spread which in turn was covered by a final 10 cm layer of topsoil. Draining systems were also installed to extract leachates from both the upper surface and the encapsulated cavity of the dump. After these operations the upper surface was seeded and the vegetation rapidly blended with the surrounding environment.

### » **Computer aided Integrated Management System in Nordenham**

The Nordenham Zinc plant has an integrated management system for quality and environment (IMS) that has been certified to ISO 9001 and ISO 14001 since 2002. As Personal Computers (PC) are found in all offices, production and maintenance areas and control rooms, a decision was taken to have the latest version of the IMS available on all computers to ensure its availability at all working places. Conditional to this was that the system should be easy to operate and not require special training of the users.

The system contains the IMS manual, process instructions, work instructions and other IMS documents. Additional sections contain emission limit values and other important conditions of the authorisation, instructions for handling dangerous materials and a collection of the valid national and European laws and regulations. The system opens with an icon on the computer desktop followed by hierarchic menu with a direct link to all documents. The IMS has become an indispensable tool for the Nordenham Zinc plant.

The quality manager emails users about updates to the system. The respective department managers are responsible for distribution of the documents in paper form to those working places without computer access.



- « Rodrigo Rodriguez, Environment Department Technician inspecting pond No. 2
- » Christiane Fabich, Technician at Nordenham accesses the IMS via a PC

Available Technology sites. During 2003, Xstrata Zinc emitted 3,345 tonnes of sulphur dioxide of which 2,800 tonnes was emitted from the sulphuric acid plants.

Greenhouse gas emissions increased 12 percent over last year to 1.19 million CO<sub>2</sub>-e tonnes primarily due to the acquisition of the Nordenham, Northfleet and MRM operations. The majority of these emissions are from the generation of electricity by third parties.

### Energy Use

Energy is predominantly sourced from electricity and natural gas. A component of Spanish electricity is sourced from hydroelectric power.

Energy Use Source	GJ
Electricity	9,688,040
Fuel oil	217,629
Diesel	190,989
Anthracite	32,422
LPG	28,166
Coke	20,601
Natural Gas	569
Petrol	465
<b>Total</b>	<b>10,178,881</b>

### Environmental Incidents

One Category 3 incident took place at the San Juan de Nieva smelter when thickener waste was temporarily deposited on the ground. The material was removed and sent to landfill. The only Category 3 incident recorded by Northfleet since it joined Xstrata concerned exceeding Total Suspended Particulates and Lead licence limits at the Actairs 2 and 4 stacks. The Environment Agency advised

Category	1	2	3	4	5
	81	87	7	0	0

the site to cease operations associated with the stacks and remedial actions were taken. The remaining five Category 3 incidents occurred at Northfleet and McArthur River prior to them being purchased. No Xstrata Zinc operation attracted environmentally related fines or prosecutions during 2003.

### Environmental Management Systems

During 2003, two workshops were held to inform the San Juan de Nieva management about the background and requirements of the site environmental standard ISO 14001, due for certification in 2004. The Nordenham Zinc plant is certified to both ISO 14001 and ISO 9001.

In 1996, Northfleet was the first UK company in the Non-Ferrous industry sector to achieve both ISO 14001 and QS9000 certification simultaneously. Northfleet's environmental improvement programme is focused on: improved employee awareness, reducing air emissions, reducing water emissions, minimising waste and improving relations with the local community.

Internal EMS audits were undertaken at McArthur River (MRM) during 2003 with a view to achieving ISO 14001 certification by the end of 2004. The Department of Business Industry and Resource Development conducted an annual compliance audit in May 2003. The audit identified no significant non-compliances. A minor non-conformance initiated a recommendation to develop longer-term tailings seepage management strategies.

Currently, the Regional Government Environmental Authority does irregular audits on Spanish industrial sites to ensure that the operations are meeting the requirements of Spanish environmental legislation for waste management, emissions to air and waste water discharges. The 2004 certification of the San Juan plant to ISO 14001 will involve increased auditing.

All Nordenham employees are annually trained in environmental issues in groups of up to 12 people, and five employees received external environmental training in 2003. During the year, Northfleet improved environmental training by presenting a revised induction programme to all new employees and developing training programmes for presentation to the workforce during 2004. Remediation work has been planned to complete the closure of the Northfleet and Wakefield Recycling plants.

## COMMUNITY

### Local Community and Stakeholders

Xstrata Zinc's operations in Europe are located in urban or industrialised areas whose major stakeholders are people living near the vicinity of the operation, local government, the employees and regulators. McArthur River Mine is located in a remote and isolated pastoral area with the main stakeholders comprising employees, local landholders, the people of local towns and regulators.

Xstrata Zinc's Spanish operations and industrial sites are located in the provinces of Asturias and Cantabria. The Nordenham Zinc Plant is located in the north of the German federal state of Lower Saxony. The Northfleet lead refinery is located at Northfleet, an urban area on the River Thames, 35 kilometres southeast of London.

McArthur River Mine (MRM) is located 60 kilometres from the small town of Borrooloola in the Northern Territory of Australia, near the Gulf of Carpentaria.

### Engagement

As Non-Government Organisations, local communities (including municipalities) and small to medium sized enterprises are largely self-funded or supported by government, there are few opportunities for the Commodity Business to support local institutions.

When engaging with the community, Xstrata Zinc:

- participates in resolving community concerns whenever possible;
- always considers the impact of their operations;
- provides information to stakeholders;
- ensures that it continues being valued as a neighbour;
- cooperates with local communities, councils, and government agencies on matters of mutual interest; and
- participates in community forums.

MRM continues to engage the local community of Borrooloola via informal meetings, site visits and field excursions for traditional landowners and representatives from the Northern Land Council.

### Community Complaints

During 2003, there were two community complaints at MRM, one alleged dust from haultrucks and the other was a newspaper article alleging a fish kill. Both allegations were fully investigated with community involvement and determined to be unfounded.

### Community Performance

Xstrata Zinc invested US\$323,607 in community initiatives and projects during 2003. European operations mainly supported education, sport and cultural events as well as assisting in the organisation of an environmental exhibition (see case study). MRM's cooperate social involvement predominantly consists of supporting the social, community, rural development of their local communities.

Industrial health, safety, languages, maintenance, quality and environment were some of the subjects taken by 499 employees participating in educational courses at the Spanish training centre in Arnao.

The 'El Estrellin' quarry where jarofix is being used to rehabilitate the quarry

Judging the annual MRM School Science Award Competition at the Borrooloola Community Education Centre



## COMMUNITY CASE STUDIES

### « Participation in regional seminars and exhibitions

At the end of October, Asturiana de Zinc participated in an environmental exhibition (EXPOAMBIENTE 2003), Avilés organised by the Regional Environmental Authority, the Avilés City Council and the local Chamber of Commerce. During five days, several hundred people including many students, visited the stand and were informed about Xstrata Zinc's environmental performance and the uses of zinc in fields such as medicine and pharmacology. Xstrata Zinc also participated in the seminar 'Trends of the Chemical and Process Industry', organised by the Association of Chemical and Process Industries of Asturias, the Institute for the Economic Development of Asturias and the University of Oviedo. Xstrata Zinc's Environmental Coordinator, Jose Poncet, spoke on 'Trends of the Non-Ferrous Metals Industry', covering subjects such as the marketing of metals and the financial consequences of the new environmental legislation, e.g. the Kyoto Protocol. The audience consisted mainly of university students and lecturers as well as technicians and economists from the chemical and metallurgical Industries.

### » Community Education in the Northern Territory

The Memorandum of Understanding (MOU) between McArthur River Mining Pty Ltd and the NT Department of Education represents an industry and education partnership that endeavours to improve the scope of education and post-education outcomes for students at Borroloola. The MRM Annual Student Science Award Programme continued to be a great success. The 2003 competition attracted entries from all levels of the local community education centre and included a demonstration by pre-school students of a 'Sun Dial'. All projects had measurable outcomes and demonstrated a high standard of scientific research undertaken by the students. In keeping with the spirit of the awards, MRM donated four quality microscopes to the Borroloola Community Education Centre during the year.

MRM also provides logistical support and sponsorship to the NT Minerals Council Education Committee for annual classroom visits to the Borroloola and Robinson River School which promoted minerals awareness and education to the students. The Company also continues its support for hearing impaired students from the Borroloola and Robinson River Communities with sponsorship of visits to the community by special teachers of the deaf from the Alice Springs Department of Education.



## ZINC

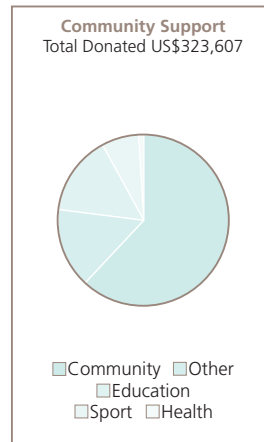
Xstrata Zinc's Spanish operations organised a Chemical Plant Operator course in collaboration with the Regional Ministry of Labour and Employment Development. Fifteen persons attended this course and six of them have since been employed by the Commodity Business. Xstrata Zinc Spain will continue developing the training centre and encourage employees and members of the community to take part in the courses offered.

At Nordenham, Xstrata Zinc shares the cost of a training centre for young trainees with a neighbouring lead smelter. Presently, 30 students are being trained in professions useful for the zinc industry such as plant operators, electricians and fitters.

Northfleet is an integral part of the local community. As well as being one of the largest employers in the area, Northfleet supports many other community activities including:

- annual donations to all secondary schools in the borough of Gravesham;
- sponsoring projects at primary schools throughout the borough; and
- donations to numerous local and national charities ranging from local youth clubs and football teams to large charitable organisations.

A Community Relations Plan developed by Northfleet will be implemented over the next five years.



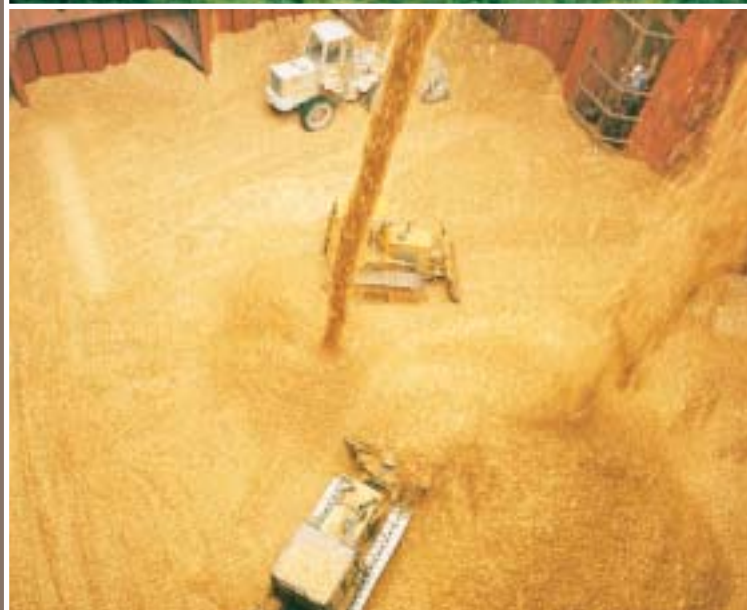
The two community relations officers employed at MRM can be contacted at any time by local indigenous groups and organisations. MRM administers a government-certified in-house training and employment programme aiming to train ten local and indigenous people annually (see case study). MRM's community business partnership with the local group MAWA for the concentrate barging contract from the port of Bing Bong provides an income that benefits members of all four local indigenous groups.

MRM is an active participant in a group formed by regional authorities, scientists and interested parties to investigate the potential impacts on marine life in the Gulf of Carpentaria region. The group was set up to investigate community concerns about a perceived decline in the marine life in the area. With the input from independent parties including community representatives and the Northern Territory University, it was determined that MRM's operational activities have not impacted on the regional biological environment. Confidence in MRM's offsite performance is supported by comprehensive independent scientific evidence collated from historical environmental monitoring of the marine ecosystems. The group has determined that any decline in marine health is likely to be a result of exotic disease or natural changes to diet. MRM continues to support rigorous assessment of the wider regional ecosystems to ensure this high standard of monitoring continues.



## FORESTRY

- ≈ Eucalyptus globulus plantation at Forestal Los Lagos
- » Stored chips at Forestal del Sur mill



## FORESTAL LOS LAGOS S.A.

### Operation

Forestal Los Lagos (FLL), fully owned by Xstrata, supplies *Eucalyptus globulus* pulp logs to the Forestal del Sur (Fds) mill. Of the 16,040 hectares owned by FLL, 3,863 hectares consists of protected native forest with the balance *Eucalyptus globulus* plantations.

### Forest Stewardship Council (FSC)

Forestal Los Lagos is accredited to the FSC, an organisation supporting environmentally appropriate, socially beneficial, and economically viable management of the world's forests.

FSC has developed an international labelling scheme for forest products as an incentive for good forest stewardship. Forest operations which conform with FSC standards are awarded a certificate enabling the landowner to market certified wood and use the FSC logo.

### Health and Safety

FLL recorded 11 recordable injuries in 2003, of which 10 were reported by contractors. The majority of injuries occurred during tree harvesting. The health and safety standards that FLL apply to the harvest, logging, piling and plantation areas include:

- hazardous materials management;
- emergency preparedness and response; and
- occupational health.

The FLL audit programme routinely assesses harvest areas, follows up on corrective actions, and reviews contractors.

### Environment

Assisted with research by the Catholic University of Chile, weed control in plantations has improved. Increasing the plantation density from 1,700 plants per hectare (pph) to 1,900 pph further closes the canopy so that light does not reach the soil, minimising weed regeneration.

FLL uses a form of genetic selection to obtain higher survival rates in cold climates. Seeds from trees found in cold areas are exposed to natural frost in nurseries during winter and are then transferred to plantations in spring. These seeds build up resistance to the cold but still only eight percent germinate into plants in the field. This low cost technique has the approval of the 'Forestry Genetic Improvement Cooperative', to which FLL belongs.

### Community

FLL community objectives are to participate in local development; and maintain positive and permanent contact with the community.

FLL's community involvement includes:

- operating an office in Fresia, to provide company information and listen to any concerns;
- visiting neighbours to discuss concerns and suggestions;
- partnering with governmental institutions to plan activities such as training; and
- providing technical, educational and financial support for a number of local activities.

The Pichi Maule Native Community are neighbours of FLL. During 2003, FLL's involvement with the Pichi Maule included:

- allowing medicinal plants to be picked in the plantation and supporting the construction of a medicinal plants nursery;
- support for the showing of antique pieces of art in the Puerto Montt Museum; and
- assisting the formation of a contractor firm to work at FLL.

## GLOSSARY

### AIDS

Acquired immune deficiency syndrome.

### AS

Australian Standards.

### ATCOM

Arthur Taylor Colliery Opencast Mine.

### BCM

Bank cubic metres.

### Business Principles

An ethos of systems, policies and procedures to conducting business activities which sets out specific aspirations and commitments that apply to the company's relations with its customers, employees, shareholders, partners, suppliers and in the communities where it operates.

### CCSD

Cooperative Research Centre for Coal in Sustainable Development in Australia.

### CEO

Chief Executive Officer.

### Closure Plan

A formal document detailing a costed conceptual outline of how the operation will be closed, taking into account the options available to deal with prevailing social and environmental issues.

### COAL 21

An Australian research partnership to eliminate greenhouse gas emissions from use of coal in electricity generation.

### Coal mine methane

Methane is a greenhouse gas with approximately 21 times higher global warming potential than CO<sub>2</sub>. Methane (CH<sub>4</sub>) is released from coal as it is mined.

### CO<sub>2</sub>

Carbon dioxide.

### CO<sub>2</sub>CRC

Cooperative Research Centre for Greenhouse Gas Technologies in Australia.

### CO<sub>2</sub>-e

Carbon dioxide equivalent.

### Colliery

Underground coal mine.

### Community Complaints

Any issue raised by a member of the community relating to the operation in question, whether resolved or not. Can relate to an enquiry, a pollution or other incident or non-compliance.

### Disabling Injury

Calculated as Lost Time Injuries plus Restricted Work Injuries (LTI + RWI).

### DISR

Disabling Injury Severity Rate. The number of disabling injuries per million hours worked.

### DME

South African Department of Minerals and Energy.

### EMPR

Environmental Management Programme Report (South Africa).

### EMS

Environmental Management Systems.

### Exceptional

Profit or loss due to abnormal business transactions e.g. asset write down, profit from sale of a business.

### Fatality

A death resulting from an occupational injury or disease/illness and identified within the reporting period.

### FeV

Ferrovanadium.

### GGAP

Australian Greenhouse Gas Abatement Programme.

### GJ

gigajoules (1 GJ = 1,000,000,000 Joules).

### GRI

Global Reporting Initiative – a long term, multi stakeholder, international process whose mission is to develop and disseminate globally applicable Sustainability Reporting Guidelines to assist corporations in reporting on the economic, environmental, and social performance of their operations.

### ha

hectares (1 ha = 10,000 square metres).

### HIV

Human immunodeficiency virus.

### Hours worked

Total number of hours worked by employees, including overtime and training, excluding leave, sickness and other absences. It includes the total number of contractor hours worked on site during the year.

### H&S

Health and Safety.

### HSEC

Health, safety, environment and community.

### Incident Categories:

A scheme based on a scale ranging from 1 to 5 representing scale of environmental impact.

**Category 1:** an incident that has caused negligible, reversible environmental impact, requiring very minor or no remediation

**Category 2:** an incident that has caused minor, reversible environmental impact, requiring minor remediation.

**Category 3:** an incident causing moderate, reversible environmental impact, with short term effect, requiring moderate remediation.

**Category 4:** an incident that has caused serious environmental impact, with medium term effect, requiring significant remediation.

**Category 5:** an incident that has caused major environmental impact, with long term effect, requiring major remediation.

### Discard

Total of coarse reject and fine reject (tailings).

### ISO

International Organisation for Standardisation.

### ISO 14001

An international standard for environmental management systems.

### kg

kilogram (1 kg = 1,000 grams).

### kL

kilolitre (1 kL = 1,000 litres).

### km

kilometre (1 km = 1,000 metres).

### Land disturbed

Land disturbed by operational activities.

### Land rehabilitated

Land disturbed by operational activities and then reshaped and revegetated.

### LPG

liquid petroleum gas.

### LTI

Lost Time Injury – an occupational injury or disease that results in days away from work on any rostered shift subsequent to that on which the injury occurred. A fatality is also recorded as a LTI.

### LTIFR

Lost Time Injury Frequency Rate = LTI x 1,000,000 / hours worked.

### m<sup>3</sup>

cubic metres.

### Megalitre

1 megalitre = 1,000,000 litres or 1,000 kilolitres.

### µg/l

micrograms per litre.

### ML

megalitres (1 ML = 1,000,000 litres).

### Mt

Mega tonnes (1 Mt = 1,000,000 tonnes).

### MTI

Medical Treatment Injuries – an occupational injury/illness which is not classified as an LTI or RWI, but which results in loss of consciousness or medical treatment after first aid.

### Oleum

Fuming sulphuric acid.

### OHSAS 18001

Occupational Health and Safety Assessment Series (specifications for occupational health and safety management systems).

### Overpressure

Pressure on an object which is greater than normal atmospheric pressure and results from an impacting shock wave.

### PDI

Permanent Damage Injury – any occupational injury: (a) from which there has not been, or is not expected to be, full recovery after two years; and/or (b) which has substantial negative consequences for the individual, for example, prolonged hospitalisation; prolonged inability to work; loss of ability to continue normal social and home life; major damage to body and body function. All amputations are PDIs.

### PJ

Petajoules (10<sup>15</sup>).

### plc

Proprietary Limited Company.

### PM<sub>10</sub>

Particulate matter less than 10 microns in size.

### Pneumoconiosis

Primarily an occupational disease of miners, sandblasters, and metal grinders. A chronic disease of the lungs, it is a result of repeated inhalation and accumulation of dust in the lungs leading to loss of lung function and possibly heart failure.

### Raw water

Untreated water extracted from groundwater, dams or rivers.

### Recycled water

Water released during mining or processing and then released in operational activities.

### RWI

Restricted Work Injury – an occupational injury or disease that results in a person being physically or mentally unable to perform all or any part of his/her normal assignment during any rostered shift subsequent to that on which the event occurred, that is, where:  
(1) the employee was assigned to another job on a temporary basis;  
(2) the employee worked at a permanent job less than full-time; or  
(3) the employee worked at his or her permanently assigned job but could not perform all the duties normally connected with it.

### SO<sub>2</sub>

Sulphur dioxide.

### Social Involvement Plan

A plan produced by each Commodity Business which sets out their engagement with local communities, and details the range of initiatives to be undertaken and the resources, financial and other, dedicated to this area of their business.

### Tailings and tailings dams

The fine fraction of waste rock remaining after the mining and on-site processing of mineral resources. This consists of finely ground particles and traces of process reagents and chemical residues. Tailings are piped into engineered impoundments known as tailings dams, which are developed, operated, monitored and maintained to prevent seepage and water contamination both during and after mining operations.

### Tonnes milled

Total tonnes of ore processed.

### Tonnes mined

Total tonnes of ore/coal and waste/overburden mined.

### Total energy used

Calculated from electricity purchased and fossil fuels consumed.

### TRI

Total Recordable Injuries – a measure that includes:

- Lost Time Injuries (including fatalities);
- Restricted Work Injuries; and
- Medical Treatment Injuries.

### TRIFR

Total Recordable Injury Frequency Rate = (LTI + RWI + MTI) x 1,000,000/hours worked.

### V

Vanadium.

### V<sub>2</sub>O<sub>3</sub>

Vanadium trioxide.

### V<sub>2</sub>O<sub>5</sub>

Vanadium pentoxide.

### Waste water discharged

Total volume of effluent discharged to: surface water for irrigation; third parties for treatment; and rivers or oceans.

### Xplc

Xstrata plc.

### Zn

Zinc.

## VERIFICATION STATEMENT

URS was retained by Xstrata to provide an objective and independent assessment of the veracity of significant disclosures made in its 2003 HSEC Report. The assessment was based on evaluation of a representative sample of sites and data, a review of data management and reporting systems and the 16 March 2004 version of the HSEC Report. The seven Xstrata sites visited were Northfleet lead refinery (UK), Mount Isa copper and zinc operations, Ulan coal mine, Bulga coal mine (Australia), Wonderkop chrome smelter, Waterval chrome mine and South Witbank coal mine (South Africa). The data aspects verified were:

**Safety:** Numbers of fatalities, total recordable injuries (LTI, MTI, RWI), fines and penalties.

**Health:** Number and type of occupational diseases.

**Environment:** Energy use, water use (potable, raw, recycled), water discharges, land and biodiversity, air emissions (CO<sub>2</sub>, SO<sub>2</sub>, site specific parameters) and environmental incidents.

**Community:** Number and type of community complaints.

URS used the AA1000 Assurance Standard as the basis of the approach to verification. In a year of considerable change due to major acquisitions Xstrata should be commended for producing a detailed HSEC Report. URS has undertaken a small number of commissions for Xstrata during the reporting period, however, independence was ensured by selecting a team of site verifiers that had no previous involvement with the sites they verified.

### Conclusions

The level of data accuracy presented in the report is considered good particularly for the health, safety and community data. The collection and management processes for environmental data require improvements to reduce the potential for inconsistent reporting on sites from year to year and between sites.

There is a balanced presentation of performance against targets. The report contains statements that are in general accordance with the health, safety, environment and community performance of the group. The balance of the report text and Case Studies focuses on positive rather than negative aspects of commodity group performance.

URS concludes the following regarding the three principles of Materiality, Completeness and Responsiveness for the likely stakeholder groups that the report is prepared for:

**Materiality:** The report provides a fair and balanced representation of HSEC performance although discussion of missed objectives or targets is occasionally lacking at site level. HSEC liabilities are incorporated into overall financial liabilities and reported in the Xstrata Annual Report. These were not verified as part of the verification process.

**Completeness:** Xstrata has good processes in place to identify and understand the HSEC performance of its activities and sites. The report does not give information on Xstrata's activities related to influence on external performance such as the effects of product use and supplier management.

**Responsiveness:** The capture of, and response to, site related stakeholder concerns is well managed and this is reflected in the report.

Xstrata is a relatively young company, which has expanded rapidly since its listing on the London stock exchange in March 2002. URS has observed there is a clear commitment to continuously improve HSEC performance and there are specific initiatives being implemented to improve data collection and reporting systems across the Group.

On behalf of the verification team,



**James MacDermott**

**Principal and Registered Lead Environmental Auditor, URS**

**Paul Jones**, General Manager  
Health, Safety and Environment  
+61 2 9253 6742  
pejones@xstrata.com

**Marc Gonsalves**, General Manager Corporate Affairs  
+44 20 7968 2812  
mgonsalves@xstrata.com

**Justine Winn**, Corporate Affairs Manager  
Xstrata Coal  
+61 2 9253 6748  
jwinn@xstratacoal.com

**Sue Sara**, Corporate Affairs Manager  
Xstrata Copper  
+61 7 3295 7500  
suesara@xstrata.com.au

#### **Head Office**

Bahnhofstrasse 2, PO Box 102  
6301 Zug, Switzerland  
Tel: +41 41 726 6070  
Fax: +41 41 726 6089

#### **Registered Office**

Panton House, 25 Haymarket  
London SW1Y 4EN, United Kingdom

For further information visit our website: [www.xstrata.com](http://www.xstrata.com)

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Xstrata plc Bahnhofstrasse 2 PO Box 102 6301 Zug Switzerland  
Tel +41 41 726 6070 Fax +41 41 726 6089 [www.xstrata.com](http://www.xstrata.com)