

# Rössing. Social and Environmental R E P O R T

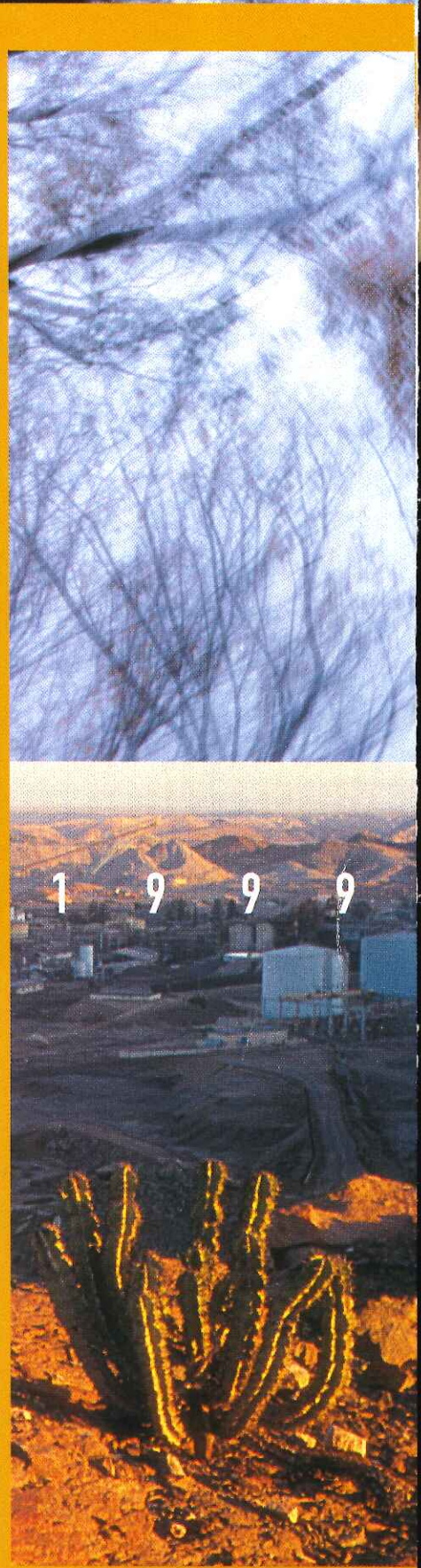
## MESSAGE FROM WERNER HAYMANN, GENERAL MANAGER

1999 was a very busy year for the health, safety and environmental sections. Lost time injuries reduced by 50%, random testing for alcohol and drug abuse was introduced, curative services and the medical aid scheme were privatised, while the implementation of the Environmental Management System (EMS) progressed well.

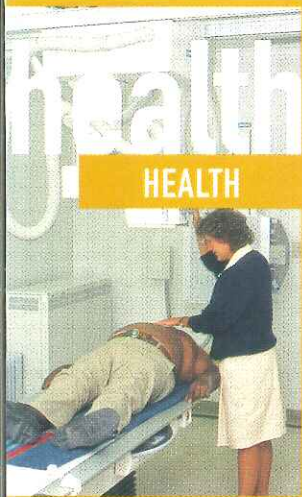
Our policy statement on Health, Safety and the Environment underpins Rössing's commitment to provide a climate in which the interest of health, safety and the environment are of prime consideration at all times.

Effective safety management is achieved by the systematic application of incident and loss prevention practices, by employing safe technologies and operating procedures and through active participation by all employees and contractors. Strategies to ensure environmental sustainability relate to the reduction of use of natural resources, the efficient use of resources and materials, pollution prevention and control, waste management and closure planning.

This report therefore reflects our ongoing commitment to continuously improve our performance in Health



# key health, safety



## HEALTH

### 1999 PLAN

- Determine and manage optimal man-job compatibility. (Man-job refers to the employee and the work that he does eg. job suitability due to the employee's medical condition at a specific time).
- Improve on Health Promotion and Education.
- Introduce an Alcohol and Drug Policy in support of performance.
- Improve radiation dose assessment by the implementation of a personal monitoring programme.

### 1999 PERFORMANCE

- Individual man-job compatibility management achieved maximum attention. Management of transfers within the company ensured compatibility.
- Health awareness continued by means of presentations, the peer education system and articles in the Rössing News reaching approximately 3 000 people. Topics discussed included healthy lifestyles, tuberculosis, sexually transmitted diseases, HIV/AIDS, malaria, alcohol and drugs, smoking and cancer.
- An HIV/AIDS policy was developed and an Alcohol and Drug policy was implemented. Random testing for alcohol and drug commenced, as well as a proactive approach to rehabilitation.
- The radiation exposure levels of personnel monitored in 1999 were well below the standard of 20 mSv/y, as recommended by the International Commission for Radiological Protection (ICRP).



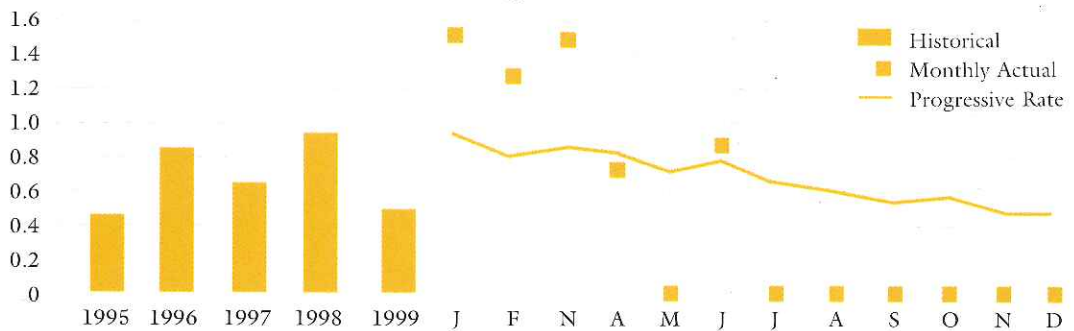
## SAFETY

- Perform Risk Assessment to identify hazards at the commencement of a job and when processes change.
- Include safety performance as an important component of overall performance management.
- Implement immediate follow-through of incidents.
- Further strengthen ownership of safety responsibility.
- Introduce behaviour based safety.
- Implement system to track follow-through of incidents.

- A 50% reduction in lost time injuries was experienced in 1999, sustaining 9 lost time injuries as opposed to 18 in 1998.
- Implementation of an integrated recording/reporting system.
- Implementation of a risk assessment programme for evaluation of all hazards related to tasks.
- A review of whether appropriate usage of personal protective equipment (PPE) was completed and recommendations for changes were approved and implemented.
- An employee died in a road accident on his return from a business meeting. As a mark of respect to his memory, the Company decided to relinquish the NOSCAR safety award for the year, which it has consistently attained for the past 13 years.

### LOST TIME INJURY INCIDENCE RATE

Rössing Uranium Limited



## ENVIRONMENT

- Implement an environmental management system consistent with international standards.
- Implement an improved maintenance programme for the dust extraction systems at the Fine Crushing Circuit.
- Reduce the effects of wind erosion on the tailings impoundment during east wind events.

- A working environmental management system was implemented by June 1999.
- A revised maintenance programme was initiated for the refurbishment of dust extraction systems at the Fine Crushing Plant. The maintenance programme is due for completion in 2000.
- Sulphur dioxide concentrations measured in the vicinity of Arandis averaged 0.002 ppm which is well below the annual average of 0.03 ppm.

# company information



Rössing, the largest open pit uranium mine in the world, is situated in Namibia in south-western Africa. It lies in the Namib Desert, 65 kilometres inland from the coastal town of Swakopmund and 14 km from the town of Arandis. The region is characterised by limited vegetation, rocky outcrops and gravel plains with an average rainfall of approximately 30 mm per year. Today the Rössing mine is the fifth largest uranium producer in the world and accounts for 8% of total world production. Rio Tinto currently holds 68,4% of Rössing's equity.

## MINING AND PROCESSING OPERATIONS

The orebody is mined by blasting and loading the rock into 180 tonne haultrucks with electric shovels. The uranium-bearing ore is then delivered to the primary crushers and waste rock taken to dumping sites outside the pit area.

The primary crushers initially reduce the uranium-bearing rock to an approximate size of 16 cm. It is further reduced in size in three additional crushing stages, finally reducing it to fine sand in the rod mills. Sulphuric acid is added as leaching agent to extract the uranium from the rock. The solution is separated from the ground rock and the solid material is pumped to the tailings dam for disposal.

In the first stage of recovery, resin beads absorb uranium from the solution, which is then stripped from the beads to form a more concentrated solution. This is pumped to a solvent extraction plant where it is further concentrated and the remaining impurities removed. In the next step, gaseous ammonia is added to the solution, causing a precipitate of ammonium diuranate, or yellow cake. This is dried and roasted at temperatures in excess of 600°C to produce Rössing's final product, uranium oxide ( $U_3O_8$ ), which is a powdery substance. The uranium oxide is safely and securely packed into steel drums ready for delivery to the company's customers.

## OTHER FACTS

Rössing is committed to a workforce that is representative of the local population. Of the 1006 employees at the end of 1999, 94 percent were Namibian citizens. The Company offers attractive conditions of employment including housing, transportation to the workplace, membership of a pension and a medical scheme together with free 24-hour life and accident insurance. More than half of the workforce has in excess of 15 years service.

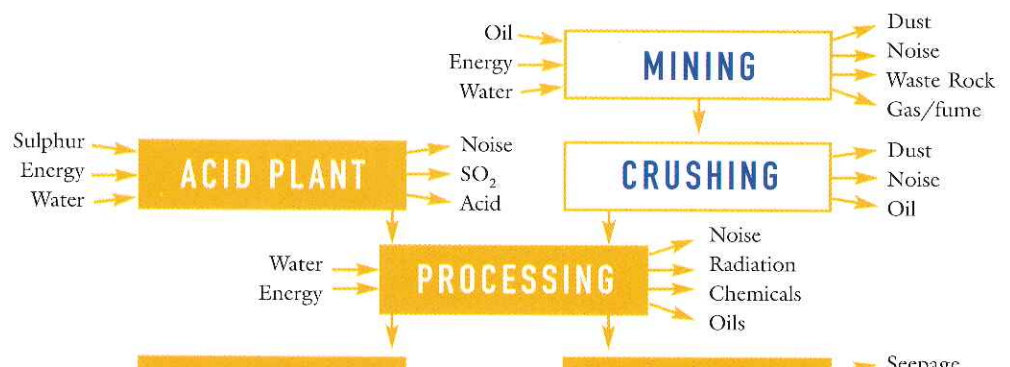
In 1987 the Company signed a recognition agreement with the Mineworkers Union of Namibia of which over 80 percent of employees are members. Union officials and mine management meet on a regular basis to discuss matters of mutual interest.

Rössing's stated and practised policy is to develop all employees to their fullest potential by providing extensive training in mining and related skills and helping to develop a proper understanding of the responsibilities and opportunities each job offers.

The Company also plays an important role in the development of Namibia by its contribution to the economy and the generation of approximately 10% of total Namibian exports. In 1999 employee salaries and benefits, taxes paid and local goods and services purchased totalled N\$650 million.

## KEY ENVIRONMENTAL IMPACTS

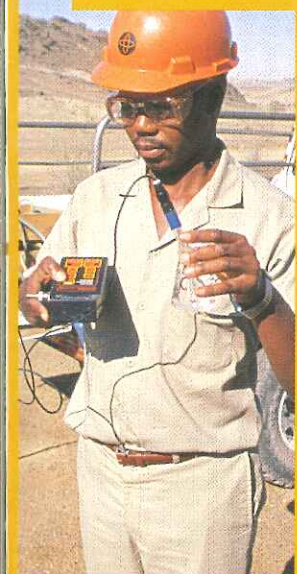
The various processes at Rössing have potential to impact the environment. The key impacts are indicated.



# ety and environmental

## water

### WATER MANAGEMENT



#### 1999 PLAN

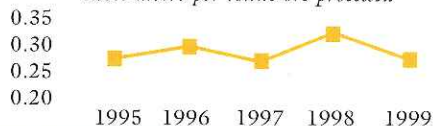
- Introduce Water Awareness training throughout the organisation.
- Improve water management through target setting in individual areas.
- Introduce the Seepage Dam Elimination Project to reduce evaporation. Maintain existing seepage control operations.
- Construct a recovery borehole in Dome Gorge to intercept potential leachate from rockdumps after rainstorm conditions.
- Replace pumps in existing boreholes to effectively lower the water table in areas affected by tailings seepage.
- Optimise the operation of the Tailings Dam Dewatering System, which was designed and implemented to prevent groundwater contamination at source.

#### 1999 PERFORMANCE

- The Water Awareness Programme was successfully completed, resulting in a more conscious use of water in areas where water application is dependent on operator decision.
- Domestic water consumption on the mine was halved during the year. However, only a small proportion (3%) is used for domestic purposes.
- The Seepage Dam Elimination Project progressed through the planning stage and construction commenced towards the end of the year. Measurable water savings are expected towards the third quarter of 2000.
- No discharge of process solutions to the environment took place and the seepage control systems abstracted contaminated water in the operational areas before it could enter the Khan River or leave the Mining Grant. Water quality analyses of samples taken in the Khan River confirmed the effectiveness of the systems.
- The seepage interception system in Dome Gorge was commissioned in October 1999 and is operating according to specifications.
- A number of borehole pumps have been replaced and continuous drawdown of the water table was achieved.
- The Tailings Dam Dewatering System has pumped an average of 504 m<sup>3</sup>/day; more than doubling the volume of groundwater seepage collected close to the seepage source.

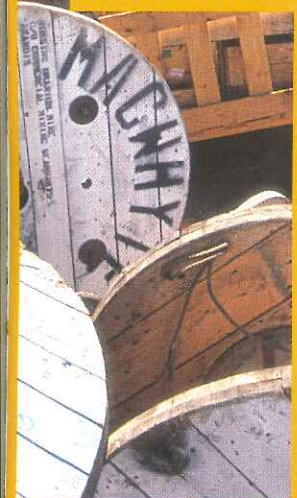
#### FRESH WATER

*cubic metre per tonne ore processed*



## waste

### WASTE MANAGEMENT



- Implement an improved waste management programme ensuring the most efficient utilisation of the present land fill site and conforming to pending legislation.

- Significant incident.

- A revised waste management programme was completed in 1999. Waste sorting at source and a new method of disposal on the local land fill site were implemented.
- A comprehensive recycling programme was completed in 1999. A contract was signed with a local scrap dealer for the removal of all recyclable items such as wood, metal, cardboard, paper and metal drums. An indication of the success of this programme lies in a reduction of up to 70% of all waste disposed of to the landfill site.
- Following a significant leak of locofuel from a distribution line a collection system has been established in the open pit into which fuel is leaking. Fuel and water seepage is collected high up at the north wall of the pit thereby preventing it from interfering with the mining process or affecting employees. By the end of the year 135 000 litres of fuel had been recovered by the system.
- An environmental impact assessment carried out by the CSIR has shown that there is no danger for contamination of soil and water in the wider vicinity of the mine as the open pit is effectively cutting off any downstream leakage. Monitoring has confirmed this.
- The Ministries of Mines and Energy, Environment and Tourism as well as the Ministry of Agriculture, Water and Rural Development have been informed of the leak and are satisfied with the actions taken by the Company. The Department of Water Affairs recommended regular monitoring to ensure that the wider environment is not affected.

## land

- Concentrate on partly decommissioned areas related to the exploration period of the mine, namely the PTZ Camp area about 10 km to the

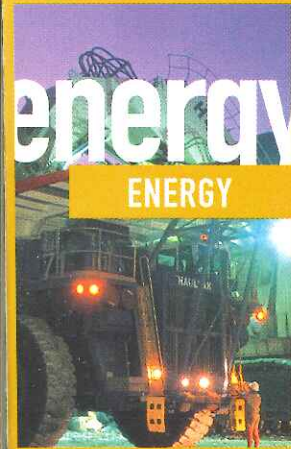
- No new land was disturbed during 1999.

- All historical waste sites were mapped and an assessment of their

P E R F O R M A N C E

1999 PLAN

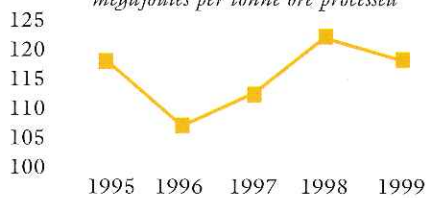
1999 PERFORMANCE



- Constantly seek opportunities to conserve energy.

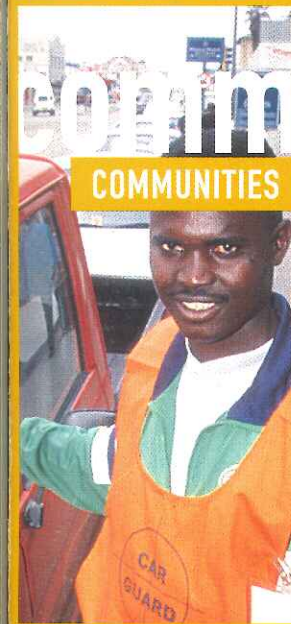
- In 1999, commitment to the participation in the Industrial Energy Management Project (IEMP) resulted in the implementation of energy saving projects such as:

**ENERGY CONSUMPTION**  
megajoules per tonne ore processed



*Note: Lower energy was consumed in 1996 due to less waste rock being removed and less acid produced.*

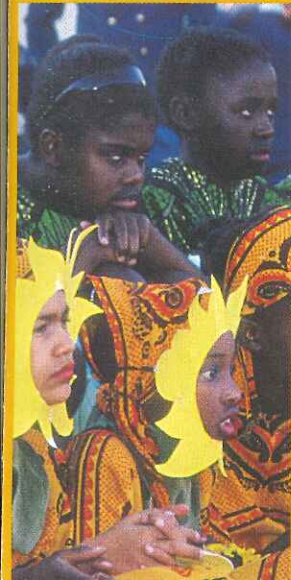
- Sealing of compressed air linkage pipes resulted in a 390 Kw compressor being taken out of the system.
- Reduction in the reactive power by limiting the maximum demand from the power supplies.
- Replacement of variable speed couplings on pumps with electrical speed drives resulting in the pumps consuming about 15% less power.



**RÖSSING COMMUNITIES PLAN**

- Develop a policy and comprehensive plan focusing on the Erongo region and review against Rio Tinto guidelines.
- Plan to include programmes for literacy, sponsorships, consultations with stakeholders, new initiatives, and partnerships.

- Policy and plan finalised. Implementation commenced during the year which included the following activities:
- Literacy classes were presented on site and in Arandis.
- A total of 22 schools in Arandis, Swakopmund and Walvis Bay received a donation of book prizes for the annual prize giving ceremonies.
- Sponsorships for the year included the Namibian Marathon Championship in Swakopmund and the National 15 km championship in Windhoek.
- Visitors to the mine totalled over 2 500, including Government ministers and representatives, as well as members of the diplomatic corps. Business briefings were also held with Government, business and community leaders, suppliers, employees' spouses and the media.
- Rössing initiated the establishment of the regional branch of the Association for Resource Management against Alcohol and Drug Abuse (ARMADA) involving nine other companies at the coast.
- A partnership was formed with the Erongo Development Foundation to support entrepreneurial initiatives in the region.
- The car guard project was supported to assist them to purchase radios in the quest to fight crime at the coast.



**RÖSSING FOUNDATION PLAN**

- Rationalise and consolidate existing programmes to focus on core tasks.
- Develop a few selected programmes to strengthen current objectives.

- The strategic plan provides for three broad areas of operation, namely adult basic education and training, natural resource management, and enterprise development.
- Selected adult basic education and training programmes continued with a focus on practical skills to open opportunities for employment and self-employment.
- Training programmes were used as an outreach activity and target for rural communities to increase local capacity.
- The Foundation continued providing professional support to a wide range of activities including the five community libraries and resource centres, technical support and financial training.
- The two craft showpieces, Mud Hut Trading and Namibia Craft Centre, performed very well in 1999.
- New programmes were developed which included a tender awarded for a USAID funded education project, increase in the services of the craft

# objectives for 2000

## HEALTH

- Improve the health status of the workforce.
- Actively analyse medical data and identify potential possible research areas.
- Implement recommendations of current research projects.
- Be more active in health care promotion programmes in the community.

## WATER MANAGEMENT

- Implement a programme to achieve compliance with Rio Tinto water management principles. Emphasis will again be placed on setting performance targets for water saving, upgrading the site water balance as well as completing risk assessments and more frequent inspections of storage and reticulation facilities.
- Commission the Seepage Dam Elimination System to reduce evaporation losses.
- Implement a wellfield to control evaporation losses from surface water bodies NW and N of the tailings facility.
- Install a water recycling system for the dust collectors at the pre-screening plant to reduce water loss in the crushing plant.
- Continue monitoring and upgrading of the existing seepage control systems during 2000.

## SAFETY

- Implement formal Risk Assessment programme fully.
- Reduce lost time incidents by 50% against 1999 performance.

## ENVIRONMENT

- Obtain ISO14001 certification of Rössing's Environmental Management System.
- Continue the programme of improving the efficiency of the bag type dust extractors at Fine Crushing.
- Import bulk volumes of sulphuric acid thus reducing sulphur dioxide emissions by the closure of the Acid Plant for the short to medium term.

## WASTE MANAGEMENT

- Assess and upgrade all hydrocarbon management systems on site during early 2000.
- Clean up of areas contaminated by hydrocarbon spillage around the fuel transfer systems.
- Establish an area (Land Farm) to biodegrade oily sludge, contaminated soils and other oily wastes.

## ENERGY

- Seek opportunities for the further reduction of energy consumption.

## LAND

- Clean up of soil in the area behind the Acid Plant which was contaminated by acid and diesel spills.
- Decommission exploration sites.

## COMMUNITIES

### RÖSSING COMMUNITIES PLAN

The plan will deliver results in the following areas:

- Empower Namibians to improve their quality of life.
- Build lasting relationships which are of mutual benefit to Rössing and its communities through ongoing communication and active participation.
- Provide assistance in areas of community needs, such as welfare, education and the environment.
- Invest resources into development programmes that will enhance the profile of Rössing through selected sponsorship activities.

### RÖSSING FOUNDATION PLAN

Three year plan provides for:

- Continuation of existing activities and expansion into carefully selected areas where funding can be sourced.
- Building mutually beneficial partnerships and maintaining the profile of the Foundation at national level.

## DATA TABLE

	1995	1996	1997	1998	1999	Target for 2000
Number of employees	1239	1189	1249	1182	1006	890
Production Data						
Ore Processed (000 tonnes)	6981	8330	10 688	10 958	10 463	11 448
Waste Rock Removed (000 tonnes)	9 510	10 656	16 137	14 637	15 607	12 725
Ratio Ore Processed : Waste Rock Removed	0.73	0.83	0.66	0.75	0.67	0.90
U <sub>3</sub> O <sub>8</sub> Produced (tonnes)	2 369	2 891	3 425	3 260	3 171	3 503
Fresh Water Consumption (000 m <sup>3</sup> )	1 980	2 474	2 820	3 542	2 779	2 700
Fresh Water per tonne Ore Processed (m <sup>3</sup> /t)	0.28	0.30	0.26	0.32	0.27	0.24
Ratio of Fresh Water : Total Water	0.33	0.38	0.29	0.35	0.27	no target set
Seepage Water Collected (000 m <sup>3</sup> )	2 313	1 935	2 009	1 821	2 102	2 160
Emissions to Air						
SO <sub>2</sub> (t)	2 378	1 926	3 006	3 090	2 347	0 after Quarter 2*
CO <sub>2</sub> (Kt CO <sub>2</sub> equivalent)	102.6	111.3	143.6	155.6	148.6	141.2
SO <sub>2</sub> per tonne Acid Produced (kg/t)	14.2	13.0	15.0	15.3	11.2	0 after Quarter 2*
CO <sub>2</sub> per Unit of Production (t/t U)	43.3	38.5	41.9	47.7	46.9	40.0
Energy Use on Site (Gj)	821 058	893 410	1 180 282	1 339 321	1 248 202	1 185 792
Energy Use per tonne Ore Processed (mg/m <sup>3</sup> )	2.55	1.01	0.73	0.88	1.22	1.04