

## The Rössing mine ...

Uranium was discovered in the Namib Desert in 1928, but it was not until intensive exploration in the late 1950s that much interest was shown in the area. After discovering numerous uranium occurrences, Rio Tinto secured the rights to the low-grade Rössing deposits in 1966. Ten years later, Rössing Uranium, Namibia's first commercial uranium mine, began operating.

Today, Namibia has two significant uranium mines and provides 7.1 per cent of world uranium oxide mining output, of which 4 per cent is produced by us. The mine has a nameplate capacity of 4,500 tonnes of uranium per year and, by the end of 2012, had supplied a total of 123,453 tonnes of uranium oxide to the world.

The mine is located 12km from the town of Arandis, 70km inland from the coastal town of Swakopmund in Namibia's Erongo Region. Walvis Bay, Namibia's only deepwater harbour, is located 30km south of Swakopmund.

The mining operation is in a semi-arid environment. Insolation at Rössing is high, and as a result, daytime ranges of temperatures are wide, especially during late autumn and early spring, when the difference between minimum and maximum temperatures

exceeds 20°C daily. The lowest temperatures are recorded normally during August, but frost is rare. The highest temperatures are recorded in the late summer, particularly March.

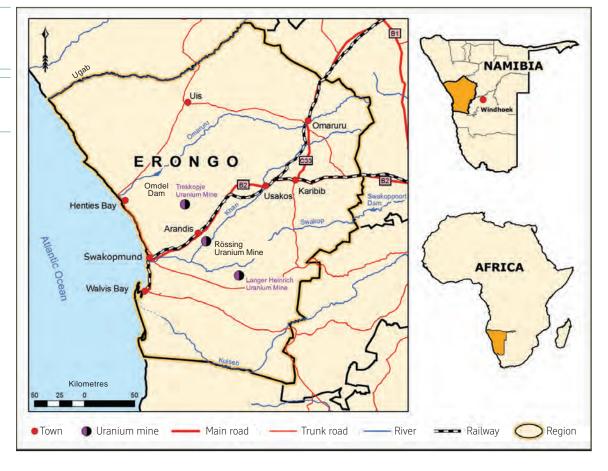
The annual rainfall recorded on the mine was 17.4mm in 2012, which is an almost 50 per cent deviation from the long-term average of 31.8mm. The rainfall for 2012 is about one fifth of the total rainfall of 2011, indicating the huge inter-seasonal variation potential at Rössing.

The mine site encompasses a mining licence and accessory works area of about 180km<sup>2</sup>, of which 25km<sup>2</sup> is used for mining, waste disposal and processing.

Mining is done by blasting, loading and hauling from the main open pit, referred to as the *SJ Pit*, before the uranium-bearing rock is processed to produce uranium oxide. The open pit currently measures 3km by 1.5km, and is 390m deep.

Front page photograph: Haul-trucks, hauling ore from the Rössing's SJ open pit.

Right: Map of the Erongo Region indicating the location of the mine.



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#### The purpose of this report

This report aims to give readers an overview of the activities of Rössing Uranium Limited (Rössing) from January to December 2012, and our interaction with society, the economy and the environment. Although the Rio Tinto Group is the majority shareholder of Rössing, it is not the only stakeholder that has invested in the business. All individuals and institutions that influence and are affected by the company are stakeholders, including the mine's employees and contractors; the

communities of Arandis, Swakopmund and Walvis Bay; Government institutions; service providers; and the mine's customers. The aim of this report is to provide locally relevant information about our business and about issues raised during the year. We practise a philosophy of open communication and simultaneously instil a culture of sustainable development that touches every part of our company.

## Message from the managing director



Welcome to Rössing Uranium's Report to stakeholders, which explains our business and our approach to what we do. The report also serves to outline how our business performed in 2012 against the key indicators by which we, our surrounding community and external stakeholders measure company performance, and discusses the progress that we made during the year towards improvement in the areas of economic, environmental, people and community performance.

If you have ever visited Rössing or interacted with Rössing employees, I hope you have been struck by the emphasis we place on safety. It will always remain our key value, and permeates through all our activities as a business and as a team. Our goal is to create an injuryand illness-free workplace, where everyone is healthy and goes home safely each day.

The highlight of 2012 was the noticeable improvement in safety. Not only have injury rates fallen to well below the target we set for ourselves, but we have seen the level of employee involvement increase. Positive improvements arising from the various initiatives were undertaken, many of them initiated and completed by our employees. However, we will not rest until we reach our ultimate goal of zero harm.

We have also made significant improvements in business performance during 2012. Production improved significantly, including improvements in shovel productivity, operations and maintenance. Processing output also increased substantially, especially in the Fine Crushing area, and uranium grade also boosted production.

The 2011 tsunami in Japan and its impact on the Fukushima nuclear plant continued to plague the uranium market in 2012, with excess supply causing a decline in market prices. The spot uranium price rallied somewhat towards the end of the year, but returned to the low level of US\$40 per pound, with little improvement expected in the short term.

The impact of the lower price and lower sales volumes, despite the improvements in uranium production and unit costs, strained operational cash flow, resulting in an operational loss.

Despite the short-term challenges, the future for uranium remains bright. In Japan, the climate for reactor restarts is improving, and China continues its nuclear build programme following a post-Fukushima safety analysis. China is set to become the main driver for the uranium industry in the coming decades.

As the world's longest-running open-pit uranium mine, and one of the largest producers of uranium oxide globally, Rössing has the resources, infrastructure and expertise in its favour. As always, the skills and resilience of our people will remain our biggest strength.

We will continue to work hard to ensure that everyone at Rössing has the opportunity to contribute to our improvement journey. In facing our challenge to remain cost-competitive, our focus will remain on safety and on improving our efficiency, productivity and operating costs to ensure that Rössing is well-positioned to withstand the short-term pressures and preserve future growth options. These growth options will be targeted at increasing production as well as examining the potential to further extend the mine life.

As our track record demonstrates, Rössing is committed to its shareholders, employees, the communities in which it operates, and to Namibia in general. I thank you for your support in 2012 and look forward to the challenges of 2013.

Chris Salisbury Managing director 30 April 2013

## Rössing Uranium's 2012/13 strategic pillars

Our strategic pillars summarise the key drivers that have enabled us to stay focused, and on which we now report.

#### Core purpose

Maximising the value delivered to our shareholders by being a safe, significant and growing long-term supplier of uranium to the world nuclear power industry.

#### **Strategy**

Enabling Rössing's capability to deliver operations and reputational excellence through safety, productivity and cost improvement.

Strategic pillars	Health, safety and environ- ment	Financial and operations excellence	Value adding growth, innovation and technology	People	Licence to operate	Customers and markets
Our inspiration	Zero harm	Value adding operations	Value adding growth	Employer of choice	<ul> <li>Developer of choice</li> <li>Number one corporate citizen in Namibia</li> </ul>	Supplier of choice
Key drivers	Behavioural safety  Effective leadership  Accountability  Efficient and effective systems and procedures  Exemplary management of critical risk  Process safety management  Revitalise Occupational Health, Safety and Environment committees	Top quartile margins Continuous net present value growth Optimally using existing assets A major contributor to Namibia's gross domestic product Rigorous cost and financial management Top-performing heavy mining equipment and fixed plant in Rio Tinto	Extensive proven reserves     Proactive collaboration     Unlock additional value from reserves and resources     Leverage technology     Intellectual property and knowledge management     Improvement projects	A great working environment     Deployment of trained and returnee bursary holders     Creative and innovative employees     Effective communication     Performance management and rewards     Development of leaders	Strong Government relations Stakeholder engagement Recognised for quality and commitment to sustainable development Climate change and energy strategy Transformational Economic and Social Empowerment Framework (TESEF)/New Equitable Economic Empowerment Framework (NEEEF) The Rössing Foundation: valued corporate social responsibility delivery pathway Plays an active role in the Uranium Institute and the Strategic Environmental Management Plan (SEMP)	Long-term contracts underpinning life of mine     High standards of operation and reliability     Contributes to policy debate     World-class, fact-based marketing strategy and tactics

## 2012 at a glance

The year under review was a busy and challenging one, but with many positive changes made to set up the business for growth and an even longer mine life. Substantial improvements were made in the areas of safety performance, production and the containment of operational costs. To build our future, we will continue to focus on our strengths: our people, our reputation and heritage, our resources and infrastructure, our growth options, and the support of Rio Tinto.

## Safety

All Injury Frequency Rate (AIFR) achieved in 2012:

0.49

Our safety performance improved substantially compared with 2011. The AIFR achieved for the year was 0.49 overall, against a target of 0.65. (See page 38 for detail on the measurement of AIFR.)

## Market conditions

Short-term challenges, but global nuclear power is still showing long-term growth

The impact of the events in Japan in 2011 continued to plague the uranium market throughout 2012, but the climate for reactor restarts in Japan is improving. After recommencing its nuclear build programme, China will be the main driver for the uranium industry in the coming decades. Uranium mining will still need to expand significantly to meet global energy demand.

Production
2,699 tonnes of uranium oxide produced

Although we did not achieve our production target, significant improvements were made in many areas. Both throughput and uranium oxide produced showed upward trends during the year, culminating in a record performance of 40,000 tonnes per day milled throughput in October.

### Financial performance

Loss of

N\$474 million We reported an operating loss for the third consecutive year. Moving from a profit of N\$290 million in 2009, our losses were N\$43 million in 2010, N\$464 million in 2011, and N\$474 million in 2012.

## Cost and efficiency

will remain key focus areas

In facing the challenge to remain cost-competitive in the market, we will continue our focus on improving our efficiency, productivity and operating costs to ensure that Rössing is well-positioned to withstand short-term pressures and can continue to grow. Our ongoing efforts to implement business improvement strategies will ensure the continued viability of our business.

### **Exploration**

Z20 uranium occurence a

## significant

resource

The Z20 uranium occurrence, explored by Rio Tinto Exploration on behalf of Rössing since 2010, turned out to be a significant resource. The drilling programme was completed in March 2012, and subsequently a follow-up drilling programme was launched in August 2012.

# Business improvement Innovative programmes

The year under review was one of innovative business improvements. We continued to invest heavily in time and resources to improve our efficiency, productivity and cost base in order to remain competitive in the marketplace. As part of our Sustainable Performance Acceleration at Rössing (SPAR) initiative, change leaders were identified in the different business areas to drive business improvements across the mine.

## Human resources Teamwork

has improved markedly

The streamlined organisational structure has resulted in benefits such as improved teamwork and efficiency. We worked together to improve a number of agreements and signed a salary agreement for the next two years.

# Mining productivity improved

Due to their consistent efforts to improve mining rates, the mining team mined close to 204,000 tonnes in one day, a monumental achievement which greatly exceeds the 130,000-tonnes daily target. Shovel productivity also increased substantially, and the effective utilisation of the haul trucks improved steadily throughout the year.

## Executive committee



Executive committee members as at 30 April 2013:

(Back row) Shaan van Schalkwyk: chief financial officer; Ben Devries: general manager Mining; Penda Kiiyala; general manager External Affairs and Communities; (middle row) Bernard Morwe: general manager Processing; Lamar Nichols: general manager Business Improvement; (front row) Melissa Shanjengange: general manager Human Resources; Chris Salisbury: managing director; Mpho Mothoa: chief operating officer

## Our sustainable development approach

Sustainable development is the distinctive, significant and characteristic centre of our overall approach to business.

Everything we do is in line with the generally accepted definition of *sustainable development* as development that meets the needs of the present without compromising the ability of future generations to meet their needs. This suggests that meeting the needs of future generations depends on how well we balance social, economic and environmental needs when making decisions today.

The aim of sustainable development is, therefore, to seek out win—win situations that can achieve environmental quality and increase economic wealth and social wellbeing, today and tomorrow.

Our vision remains focused on being able to -

- create long-lasting positive effects for the people of the Erongo Region and Namibia;
- build capacity to ensure that we contribute to the future well-being of our employees;
- minimise negative impacts and optimise positive ones; and
- maintain our reputation as a responsible corporate citizen of Namibia.

When conducting our business we ensure that we maintain a balance in the way we –

- utilise our assets (both our own resources and environmental resources);
- contribute positively to the needs of society by providing support to the communities without creating dependency; and
- generate economic wealth.

Driving the integration of sustainable development at Rössing are the six themes (or pillars) highlighted alongside. These themes form the core of our business.

#### People

Our workforce is central to our business. This means ensuring a safe and healthy workplace geared for human resource development, in order to attract and retain employees while maximising our contribution to their well-being.

#### **Communities**

By understanding the diversity of the communities within which we operate, and through continuous interaction with them, we are able to respond to their concerns and needs. Moreover, the communities that host us should realise a net benefit and a long-lasting, positive effect from our activities.

#### **Product stewardship**

This theme focuses on expanding our understanding of the impact of our product on society by working with all interested and affected parties.

## **Environmental and asset resource stewardship**

We aim to be the leader in environmental stewardship and to maintain our reputation as a responsible corporate citizen. This can be achieved by understanding and appreciating our natural resources, both biotic and abiotic, utilising them in a sustainable manner, and creating a net positive impact.

#### **Economic viability**

With the aim of providing the best returns on investment for our shareholders, we need to understand the long-term demand for our product, as well as the cost, resource availability and value creation associated with such demand. Economic viability also ensures that we continue to make significant contributions to the country's economy and its people in various ways.

#### **Corporate governance and compliance**

We strive to be transparent and proactive in all our business operations. Thus, we have business systems in place which are auditable, and these form the backbone of good corporate governance.



The change leaders, spearheading improvement projects in the different operational areas, are (fltr) Paul Basson, Liezl Davies, Edward Robberts, Ruben Makgone, Phillip Kaune, Ulli Jerzembeck, Karin Abraham, Veiko Nangolo, Shaun Louw, Mengo Siwale, John Emuno, Renate Lemke, Immanuel Shikongo, Nico Mouton and Lamar Nichols (Lean Six Sigma coach).

## Business improvement

Within the context of global energy generation and utilisation trends, 'business as unusual' has emerged as the key driver in shaping the global nuclear fuel industry and has undoubtedly left a distinct mark on international and local uranium producers. During the past few years, Rössing has found itself under increasing pressure regarding all aspects of its business.

There has been pressure to perform and deliver on production plans, returns on investment expectations, shareholder expectations and stakeholder requirements. In addition, pressures have increased regarding safety, the environment and sustainability. The company has had to keep all those involved in the business safe, and reduce costs to a minimum. The continuous uranium and commodity price fluctuations, volatile exchange rates and legislative challenges have put further strain on Rössing's business.

Business improvement is not a new concept at the mine, even though the methodology has changed over the years. Various initiatives have delivered varying degrees of success, all of which have contributed to the mine's present business improvement profile. A Sustainable Performance Acceleration at Rössing (SPAR) programme was launched in 2010 to improve safety and production and bring down operation costs. This programme continued through 2011 and 2012 and has evolved into an approach that aims for a greater number of smaller-scale, shorter- duration projects. This approach allows for a culture of continuous improvement, which delivers value and solutions that are more sustainable over time.

Positioning Rössing to withstand projected short- and medium-term economic challenges has become part of the daily business and business imperative of the mine. It is recognised that there is no alternative but to streamline our processes, declare a crackdown on waste, and fully utilise our human resources. A changed mindset has been required by all towards profitability.

This has focused proactively on any activity that may hamper profitability (eg reducing unplanned down time on assets or equipment failures), or that may enhance profitability (eg implementing more efficient maintenance programmes). Discouraging all activities that do not add value has become central to our current approach towards improvement and the building of a bright future.

We assigned 15 change leaders in 2012, whose responsibility is to assist and support the mine to move closer to profitability. The Business Improvement unit is currently in the process of grooming and training these leaders, who will run improvement projects in their specific operational areas in order to effectively roll out the improvement plan.

These leaders are being skilled in the methodology of surrounding problem-solving. By going through this training programme of theory and practice, these leaders are being prepared for their crucial role as improvement catalysts who will head various improvement projects aimed at a wide range of outcomes, from making the workplace a happier place, to cost reduction, cost avoidance and revenue generation. These improvement projects will, in time, bring Rössing closer to being able to reduce recurring failures, create a culture of continuous improvement, run improved processes, reduce down time, capture more meaningful data, increase production, strengthen internal and external partnerships, become a proactive organisation, and ultimately, justify its existence as a Rio Tinto operation.

## Marketing our product

All uranium produced by Rio Tinto's mines is marketed by London-based Rio Tinto Uranium Limited. Rössing, one of the largest and longest-operating uranium mines in the world, supplies electricity companies located in all three major markets: Asia, North America and Europe. Almost all of Rössing's production is marketed through long-term contracts with a diverse selection of customers.

In contrast to the market volatility of 2011, the uranium market in 2012 was relatively stable, both in the spot and long-term markets. The spot price began the year at US\$52 per pound, but gradually fell by US\$10 per pound, swinging between a high of US\$52.75 and a low of US\$41 over the course of the year.

This market was mainly driven by traders and other intermediaries who were selling small lots and trying to influence the price by a few dollars up or down in order to secure short-term trading profits. Firm utility demand was almost non-existent in the spot market, although many utilities bought material on a discretionary basis and to build inventories when sellers offered aggressively. For the most part, near-term demand remained soft for a variety of reasons, as mentioned below.

#### Uncertainty in Japan

As a result of the Fukushima incident and its contributing factors, only two of Japan's 54 nuclear units were permitted to resume operations in 2012. No other units have been permitted to restart operations until thorough 'stress-test' evaluations have been completed and local and national governments have given their approval. A new regulatory body, the Nuclear Regulation Authority, has been created to review the individual stress-test reports and to authorise restarts when all recommended safety upgrades have been completed, including, in some cases, strengthening tsunami defences around nuclear power plants.

#### Stockpiling in China

Due to China's huge projected growth rate for nuclear power, the country has been actively building up a stock of uranium for the future. In the last few years, China is estimated to have purchased well over 100 million pounds of uranium oxide from international suppliers. This equates to two full years of demand in the United States (US), which is currently the world's largest market. Most of this uranium has come from

Kazakhstan, China's closest and largest supplier. Thus, while China continues to purchase from Rössing and other Western suppliers, the demand in that country is not as large in the near term because of the massive inventory position that has been secured.

#### High inventory levels

Utility inventory levels are higher than normal around the world. This is true mostly of Japan, but also of Europe, the US, and even China. This means that utilities are relatively comfortable with waiting to contract new supplies, and are more interested in looking for bargains rather than in covering their needs well into the future.

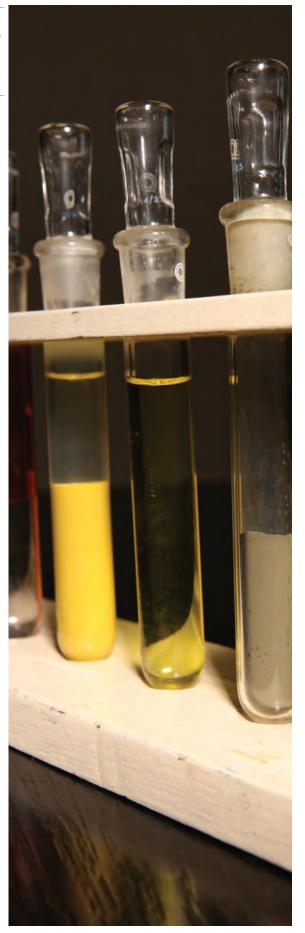
#### Other operational issues affecting demand

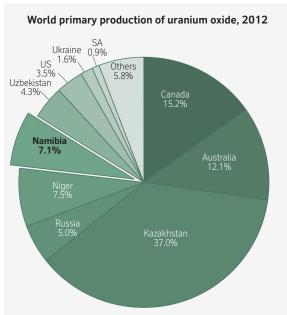
Outside Japan, a number of nuclear units have faced significant operational problems that were exacerbated by the Fukushima incident. In the US, the Kewaunee unit has been closed for economic reasons due to extremely low natural-gas prices in its service territory. The San Onofre unit has experienced serious problems with its steam generators, and the Crystal River unit with its containment structure. The cost of repairs may prohibit both these units from operating in the future. Europe is dealing not only with the eventual shutdown of the German industry, but also with controversies surrounding the safety of older units in Belgium and elsewhere. These factors have kept purchasing departments out of the market.

In the long-term market, which is more relevant to Rössing's contract prices and revenues, the environment in 2012 was much more stable, but also very quiet. The long-term price started 2012 at US\$61 and remained at that level for much of the year. By December, however, a troubling sell-off occurred.

Producers who apparently had not secured adequate sales volumes during the year became much more aggressive, lowering their prices by US\$3 to US\$4 per pound, so that the long-term price ended the year at

Test tubes depicting the different processing stages of our product in the mine's chemical laboratories.





US\$56.50 per pound. The fact that most Japanese units remain off-line, and that Japanese utilities have been either cancelling or requesting deferral of deliveries, is probably the main reason behind the excess supply and price aggressiveness of sellers in both the spot and term markets at present. This situation will only turn around once this excess material has cleared from the market and is on its way to being consumed in reactors. As noted, the political climate in Japan is becoming more favourable, as politicians and the public become more realistic about the country's energy options. Reactor restarts depend in part on public support, and the industry and the Government are working hard to rebuild that confidence, and will continue to do so in the coming years.

After halting its construction plans during 2011 while it reviewed the safety implications of Fukushima, China has now resumed approval for new units. There are 16 units operating in China at present, with 29 units under construction, and a further 50 units in the early planning stages. China, thus, remains the growth leader in the industry by far, and Rössing is well-positioned to build on its role as one of China's major suppliers.

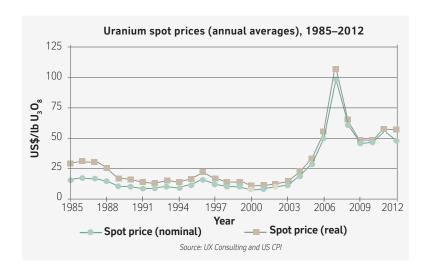
Elsewhere, demand continues to grow on a more moderate scale despite the challenging global economic environment. New reactors are under construction in Korea, Finland, France, Taiwan, India, Russia, the US and the United Arab Emirates. The United Arab Emirates conducted a tender for long-term uranium supply in 2012, and Rio Tinto was one of the successful bidders. This means that Rössing gained a foothold in the supply portfolio of the first major nuclear power programme in the Middle East. A number of other countries are considering building new units, including Turkey and Vietnam.

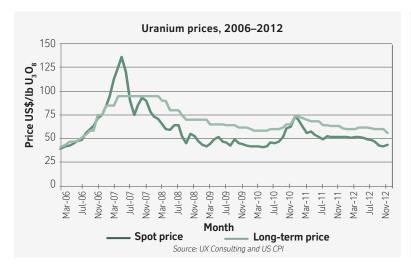
With the price of uranium declining, 2012 was a difficult year for all uranium miners around the world. Consequently, few new mines are expected to enter

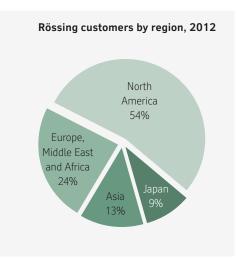


"The after-effect of the events in Japan in 2011 continued to plague the uranium market throughout 2012, as excess supply caused a further decline in market prices in the second half of the year. The good news is that the climate for reactor restarts in Japan is improving, as the new Government elected in December 2012 is committed to returning the Japanese nuclear fleet to service as soon as is practical. It has become an overwhelming economic and energy security priority for Japan, given that the country experienced its first trade deficit in 30 years due to the need to import expensive liquid natural gas to power its economy. In addition, China has recommenced its nuclear build programme following a post-Fukushima safety analysis, and China's programme will be the main driver for the uranium industry over the coming decades.."

Clark Beyer: managing director, Rio Tinto Uranium







production in the next few years, given the weak pricing environment. At current price levels, not only is Rössing challenged to achieve profitability, but many other mines are struggling financially. However, the industry will need new mines to be developed in the next five years to meet post-2020 demand. New projects will only be delivered if incentive prices become higher than they are at present. As noted in the 2011 Stakeholder report, while the market effects of Fukushima could last for another

year or two, at some point higher prices will be needed to ensure sufficient new mine production for the growing number of reactors worldwide, and the rapidly growing number of units in China.

The long-term outlook for the nuclear industry therefore remains bright.

## Our operations

Rössing's operations consist of two distinct activities: mining of the uranium-bearing rock, and processing this ore to produce uranium oxide. The mine operates on a 24-hour, 365-day basis, with all our attention directed not only towards creating shareholder value and keeping the business safe and viable, but also towards ensuring that we are a long-term contributor to Namibia's economy.

#### **Exploration and resource modelling**

A first step in any mining activity is to understand the geology of the ore body. The most critical questions that need to be answered for any mine are: What is in the ground? Where is it? How much of it is there? The answers to these questions lie in ongoing development initiatives and a well-defined strategic approach, allowing us to be well-positioned to further extend the life of the mine.

#### The Z20 deposit (Greenfield)

The Z20 ore body is situated on a portion of Rössing's mining licence area that overlaps the Namib Naukluft National Park to the south of the Khan River. The deposit, explored by Rio Tinto Exploration on behalf of Rössing since 2010, turned out to be a significant resource comparable to Zone 1 of the neighbouring Swakop Uranium's Husab ore body. This is not surprising since these bodies are aligned along similar geological structures.

The Z20 exploration is being conducted in three phases. Phase 1, which defined the position of the resource, was carried out between 2010 and 2011. This was followed by Phase 2, completed in 2012.

Due to the encouraging results of the Phase 2 exploration work, it was decided to continue the drilling programme into Phase 3, which commenced in August 2012. The aim of the programme is to upgrade the resource rating from 'inferred' to 'indicated' by completing 25,000m of drilling. This drilling comprises 15,000m reverse-circulation and 10,000m diamond-core drilling in around 80 drill holes, bringing the total drilling meterage on the Z20 prospect to 50,000m, with a total of 160 drill holes.

Other components of the drilling programme include detailed 1:2,000-scale geological and structural mapping, specific gravity sampling to accurately estimate the number of tonnes of resource, sulphur content analysis to predict the potential for acid

drainage of waste rock, and down-hole structural data interpretation to assist with the interpretation of subsurface geology.

In August 2012, a pre-start and induction week was held with new staff and contractors to assess potential risks and hazards and to ensure compliance with Rio Tinto standards. A training programme was implemented, including driver training, wilderness first-aid training and technical workshops.

The first drill contractor arrived on site in September and was approved to drill with its first reverse-circulation rig in October, with the second following in November. The second drill contractor arrived on site in November and began diamond-core drilling. At the end of 2012, a total of 3,548m of percussion drilling and 1,566m of diamond-core drilling had been completed, representing a cumulative 20.5 per cent of programme completion.

Upon completion of the Phase 3 drilling programme a decision will be made on whether to proceed with further exploration or development activities and if not, the site will be rehabilitated and audited. Successful rehabilitation is critical for Rio Tinto to receive the support of the national parks authorities and the local communities, and for Rössing to be allowed to continue its operations in the region.

The Social and Environmental Impact Assessment of the initial mining plans commenced in October 2012. Two components of the plans are being assessed.

The assessment of the first component, an infrastructure corridor to link the Z20 area on the southern side of the Khan River to the Processing plant by road and conveyor, has already been completed. This assessment was submitted to the environmental commissioner for a decision as to whether an environmental clearance certificate could be granted.

During 2013, the second component of the project will be assessed. This involves mining the ore from a Z20



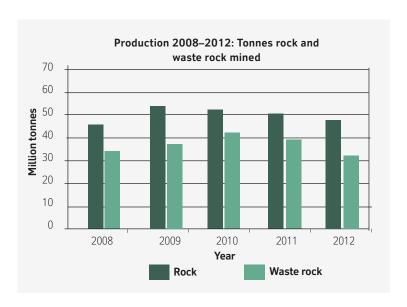
The reverse-circulation drill rig at the Z20 deposit where geologist Mesag Nekongo conducts a risk assessment with the contractor team.

open pit and disposing of waste rock near the Z20 mine, as well as establishing a new Tailings Disposal facility at Rössing. All the environmental work, including a cumulative assessment of all mining-related projects in the Erongo Region, including Z20.

#### The SJ deposit (Brownfield)

Following an announcement in 2012 that Rössing and the Husab project would not establish a processing joint venture, the mine continues to evaluate its options for alternative development opportunities growth. Key to this is the accurate resource estimation of the main SJ ore body and reverse-circulation drilling recommenced in the pit during 2012 to improve the accuracy of the short- to medium-term mine plans.





#### Mining operations

The main activities associated with mining are drilling and blasting to break the rock, loading the ore by shovel onto haul trucks, and hauling the ore from the pit — either to the Processing plant if the ore grade is high enough, or to the waste rock dumps adjacent to the pit if the ore grade is too low.

A total of 46 million tonnes of rock was mined in 2012. Although Rössing performed well in terms of mining activities, it underperformed on delivering the expected uranium ore grade.

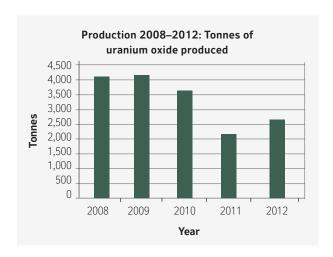
Much less waste-stripping was carried out in 2012 compared with the previous three years. *Waste-stripping* entails the removal of blasted rock that does not bear sufficient uranium and is, therefore, uneconomical to process.

Towards the end of 2012, the mine was operating with 32 haul trucks, five shovels and two 994-model frontend loaders. As less waste was mined from the pit, it was possible to withdraw one shovel and five haul trucks from production.



Left: Abuid Kapere (diesel fitter) walking past the rear wheel of a front-end loader while busy with maintenance tasks in the workshop.

Right: Pendapala Shipunda (senior geological assistant) and Johannes Kavendji (senior geological assistant) cutting core samples using a new diamondautomated core saw.



#### **Processing**

The Processing department is responsible for the safe and efficient extraction of uranium from ore, and for processing it into final product for shipment to overseas converters.

The key production challenge in 2012 was to deliver product at low cost in the face of low ore grade from the open pit after the closure of Trolley 10 ramp in late 2010, and the revised mine life plan which required high stripping ratios.

Drummed final product for 2012 amounted to 2,699 tonnes of uranium oxide, a 26 per cent increase in production on the previous year, despite the relatively low ore grade. This was largely a result of productivity improvements, throughput increases in the crushing process, and stable prevailing weather conditions.

Reagent consumption and related costs, primarily acid consumption, amounted to 19.1kg per tonne, well below plan of 24.1kg per tonne. This was largely driven by lower-than-plan calc indices, and it also included an efficiency improvement component. The cost savings resulting from this were offset by the costs incurred in the maintenance areas, which were largely related to conveyor and crusher maintenance, and leach tank maintenance.

The Processing Improvement project gained momentum towards the end of 2012. The objective of this cluster of initiatives is to deliver world-class performance in recovery and throughput that will form the basis for future organisational growth. The key projects started in 2012 were the leach agitator optimisation and plant modifications to decrease soluble uranium losses. The implementation of the new leach control philosophy and optimisation of leach parameters resulted in measured improvements to both uranium extraction and reagent consumption.

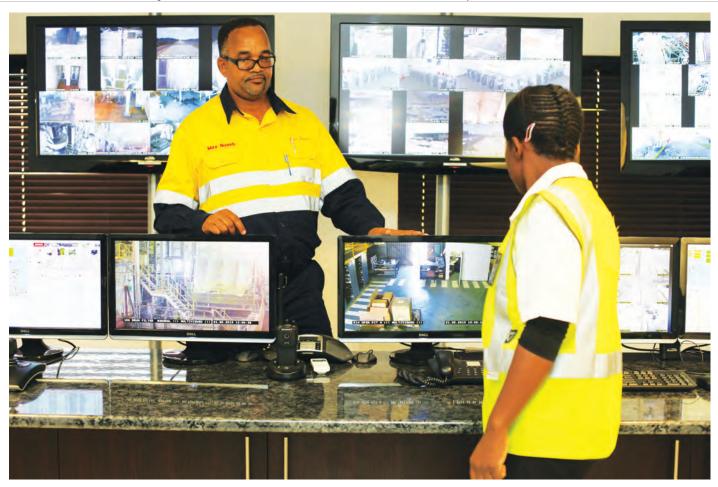
Overall, there were a number of positive trends noted in 2012, but these were accompanied by signals that indicate that a renewed and concerted focus on safety, productivity and cost control will be the business imperative. These signals include -

- an increase in significant potential incidents recorded, although this is partially a result of better awareness and reporting;
- uncertainty surrounding the availability and pricing of fresh water;
- the expected significant increases in power tariffs;
- shortfalls in achieving plant availability targets, and a shortage of critical spares such as liners, albeit on the back of improved performance.

To build on the foundations laid in 2012 and address potential risks, the safety and production effort will be centred around -

- reviewing work planning and execution in maintenance, with rigorous enforcement of standards and work practices;
- focusing on the management of critical spares and better integration with the procurement and supply chain; and
- continuing to implement the high-value initiatives in the Processing Improvement project.





Max Nuseb (foreman Security Services Access Control) and Samueline Kamenjono (security company officer) discussing activity on the mine's camera circuit in Rössing's close-circuit television control room.

#### **Heap Leach Pilot project**

At the end of 2012, the Heap Leach Pre-feasibility study was concluded, and all the test work relating to the Heap Leach Pilot plant was completed. The project has come a long way and has proved to be a viable concept for Rössing as a way forward. However, the current market conditions and the current capital-constraint environment in which we operate require us to focus strongly on conserving cash.

Furthermore, the focus for Rössing will be to optimise its existing processing and mining assets to create the most value from current assets in order to provide a solid foundation ahead of any further work on expansion plans. As a result, Rössing has opted not to continue with the Heap Leach Pilot project in the short term.

A significant amount of intellectual property on the optimal treatment of alaskite-hosted uranium ore was built up by this process. The Heap Leach Pilot plant also generated around 50 tonnes of uranium oxide, which paid for the cost of operating it during this period. Results from the study have been well-documented and archived to enable it to be resumed quickly at an appropriate time in the future.

#### Capital projects

Planning for long-term development continued to evaluate strategic projects associated with our expansion activities in support of our goal of meeting the increasing global demand for uranium.

During 2012, the Projects department was responsible for the design and implementation of various capital and operations improvement projects. All engineering and project management was performed by an in-house team, with the construction outsourced to mainly local contractors. The department was also responsible for initiating site-wide process safety activities.

#### Security upgrade

A total security upgrade of all the major monitoring and control systems was commenced in 2011 and completed in 2012. The main focus of the upgrade was to improve the security surveillance at critical positions in the plant, especially at the Final Product Recovery area, the stores area, and the perimeter fence area. The project consists of the installation of 110 new cameras, a wireless area network system, servers hosting the video back-up system, and a control room. The access control system at the main entrance gate was also upgraded to allow for access control of all personnel.

#### Change houses

The construction of two major change houses was completed in 2012, for the Mining Operations department and the Tailings Dam and Water Management section, and the construction of a third one was started. The new 400-person Mining Operations change house caters for the requirements of the Load and Haul section, while the Tailings Dam and Water Management change house will accommodate 80 members of staff. The third change house, for the Processing plant, will have a 500-person capacity.

#### HEF Plant Automation and Upgrade project

The High-energy fuel (HEF) Plant Automation and Upgrade project was completed in 2012, which included the upgrade of the HEF storage capacity, and the replacement of the control and automation system. This project addressed the fact that the HEF plant control system has in the past not been interconnected with the rest of the Rössing Supervisory control and data acquisition systems.

#### Hydraulic hammers

Two new hydraulic hammers were installed at the primary crushers on site, which proved to be successful in minimising the down-time on these crushers. The purpose of the hammers is to move and manipulate large rock in the chambers of the primary crushers to prevent choking of the crushers. The units, remotecontrolled from the primary crusher control room, have the ability to crush, grab, and move large rock to feed it into the primary crushers.

#### Trolley lines 13 and 14

Two new trolley lines were commissioned in the mining area, measuring 450m and 850m, respectively, which enable haul trucks to operate from grid-supplied electricity. These trolley-assist systems contribute to electricity and diesel savings and help to reduce carbon emissions.

#### Rod mill relining machine

The four rod mills are lined internally with wear plates to allow the linings to be replaced at regular intervals, as they experience wear caused by the milling of the ore. The wear plates are too heavy to be manually handled and require replacing in the chamber of the rod mill. To complete this high-risk work requires a downtime of about ten days. The rod mill relining machine is mounted on a trolley system in the rod mills, with an extended hydraulic boom that reaches inside the

cylindrical chamber of the rod mills. The boom is fitted with a grapple head, allowing for the attachment of the liner by means of a hydraulic grab system. This eliminates manual handling and, thus, reduces the down-time required to replace the liners.

#### Digital radio replacement

A project was approved to upgrade the current analogue radio system to a digital system to allow for better radio coverage and functionality. The upgraded functionality will allow for one-to-one communication, the sending of text messages, location tracking and improved band-width utilisation. The project consists of three phases: coverage for the mine, the plant, and the road to Swakopmund. Phase 1 was implemented successfully in 2012.

#### Protection grading study

A protection grading study was commissioned whereby the total on-site electrical distribution system was modelled by means of computerised electrical system-modelling software. This allows for the calculation of all requirements for network protection, load flows, system sizing and future expansion of the network. The total electrical network consists of more than 1,100 load points above 550 volt only.

#### Reagent plant upgrade

A detailed design upgrade of a new reagent facility was commissioned. This facility will allow for the handling and dispensing of hematite and manganese into makeup tanks, which will be fed to the Processing plant.

#### **Process safety**

A Process Safety committee was established in 2012 to oversee and implement a process safety system. Highrisk areas were identified on site. Detailed modelling of various scenarios was carried out to determine the impact of exposures, which will translate into mitigation plans for these exposures.

## Our people

Through employment, large companies like Rössing can make a significant contribution to society and the economy. Providing stable, long-term and rewarding employment, backed by career development opportunities, can contribute to wealth creation and better living standards in our surrounding communities.

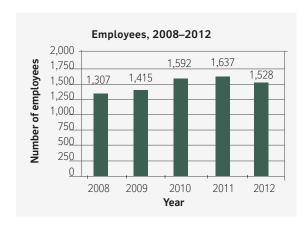
#### Statistical information on our workforce, 2012

Local and foreign employees:

- Namibians: 98.5 per cent (1,505)
- Non-Namibians: 1.5 per cent (23), including -
  - 0.7 per cent (11) work permit holders, and
  - 0.8 per cent (12) permanent residence permit holders.
- Female representation: 14.1 per cent (215); new female employees recruited: 17 per cent
- Average age of new employees: 31 years
- Number of employees who left the mine's employment: 150
- Number of new employees recruited: 41



Philip Tjango (geotechnical planning officer), Keith Seeley (surveyor), Karin Abraham (geologist), Shangeelao Kayavala (geologist) and Steven Massipa (geologist) are some of our employees.



#### Workforce at a glance

At the end of 2012, we employed 1,528 people. The average number of contractors at the mine was 780.

#### **Employee relations**

An important area of focus for our business is employee relations. The work environment is crucial when it comes to building employee morale and enhancing overall productivity.

At the end of 2012, Rössing and the Rössing branch of the Mineworkers Union of Namibia successfully concluded negotiations for salary increases for 2013 and 2014. Among other benefits, the two-year agreement provides employees in the bargaining unit with a three per cent increase in 2013, and a further increase of eight per cent in 2014.

Other aspects of the agreement include -

- a housing allowance: an average increase of N\$156 for 2013 and N\$378 for 2014;
- realignment of incidental expense benefits as offered by the company and the medical aid fund, Namibia Health Plan;
- career path procedure finalisation, and a steering committee to drive the initiative; and
- enhanced funeral benefits for employees and their dependants.

The salary negotiations were undertaken in a spirit of mutual cooperation, with everyone involved sharing a common understanding of the challenges facing our business.

We hosted an employee function to recognise and reward the dedication, commitment and contributions of our employees. A Long-service Award ceremony was held in September 2012, at which 98 employees received tokens of gratitude.

Workforce profile	2007 (%)	2008 (%)	2009 (%)	2010 (%)	2011 (%)	2012 (%)
Historically disadvantaged Namibian men	79.8	79.0	79.6	79.9	80.0	80.0
Historically disadvantaged Namibian women	9.8	11.3	12.4	13.6	12.8	13.1
Previously advantaged women	1.1	1.1	1.1	1.1	1.1	0.9
Previously advantaged men	6.2	5.9	6.8	4.6	4.5	4.4
Non-Namibian men	2.5	2.1	2.0	1.5	1.5	1.4
Non-Namibian women	0.3	0.2	0.1	0.2	0.1	0.1
Persons with disabilities: men	0.3	0.3	0.3	0.3	0.1	0.1
Persons with disabilities: women	0.0	0.0	0.0	0.0	0.0	0.0

#### **Organisational effectiveness**

A focus on people remains vital as part of the strategic goal at Rössing. Our focus continues to be on internal capacity development and educational support, with a large part of our investment in people allocated to employees and the development of young Namibians.

Rössing faced another difficult year of tough market conditions, which resulted in financial losses for the third year running. This impacted on our training and development programmes. We supported a total of 246 people to the amount of N\$8.11 million, compared with 426 people and N\$15.5 million the previous year. The initiatives that will support Rössing in achieving its goal of empowering and developing our workforce are outlined below.

#### Learning and development

#### Global Frontline Leadership programme

The programme, implemented in 2010, has been integrated into normal business initiatives. Its main aim is to align and synergise frontline leader training and development across the Rio Tinto Group to ensure that all frontline leaders meet the requirements of their leadership role. Since its inception, a total of 108 frontline leaders have successfully completed the programme.

#### Graduate Development programme

This programme is in line with our commitment to capacity development and builds the professional and leadership core at Rössing. A number of initiatives are monitored on a monthly basis, such as the Graduate Intensive Training programme, the Graduate Placement programme, and community work in the form of tutorials for high-school learners on Science-related subjects.

The Graduate Intensive training forms part of the professional development aspect of the Rio Tinto Global Graduate Development programme and has been implemented internationally. The Graduate Placement programme is one such initiative, designed to facilitate knowledge-sharing and collaboration across business units for a period of six months. Rössing and Rio Tinto Coal Mozambique started a pilot Graduate Placement programme in 2012. Three graduates from both business units were identified for the exchange in the disciplines of Geology and Environmental Science.

#### University bursary scheme

A total of 29 bursary students received sponsorships from Rössing in 2012 at an investment of just over N\$2 million (excluding vacation work). Three new bursaries were awarded in 2012 in the disciplines of Mining, Chemical Engineering and Mechanical Engineering, while two bursaries were awarded for 2013 in the disciplines of Mining Engineering and Electronics Engineering, in line with operational requirements as determined by the annually reviewed workforce plan.

Our Educational Assistance scheme, which supports employees who have dependants studying at tertiary level, made a total investment of N\$1.25 million that benefited 85 dependants.

#### Apprentice training

At the start of 2012, the company had 84 bursary apprentices and two apprentice employees in various trades. The November 2011 Final Trade Test results were received in February 2012, and 20 of the 22 people who completed their training passed the exams. At the close of year, we had 55 bursary apprentices and two apprentice employees. The total investment in apprentice training for 2012 was just over N\$1.3 million (excluding monthly allowances).

#### Organisational development

#### Succession planning

The importance of having a robust succession pool for critical positions available within Rössing led to the further strengthening of the succession planning process in 2012. This crucial planning and reviewing tool has now been integrated into the People Calendar as an annual event, to consider all critical positions within the company and ensure that we have sufficient coverage for succession.

#### Performance management

Performance management is a key component at Rio Tinto as it provides development and growth opportunities within the company and ensures that priorities are aligned to the business strategy. Rössing has a proper performance management system in place that monitors performance on a quarterly basis through the Integrated Talent Management system. Three central processes are involved: performance management, individual development and talent management. These processes are distributed over the four quarters, with tools in place to measure the effectiveness of the system.

#### Secondment opportunities

We value the input of our workforce. Building a core of future leaders through development opportunities is part of our key drivers. Rössing has identified secondment opportunities within the Rio Tinto Group for employees to broaden their skills and knowledge. The uranium mine Energy Resources of Australia Limited (ERA) provided a Rössing metallurgist with the opportunity to gain more experience within the discipline in another environment for a two-year period.

#### Technical training

A wide range of technical training interventions took place in 2012. The number of employees who underwent initial or refresher equipment operator training increased to 2,687 from 2,077 in 2011. This was mainly due to the dedication of the training staff and the improved learning management system tools that were introduced in 2012.

Costs and number of participants in training and development programmes, 2008–2012	December 2008	December 2009	December 2010	December 2011	December 2012
Trade bursaries	167	130	142	118	55
Trade job attachments	10	11	9	11	0
Apprentice employees	3	3	3	2	2
College/university bursaries	66	60	59	45	29
College/university job attachments outside company bursary scheme	0	2	2	12	1
Employees enrolled at a technical college (full-time studies)	6	8	6	4	0
Employees enrolled at college/university (full-time studies)	5	3	5	6	5
Employees involved in correspondence programmes	49	48	47	55	39
Employees enrolled in the Leadership Development programme	73	25	29	50	26
Development positions	0	12	7	0	1
Rössing dependant scholarships awarded	99	122	99	118	85
Employees in limited-contact studies in various fields	17	16	9	5	3
Total number of participants	495	440	417	426	246
Training programme costs (N\$)	17,771,710	18,373,015	15,527,087	15,529,708	8,110,937

#### Learning Management system

At the start of 2012, two Organisational Effectiveness employees were trained within the Rio Tinto Business Solutions initiative. This led to a revision of our system, with the creation of a new course and qualifications catalogue, the setting up of profiles for all positions, and the creation of more meaningful reports. The groundwork for the revised system was completed within six months, resulting in a better understanding of the capabilities of the system.

#### Namibian Training Authority (NTA)

The NTA requested our assistance in creating unit standards and qualifications for Process Plant operators, Mineral Processing, Domains Metallurgy, Hydro Metallurgy and Pyro Metallurgy. Two plant employees were nominated to attend workshops during the year to assist with the drafting of unit standards and qualifications. By the end of 2012, Levels 1 and 2 were completed, and Level 3 was 80 per cent complete. In addition, continued support exists to establish a national vocational education framework and infrastructure in Namibia, with two of our employees representing the

mining industry at Board level and on the Industry Skills committee of the NTA.

#### Continuous Improvement programme

To improve employee motivation, the emphasis of this programme in 2012 was to reinforce teamwork and encourage employees to take ownership of their work. Employees were rewarded for any business improvement suggestions that were implemented. A total of 60 suggestions were received, 26 on savings in health, safety and environment, and 34 on financial savings. An amount of N\$181,746 was awarded to various employees for successfully implemented suggestions. One exceptional suggestion, which was successfully implemented and has assisted us in our journey towards a zero-harm workplace, was for the installation of level platforms and a cage adjacent to the feeding chutes at the secondary crushers, to ensure a safe working environment while loosening or fastening dust collector pipes during crusher maintenance. Since the inception of the Continuous Improvement programme in August 2008, N\$1.39 million has been awarded for successfully implemented suggestions, which represents a potential saving of N\$19.5 million.



Rössing graduates (from left) Werner Mutaleni, Heikky Katti, David Makili and Protasius Aluvilu received their degrees at the University of the Witwatersrand. David scooped the Sasol Medal for Excellence as the best student in Coal Mining.

## Our host communities

Our goal is to ensure that our operations are carried out in harmony with the environment and the communities around us.

We ensure that we know the communities in which we operate, clearly disseminate information to stakeholders, listen and respond to their needs, and embark on collaborative projects that benefit all parties involved.

We aim for a legacy of positive economic and social impact within the communities in which we operate. Being an active community partner and through joint company, community, and local and regional Government initiatives, we have invested substantial resources in community involvement projects over the years. These include opportunities in education and training, local economic diversification, enterprise development and environmental management to contribute to independent, self-sustaining communities with diversified and active local economies. In addition, we work to maximise local employment and procurement opportunities for the benefit of our neighbours.

Effective stakeholder and community engagement is key to understanding the communities in which we operate. We align our economic and social investment programmes with national and community priorities. To demonstrate shared values, we match our targeted social performance outcomes with international development objectives, such as those of the Millennium Development Goals. To ensure success in this endeavour, Rössing applies a number of structured approaches in its engagement activities, using formal techniques and tools to help identify, assess and manage its operational impacts on communities.

Most of the available community investment resources are channelled through the Rössing Foundation, which was established in 1978 through a deed of trust to implement and facilitate our corporate social responsibility activities within Namibian communities. In addition, we support various community investment initiatives directly. Some of these programmes implemented by the mine and the Rössing Foundation are highlighted in the next few pages.

#### **Community relations**

In 2012, we refocused on the application of our community engagement management systems. Information from our updated socioeconomic knowledge base, as well as potential operational impacts on communities identified during a Social and Environmental Impact Assessment, supported the listing and ranking of social risks. Identified potential community impacts and social risks shape our community and stakeholder-engagement programmes and themes.

We introduced a web-based information management and tracking system that will assist us in improving the effectiveness of our community and stakeholder engagements across operational functions. Furthermore, our activities are regularly reviewed against defined standards and objectives.

In 2012, we continued with various technical, cash and in-kind community support, focused on education and training, environmental and biodiversity management, community safety, health and HIV/AIDS awareness, and local economic development. Our employees demonstrated their sense of community by donating clothes and foodstuffs to various economically vulnerable members of the Arandis, Swakopmund and Walvis Bay communities.

Rössing will continue to strengthen our internal framework for community investments by ensuring that our current investment programmes are in line with the social components of its mine closure plans. In addition, the company will concentrate on enhancing the impact measurement processes of our overall corporate social investment so as to better assess the effectiveness of our initiatives and to make improvements, where required.



## External and internal communication activities

High-level engagement with politicians and senior Government officials was regularly undertaken to discuss a number of pertinent matters of interest to the company and the Government. The purpose of these interactions was to keep Government officials informed about our ongoing business strategy, and to seek Government support regarding certain matters that are moving forward.

The Honourable Minister Isak Katali of the Ministry of Mines and Energy visited the mine in 2012 to familiarise himself with our operations.

Although our financial resources were severely challenged in 2012, with the mine showing a financial loss for the third year running, we invested an additional N\$2 million as part of our corporate social investment in our communities through cash and in-kind donations and sponsorships. One such donation of N\$50,000, under the auspices of the Erongo Development Foundation, went to the Erongo House of Safety, a safe home for children and mothers in distress.

The mine promoted healthy lifestyles through the ever-popular Rössing Marathon Championship, which celebrated its 21st anniversary in 2012. Additional sponsorships totalling N\$80,000 for the winners in various categories secured wide media coverage. Our annual inter-departmental sports day, which included soccer, volleyball, darts and netball activities, also promoted healthy lifestyles and team spirit.

Rössing places a great deal of importance on informing the public about our operations. We achieve this through various platforms and activities, some of which are mentioned here. The success of our visitors' programme is evident by the record number of visitors received during 2012. The mine hosted 154 tours, which involved a total of 3,159 visitors, the highest number over the past few years (2,938 visitors in 2011 and 2,838 in 2010). Visitors came from all corners of the world and included specialists, academics, Government officials and members of the public.

We supported various activities that reach out to our external stakeholders, such as the 12th annual Rio Tinto Rössing birdwatching event, which is part of the larger partnership between Rio Tinto and BirdLife International.

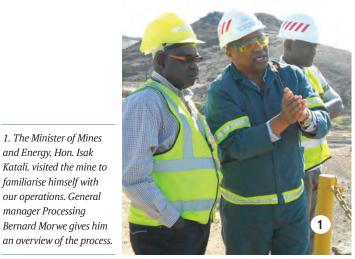
As an active member of the Uranium Institute's Uranium Stewardship committee, specifically the Communication technical advisory committee, we continue to share our expertise within the industry.

Rössing joined more than 200 exhibitors, including Government institutions, parastatals and corporations, at the second NamPort Erongo Business and Tourism Expo held in Walvis Bay in 2012. This event afforded us a platform from which to explain our role in Rio Tinto's vision to be the leading global mining and metals company.

We actively participated in other local events, such as career fairs, which promoted our activities to many secondary school learners. Our radio outreach programme on Namibian Broadcasting Corporation national radio service, reaching some 48,000 listeners, continued to increase awareness and knowledge about Rössing.

The External Affairs department manages a professional internal communication service for its internal stakeholders, which includes messages on various topics, a weekly in-house newsletter, and the production of short films.

Our media engagement activities centred around a media day and resulted in continued relationship-building and positive media coverage.





2. The annual Rössing Marathon Championship celebrated its 21st anniversary. Promoting a healthy lifestyle, it has become a highlight on the coast's calendar, with 272 runners and 400 walkers participating in the various events.

1. The Minister of Mines and Energy, Hon. Isak

familiarise himself with our operations. General manager Processing

3. The annual Rio Tinto Rössing birdwatching event was well attended, and continues to create significant awareness about the environment among school learners.



5. Rössing employed the first female haul-truck drivers in July 2002; sceptics gave them one month in the maledominated mining environment. Ten years later, six of the original group of ten are still working at the mine, of which Ester Ndeyanayi is one.









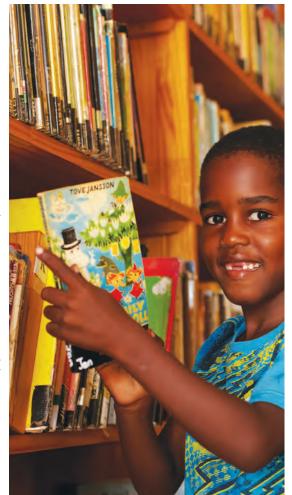
Job Tjiho: executive director of the Rössing Foundation

#### The Rössing Foundation

The Rössing Foundation implements and facilitates Rössing's corporate social responsibility activities within Namibian communities.

Like many other organisations, the Rössing Foundation went through difficult times in 2012 as it was affected by the global economic recession. To adjust to the pressures caused by these financial difficulties, the Rössing Foundation's Board of Trustees agreed to reduce the number of employees through redundancy. Fortunately, seven employees opted to take voluntary separations, while three had to be made redundant.

Despite these difficult times, all Rössing Foundation programmes and projects at the Rössing Foundation centres were highly successful. Activities focused on education, enterprise development, regional development support and assisting the Arandis Town Council to work towards making the town economic viable. A detailed account of the Foundation's activities is provided in their annual report (available on www. rossingfoundation.com), with some highlights given here.



Right: A young learner at the Rössing Foundation's junior section of the library in Arandis. The library aims to improve access to information and books, as good reading skills in turn contribute to the good results.

Far right: The Rössing Foundation supported various educational activities such as the annual Spelling Bee competition held at a regional and national level.

#### **Education programme**

To address the educational challenges facing Namibia, the Rössing Foundation's Board of Trustees has committed the Foundation to assisting the Namibian Government, and in particular the Ministry of Education, in offering opportunities to learners and teachers to acquire subject content knowledge and improve their skills in the areas of English, Mathematics and the Sciences. To meet this enormous undertaking, the Rössing Foundation has built and operates three Mathematics, English and Science centres in Swakopmund, Arandis and Ondangwa. The Foundation, in partnership with the Regional Directorates of Education, also assists schools in the areas of school management and leadership. The Rössing Foundation Teachers' Support programme aims to improve curriculum practice and the quality of education delivery by assisting to train English, Mathematics and Science teachers in order to impact significantly on learner achievement at school level.

#### Mathematics, English and Science centres

The three education centres aim to increase proficiency in Mathematics, English and Science. The centres have the Master Maths interactive software program, and offer a range of computer-assisted Mathematics courses from Grades 4 to 12. Each centre also has a fully-equipped science laboratory for teaching science-related subjects.

For most Namibians, English is a third and often a fourth language. English is given a high priority by Rössing as it is Namibia's official language and the lingua franca of choice in most parts of the world. English proficiency is, therefore, a prime target of the Foundation's various development programmes, which assist school learners and adults alike.

Learners' performance in the end-of-year examinations provides a guide to the effectiveness of the centres. In nearly all instances, the average pass rates for English, Mathematics and Science-related subjects for Grades 7, 10, 11 and 12 learners supported by these centres improved in 2012, and their results in these subjects were higher than the national averages. In some



A secondary school learner doing her Mathematics course on one of the computers at the Rössing Foundation's Arandis Mathematics, English and Science centre. instances, their results are significantly higher, eg both the Grade 10 Life Science and Physical Science results are nearly 50 per cent higher than the national average. The Higher Level Grade 12 Biology learners performed excellently, achieving a 100 per cent pass rate.

Overall, results indicate that English poses a serious challenge to all levels of learners. The English results

reflect the insufficient competency of Namibian teachers to bring the learners up to an acceptable level of English language proficiency. As a mitigation step, the Rössing Foundation has initiated collaborations with the British Council to give teachers and learners access to a variety of reading and listening materials in order to enhance their acquisition of English language skills.

#### Teacher training

Teachers are regularly trained and upgraded in English, Mathematics and Science subjects. The training aims at equipping teachers with content and pedagogical knowledge, as well as with skills to interpret and implement policies. In 2012, 120 teachers were trained in various areas.

#### Outreach programme

The Rössing Foundation embarked on an outreach programme with the Erongo and Omaheke Regional Directorates of Education. The main purpose of the programme is to improve governance and management in schools, with the goal of improved Grade 10 and 12 examination results. The Foundation continued to conduct training workshops to capacitate school governing bodies, school management teams, school board members and learners' representatives.

Kolin Foundation Secondary School, Canisianum Roman Catholic High School, Gabriel Taapopi Senior Secondary School and Oshigambo High School performed well in the Grade 10 and 12 end-of-year examinations. Each of these schools achieved a 100 per cent pass rate in the Namibia Senior Secondary School Certificate for Higher Level examinations.

#### Libraries

The purpose of the Rössing Foundation libraries is to ensure that learners, teachers and community members have access to information and books, as the improvement of reading skills in turn contributes to the attainment of good results. In 2012, a total of 44,393 learners and 14,256 community members were supported by these libraries, and a total of 18,314 books were issued on loan. These numbers show a significant improvement over 2011 and indicate the benefits the libraries bring to those Namibians using them, many of whom would otherwise not have access to such services.





Master Maths coordinator Michael Moyo (middle) and learners in front of the Rössing Foundation's Mathematics, English and Science centre in Arandis.

#### **Arandis Sustainable Development project**

The Rössing Foundation continued to support the Arandis Town Council (ATC) in working towards the economic viability of the town. This support was given in the form of a marketing initiative which used printed media to further attract investors. The initiative served to stimulate interest among the business community and showed how Arandis has developed and changed over the years.

During the past two years, the residential, commercial and industrial development of Arandis has been rapid, although the industrial development is not very visible yet. Arandis is likely to double in size, and the ATC has made provision for an additional 1,400 mixed erven (stands). Although only 10 per cent of these erven are currently being developed, the current demand for housing indicates that Arandis can expect a significant increase in property development in the next few years. While this demand is mainly due to the surrounding mines, it is also due to the growth of the town's commercial services. Construction vehicles and machinery that were previously seldom seen or heard in the town have now become familiar.

The first-ever shopping centre in Arandis is currently being constructed by a private investor. This has been long-awaited by the community, who will not have to travel to Swakopmund to shop once it has been completed. Another significant milestone for the town is the construction of a modern, three-storey hotel complex that will comprise 29 rooms, conference facilities, an executive boardroom, a restaurant, a gym and a swimming pool. The construction of a public health centre, also long-awaited, will commence in 2013.

These investments show the successful implementation of the Arandis Local Economic Development strategy, which aims for the town to become economically independent. In 2013, the focus under the Arandis Sustainable Development project (ASDP) will be on diversification and enterprise growth in order to enhance and improve local economic development.

#### **Enterprise development**

The Foundation revised its enterprise development programme by developing new policies and strategies with a view to improving the effectiveness of its interventions. During 2012, support was mainly given to enterprises with growth potential. These enterprises were taken through intensive training and mentoring in terms of business plan development and financial management training, which culminated in them acquiring loans from private banks.

A total of 46 Arandis microenterprises – ranging from retail and construction to arts and manufacturing – have benefited from the Foundation's intensive business mentoring, guidance and advisory services in the year under review.

The Foundation also facilitated the creation of the Arandis SME Collateral Fund to support small- and medium-scale enterprises (SMEs). The Foundation contributed N\$90,000 to the fund, while the Arandis Constituency Office contributed N\$40,000. Five enterprises have benefited from the fund, having secured a total of N\$668,000 to expand their businesses. Three of these enterprises, which show potential for growth, are owned and managed by women.

#### Regional development support

A group of 25 ski-boat fishermen from Swakopmund approached the Rössing Foundation – known for its vast experience in community development programmes – for assistance to draft a Fishermen's Association Constitution. The draft constitution is currently with a legal practitioner for review, after which the association will be registered. The Minister of Fisheries and Marine Resources, Honourable Bernhard Esau, has shown a keen interest in the group's initiative and has urged them to launch the association.

The Rössing Foundation has also rendered logistical and technical support to small-scale miners through the Erongo Small-scale Miners' Association (ERSMA), a body which has reached a noticeable level of maturity at the institutional level and is moving towards sustainability. With the help of the Foundation, the management of ERSMA submitted a grant proposal to the Finnish Embassy and secured a grant of N\$800,000. This grant is managed by ERSMA, which reports directly to the embassy. The Foundation also supported ERSMA in the





Right: Penina Martin, one of the SMEs supported by the Rössing Foundation, runs a clothing factory in Arandis.

Far right: Ellie Nowases, a local entrepreneur from Arandis, operates a flower and vegetable garden using a hydroponic system, with support from the Rössing Foundation.

> marketing of small-scale miners' semi-precious stones, which entered international markets in countries such as Dubai, Sweden, the United Kingdom and Zambia.

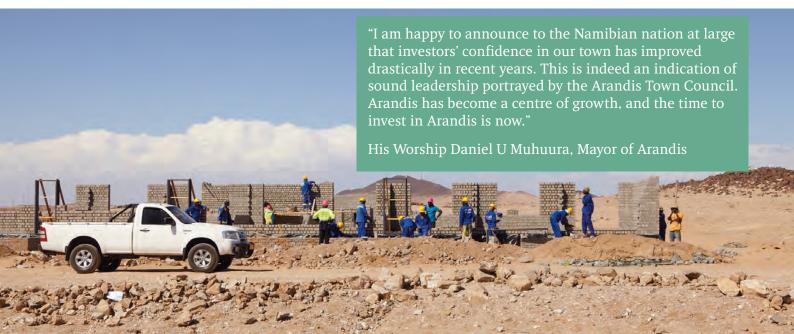
The Ûiba-Ôas Cooperative is a community-based enterprise which sells gemstones on the main road between Swakopmund and Usakos, which lies 160km. In 2012, the cooperative diversified its income stream by setting up a tuck shop to sell basic commodities to the community and travellers. To further increase revenue in 2013, more attention will be given to value addition through the cutting and polishing of gemstones.

The Micro Credit Scheme is a pro-poor microfinancing programme supported by the Rössing Foundation, the Erongo Development Foundation (EDF) and Bank Windhoek. The programme enables microenterprises from the Erongo Region to acquire loans to expand and grow their businesses. The Rössing Foundation and the Erongo Regional Council each contributed 50 per cent

of a total of N\$1.5 million to the programme. Due to the success of the first phase of the programme, the EDF increased the number of beneficiaries. A further 68 microenterprises were awarded loans, to the combined value of N\$990,500. By the end of 2012, 44 beneficiaries had paid back their loans, the total of which amounted to N\$662,505.

The Rössing Foundation has supported the Ohungu Conservancy since its inception. The Foundation constructed a multi-purpose building to serve as an office and training facility for the conservancy and the community. In 2012, the facility was officially handed over by the chairperson of the Rössing Foundation's Board of Trustees. The interventions of the Foundation have also resulted in a private lodge currently being constructed within the conservancy. This has created 15 jobs. Once the lodge is operational, eight permanent and five temporary jobs will be created.

Construction site of the new Public Health Care Clinic and staff accommodation for the Ministry of Health and Social Services in Arandis.



## Health, safety and environment

Rössing has a long history of being environmentally proactive and has employed various environmental strategies over the years. Wherever possible, we prevent or minimise, mitigate and remediate the impacts of our operations on the environment. Compliance with all environmental laws, regulations and standards is the foundation on which environmental performance is built.

Lithops ruschiorum, a plant species endemic to Namibia, is found in the mining licence area.



## Health, Safety and Environmental (HSE) Management system

The Environmental department was set up in the late 1970s. At the time, this was not mandated by law and was considered a big expense by many contemporary mines. Through the years, this department has been responsible for ensuring that impacts of operations on the environment are controlled and managed.

Since 1990 when Namibia became independent, Rössing reiterated that environmental improvement was one of the up-front, recorded goals that was embedded in the business plan. The proactive pursuit of this philosophy has meant that Rössing management has gone beyond the compliance focus to one of continuous improvement in environmental performance.

In 1996, the International Organization for Standardization (ISO) published the 14001 Environmental Management Systems (EMS) Requirements and Guidance for Use. Rössing immediately began to develop its EMS in line with this, and was awarded certification for the first time in February 2001. We were the second Namibian landbased mining operation to achieve certification.

In 2005, Rössing began to implement conformance to Rio Tinto Health, safety and environmental performance standards, which address specific areas of risk, including air quality; ecosystems; biodiversity; climate change; energy, land and water use; waste disposal; and facility closures.

Operational activities at Rössing are managed to ensure that the impact on both the biophysical and socioeconomic environment are at acceptable limits. This management is implemented in a number of ways and at all stages of mine operations, ie planning, construction, operational and decommissioning of facilities.

#### Rössing's Health, Safety and Environmental (HSE) policy

Excellence in HSE management is one of the foundations of Rössing's vision to be a safe, long-term supplier of uranium oxide to the nuclear power industry around the world. This is in line with our commitment to zero harm, corporate citizenship, social responsibility, and sustainability.

To accomplish this, Rössing undertakes to -

- recognise that nothing is more important than the protection of the health and safety of our stakeholders, ie our employees, contractors, host communities, clients and shareholders;
- commit to operate our business with respect and care for both the local and global environment to prevent and mitigate residual pollution:
- understand and manage the effects of our product through its entire life cycle to deliver continuous improvements in a sustainable manner:
- work with integrity and be in full compliance with our internal controls, applicable legal standards and all other requirements;
- seek continual improvement in HSE performance to create a zero-harm work environment in line with leading best practice;
- provide adequate HSE training and resources to employees, contractors and visitors;

- identify and assess hazards arising from our activities and manage associated risks to the lowest practical level;
- enhance biodiversity protection by assessing and considering ecological values and land-use aspects in investment, operational and closure activities;
- continue in our efforts to raise the awareness of HSE issues in our host communities;
- regularly review our performance and publicly report our progress; and
- communicate to all our stakeholders our commitment to this HSE policy and ensure that it is readily available to them.

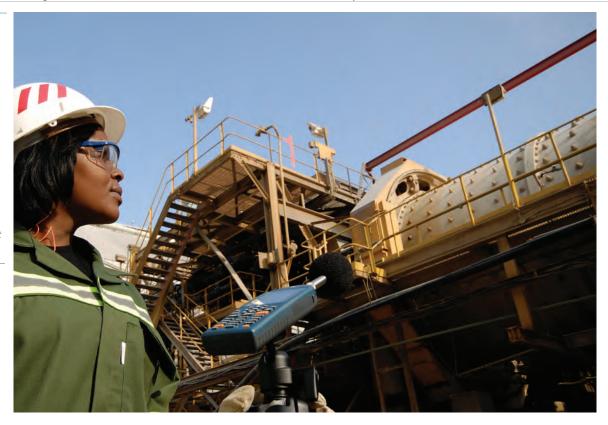
In implementing this policy, we will engage in constructive dialogue with our employees, contractors, host communities and all other stakeholders in sharing relevant information and responsibility for meeting our requirements.

This HSE policy is complemented by our HSE strategy. Both documents are readily available to all our stakeholders.

For this purpose, and based on the principles of continuous improvement, Rössing implemented an integrated Health, Safety and Environment Management system (HSEMS) in 2008, which adopts the methodology of 'Plan, Do, Check and Review'. The structure of the HSEMS generally follows the layout of common international standards, such as ISO 14001 (Environment), OHSAS 18001 and AS/NZS 4801 (Health and Safety), and ISO 9001 (Quality).

The formalised HSEMS allows Rössing to optimise, coordinate and manage its interactions as well as its various operations, personnel, plant and equipment in a manner that demonstrates consistent application of HSE best practice. Matters of planning, implementation, operation, checking, corrective action and management review are embodied in the HSEMS. Through this system, the mine can efficiently detect and minimise potential adverse impacts of activities on the health and safety of employees, contractors, the community and the receiving environment.

Environmental advisor Loide Hausiku measuring the noise level of the rod mills, using a sound-level meter. The aim is to monitor environmental noise to ensure compliance with regulatory requirements and to identify possible excessive noise emissions from mining operations in order to minimise their noise impacts on the surrounding environment and communities.



#### Occupational health management

Workplace health is a basic employment right and the health, safety and wellness of our employees remains a priority.

Through the Occupational Health Management programme we aim for the promotion and maintenance of the physical, mental and social well-being of workers in all occupations, the prevention of illnesses among workers caused by their working conditions, the protection of workers from risks resulting from factors adverse to health, and the placement and maintenance of workers in an occupational environment that is adapted to their physiological and psychological capabilities.

#### Occupational hygiene management

Rössing's risk-based Occupational Hygiene Monitoring programme is reviewed and updated annually according to prevailing and emerging identified health hazards and levels of risk. The programme is currently applied to 13 similar exposure groups (SEGs), which include all current Rössing workers and site contractors. SEGs are groups of workers who have the same general exposure profile because of the similarity and frequency of the tasks they perform, the similar ways in which they perform these tasks, and the similar materials and processes with which they work.

The data we receive from this programme is vital in guiding us to make informed decisions about implementing efficient and appropriate exposure-control measures. Typical hazards that are measured include noise, illumination, respirable dust (manganese, silica), gases, organic vapours, fumes, diesel particulates, and legionella (a water-borne bacterium that can cause legionnaires' disease). The programme is audited at least once a year by external Rio Tinto representatives, based on implemented Rio Tinto Occupational hygiene performance standards.

#### Dust

In an open-pit mine such as ours, the removal of topsoil and overburden (the soil and rock on top of the ore body) and the transport of this material, along with the crushing of ore, are typically the major sources of dust emissions.

The primary purpose of airborne dust sampling is to protect workers' health by measuring personal dust exposures to ensure that they are in compliance with occupational exposure limits. Other reasons for dust sampling include evaluating the effectiveness of existing and new engineering controls, and to detect any changes in dust levels resulting from process changes.

Dust control within the Fine Crushing plant, in particular, remained the focus for 2012. A minimal decline in the average dust level was recorded for 2012, which was 2.35mg/m³ compared with 2.55mg/m³ for 2011.

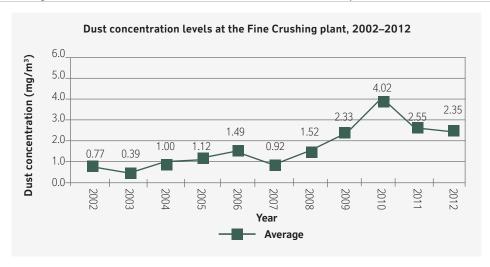
A detailed dust management action plan addressing dust emissions has been developed, which will be implemented as far as is practically possible.

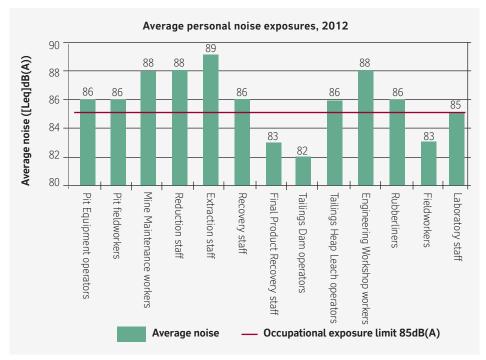
As part of the dust abatement initiatives for 2012, a detailed gap analysis was performed and a plan developed for the dust challenges experienced in the open pit area.

#### Noise

Noise is an integral part of mining because large pieces of equipment and machinery are constantly in operation. The human ear is most sensitive to sounds at or near the centre of its frequency range. To assess the impact of noise on people, a scale of frequency weighting is used, where 'A' indicates the basis point of 85dB(A).

Noise reduction and control have been achieved at the mine by following the hierarchy of control principles





using, among others, substitution, engineering and administrative means. Noise zoning is applied in highrisk areas, together with the application of personalised (custom-made), disposable hearing-protection devices called *noise bans*, which have been approved and are currently in use at the mine. In high-risk areas, engineering and administrative controls alone are not sufficient to protect workers due to the nature of the tasks being performed. Exposure to noise should be below the stipulated occupational exposure limit (OEL) of 85dB(A).

The second graph above depicts the average annual personal noise dose measured for the different SEGs in 2012.

The measured doses do not take into account the protection factor provided by the noise ban hearing-protection device, which is permanently calibrated to filter out all noise levels above 82dB(A), and the disposable earplugs, which provide a noise-reduction rating of 26.

Of the 13 SEGs monitored for personal noise exposures, nine exceeded the OEL. Contributing factors to these exceedances were plant noise and excessive noise being generated from radios in equipment cabs. In certain SEGs, specific tasks were identified as causing an increase in noise exposure. Remedial actions are being implemented on the specific noise sources identified in order to bring down the levels to below the OEL.

### Clean-shaven policy

When a male worker dons a dust mask or cartridge respirator of any sort, it is essential that he is clean-shaven. Any stubble or facial hair prevents a tight fit around the breathing zone, which renders the respiratory protection ineffective. Posters and flyers were launched, together with mine-wide talks, in an effort to reinforce awareness of and compliance with this policy. These initiatives were received positively by the workforce.

### Occupational medical surveillance

The Medical Surveillance programme provides relevant information to the mine for the purpose of controlling health risks and preventing, detecting and treating occupational illnesses. All employees and contractors undergo pre-employment medical examinations to ensure that they are fit to work. These are followed by regular risk-based medical examinations during employment, and an exit medical examination when leaving the company.

In 2012, a total of 2,014 medical examinations were carried out on Rössing employees, which included 55 pre-employment medicals, 1,778 periodic medicals and 181 exit medicals. Also in 2012, 671 pre-employment medicals, 651 periodic medicals and 358 exit medicals were carried out on contractors.

Through the mine's Workplace Wellness programmes, employees are encouraged to undergo additional medical screening tests to manage their own health and as a means of detecting chronic and/or life-threatening illnesses.

### Wellness

Our Workplace Wellness programmes are designed to assist us in creating a work environment that is healthy for our employees. Through these programmes we encourage employees to choose healthier behaviours. The programmes also involve increasing knowledge and awareness through campaigns and education sessions, and introducing policies that help employees to make healthier choices. Various activities were undertaken during 2012 to support our programmes.

### Peer Education programme

Our Peer Education programme has been in existence since 1996 and is a success story. *Peer educators* are employees and contractors who volunteer for and are trained to undertake informal or organised educational activities with their peers, both within and outside the workplace. The aim of these activities is to develop people's knowledge and skills, positively influence their attitudes and beliefs, and help them to be responsible for and protect their health.

During 2012, 33 peer educators attended training in behaviour change communication and in advanced peer education.

### Stop Smoking campaign

A five-day Stop Smoking campaign – *Breathe Easily, Live Happily* – was held on site in 2012, during which various information, education and communication strategies were applied. Peer educators and the wellness team raised awareness at different sections on site, highlighting the harmful effects of smoking and emphasising the benefits of not smoking. Different themes were used for each of the five days, during which ten employees enrolled in the Stop Smoking programme offered on site.

### Fatigue awareness for partners

Rössing developed a Fatigue Management policy to comply with the Rio Tinto standards and regulatory requirements. The policy addresses fatigue management issues and minimises the impact of fatigue on the health, safety and fitness-for-work of employees and contractors. Education and training are a key element in carrying out this policy. Employees regularly receive fatigue training, where their fatigue risk is assessed and they are educated about measures to take to prevent fatigue or effectively manage existing fatigue. Many of these measures can be implemented at home and through specific lifestyle behaviours and/or changes.

Roles, responsibilities, activities and routines at the household level affect the physical and mental state of employees, which in turn affects their performance and fitness to work. When partners and family members at home understand the influence of these factors, they can play an important role in assisting and supporting employees to effectively manage their fatigue. The need was, therefore, identified to invite employees' partners to attend a half-day session on the mine, where they received a presentation on fatigue, were informed about the importance of safety in the workplace, and were taken on a short mine tour for them to better understand the environment in which their partners operate. Four successful sessions, attended by 106 partners of mainly shift-work employees, were held in 2012.

### Employees knowing their HIV status

On-site voluntary counselling and testing (VCT) for the human immunodeficiency virus (HIV) is offered to both employees and contractors. Employees are constantly encouraged to know their HIV status through regular testing. At the end of 2012, a total of 1,491 Rössing employees (representing 89 per cent of the workforce) and 814 contractors knew their HIV status. Employees who require treatment have access to antiretroviral therapy through the company's medical aid.



Fire-fighting training is presented to all Rössing employees as part of the mine's zero-harm goal.

### Safety

A safe workplace is a fundamental employment right, and safety is the foundation on which we build our business and our surrounding community. We believe all incidents, injuries and occupational illnesses are preventable and, thus, our goal is zero harm.

Safety management is an integral part of the way we work. As our success depends on it, it continues to remain a priority in all of our business operations and activities. Our safety aims and objectives intend to encourage our employees to behave in ways which project a positive and proactive attitude towards safety.

The following ongoing initiatives took place during 2012 to further our goal of zero harm:

- A total of 1,417 employees and contractors underwent intensive safety training. Zero-harm training and awareness are continuous processes that include practical skills training.
- Safety leadership and accountability were promoted by management personnel through safe-work initiatives, such as HSE Crew Projects and the HSE Go and See.
- HSE training provided to employees focused on developing and enhancing their HSE knowledge and skills.
- Implementation of process safety management ensured that risks with low probability but high consequences were identified and managed.

Achieving zero harm requires absolute adherence to policies, standards and procedures that intend to protect employees from injury and illness and minimise significant negative impact on their lives. To this effect, nine *Golden Rules of Safety* were introduced last

year. These rules are embedded in the daily tasks and activities of every worker and were strictly enforced during 2012. These rules had a positive impact on the severity of incidents and the number of observed unsafe actions and conditions. Since all the rules are considered important, non-adherence to even one of them has severe consequences.

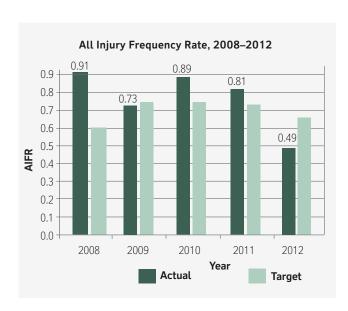
Rössing uses a range of measures to gauge its safety performance. The total number of all injuries (ie medical treatment cases and lost-day injuries) per 200,000 employee hours worked is one such measure.

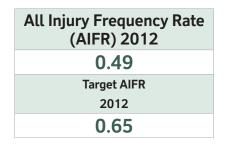
Other HSE management system mechanisms, such as audits, risk assessments and HSE training, were used throughout the year. These mechanisms were all geared towards inculcating a culture of zero harm within the workplace.

The mine recorded an All Injury Frequency Rate (AIFR) of 0.49 for 2012, which is a 0.32 improvement on the 0.81 recorded for 2011. Our AIFR target for 2012 was set at 0.65. We proved that it is possible to achieve our target and improve our safety performance.

The following injuries and significant incident categories were reported:

- Lost-day injuries: 4
- Incidents requiring medical treatment: 4
- Restricted workday injury: 4
- Incidents requiring first aid treatment: 47
- Significant potential incidents: 28
- Near-miss incidents: 157





The All Injury Frequency Rate (AIFR) is the rate of occurrence of all injuries per 200,000 hours worked:

Number of all injuries x 200,000

Hours of exposure

The successes achieved during 2012 were as follows:

- Our Lessons Learned awareness initiative continued to reinforce safety expectations and needs related to trends that may become a safety concern.
   Various key focus areas were identified and implemented in this regard.
- No lost-day injuries or medical treatment cases were reported for the months of February, April, September, November and December.
- Safety advisors were seconded to each general manager to provide direct support and advice on safety management programmes and initiatives.
- Focused internal HSE training was provided to more than 40 employees.

We will continue our zero harm awareness campaign and initiatives. Our safety message – of being personally responsible for one's safety and that of others, and thereby contributing towards achieving a healthy and safe working environment for all employees, stakeholders and the community at large – remains the bedrock of our HSE activities.

The new *Take Five* booklet was launched mine-wide in the year under review. 'Take Five' is a methodology applied to analyse risk before carrying out the task and is mandated for the entire workforce prior to commencing any task. The methodology refers to employees allocating some time prior to each task to evaluate the possible risks involved and to prepare for the task accordingly.



One of the safety improvement initiatives was a user-friendly, informative and thought-provoking Take Five booklet. Our meerkat safety mascot greeted workers at the launch.

### **Radiation safety**

With the implementation of the newly gazetted Radiation Protection and Waste Disposal Regulations in January 2012 by the National Radiation Protection Authority (NRPA) of the Ministry of Health and Social Services, radiation protection in Namibia's uranium mining sector entered a stage of stricter regulation and enforcement of radiation protection measures.

For Rössing, radiation protection in the past has followed the Rio Tinto standards, and the regulations and guidelines laid down by the International Atomic Energy Agency (IAEA). The new regulations present no new measures, but introduce a collection of additional reporting and licensing requirements. Regular reporting in six-monthly intervals to the NRPA includes the following information -

- Quantities of uranium oxide exported, transport routes followed, and recipients of consignments;
- Quantities and characteristics of tailings material deposited in the Tailings Storage facility, including full information on the material deposited to date;
- Quantities and characteristics of non-mineral contaminated waste deposited in the Tailings Storage facility, including full disclosure of historical deposits;
- Radiation exposure doses for each worker, including contractors: workers' doses are recorded for the three major pathways separately, ie external exposure to gamma radiation, internal exposure to inhalation of radioactive dust, and internal exposure to radon and radon-decay products. An exact gamma dose is recorded for each radiation worker. For all other workers and pathways, the average dose determined for the SEG is recorded for each worker in such SEG. In addition, a 95 per cent confidence level for the total dose is given for each worker; and
- A list of all industrial radiation sources that are registered and licensed by the NRPA. Regular checks of the integrity of these sources must be supplied, together with the location and use of the sources.

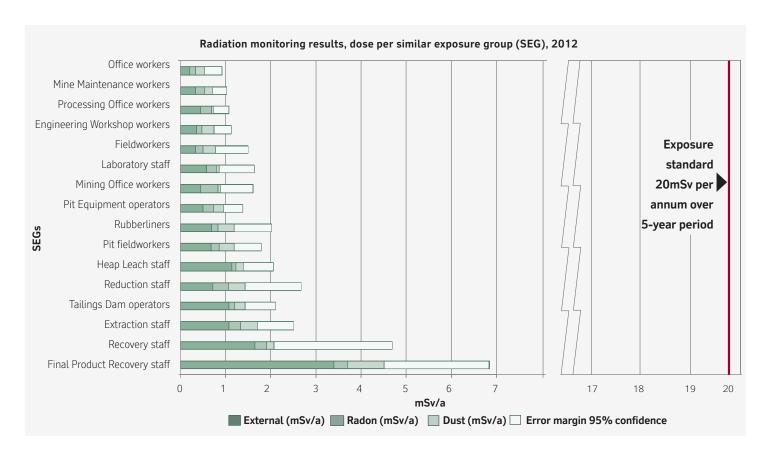
In addition to routine reporting, mandatory reporting to the NRPA includes immediate notification of incidents involving radiation sources. In 2012, the following two incidents, although not constituting exceedances of legal limits, were reported to the authority:

- In May, a sealed source became dislodged from its protective casing and was discovered lying in the rod mills area. The source was safely removed to the radiation bunker on the day of the incident. The source was removed in the presence and with the support of an official from the NRPA. No worker was injured or excessively exposed to radiation during the incident, and precautionary medical checks of workers have confirmed that no one was harmed. A root cause analysis of the incident has led to corrective actions being implemented, including an improvement of access restriction to sources, and a restriction of the number of sources used on site to five.
- In August, a dose report from a radiation worker displayed a deep dose of 28mSv over a 12-week period. The exact cause of this dose could not be ascertained, but an investigation into the working areas with the highest radiation levels on site confirmed that a work exposure of this extent was not possible over the period in question. The dose reading is, therefore, regarded as an error. Nevertheless, the worker was removed from the radiation area and will not be permitted back into the area for the long term. The worker is currently working on site in a supervised work area.

Rössing's Radiation Management plan (RMP) was approved by the NRPA in 2010, and has since been continually reviewed and updated in consultation with the authority.

The NRPA performed compliance audits against the RMP in 2011 and 2012, which confirmed that Rössing is in full compliance with the regulations. More specifically, the mine has complied with the requirements for licensing to -

- mine uranium and handle radioactive materials (licence application acknowledged; licence pending);
- possess and register radiation sources (industrial gauges and equipment utilising x-rays; licence received);
- export uranium oxide (licence received);
- transport radioactive materials, ie uranium oxide (licence application acknowledged; licence pending);
- transport radioactive materials, ie uranium-bearing ore samples (licence received); and
- dispose of hazardous (radioactive) waste (licence application acknowledged; licence pending).



A joint uranium spill drill by Rössing and Langer Heinrich Mine was held at Walvis Bay in December 2012 to test emergency preparedness and response. Both mines took part as active participants, with Areva and Swakop Uranium as observers. Officials from the NRPA witnessed the drill and were able to test the industry's response preparedness.

Rössing's Occupational Radiation Protection programme includes a comprehensive monitoring programme for measuring the occupational exposure to ionising radiation of all employees. Sixteen SEGs are identified on the mine, according to the potential radiation exposure encountered during different work processes.

Three major exposure pathways form part of this routine monitoring programme:

- Internal exposure to alpha radiation from the inhalation of radon and the short-lived decay products of radon;
- Internal exposure to alpha radiation from the inhalation of the long-lived radionuclides occurring in uranium-bearing dust or in uranium concentrate dust;
- External exposure to gamma radiation.

For each of these three pathways, an annual dose is obtained. The three annual doses are then added up to find the total annual radiation exposure dose.

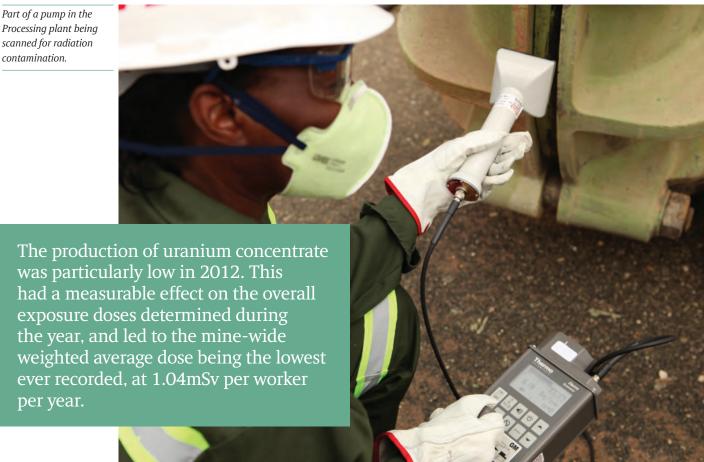
A fourth pathway, internal exposure from the ingestion of uranium, is checked by taking regular urine bioassay samples of potentially affected workers, ie workers who may come into direct contact with concentrated uranium during their work activities. This urine sampling programme provides an effective check regarding the prevention of ingestion, and for this reason no separate ingestion dose is obtained.

More than 2,000 personal radiation exposure monitoring samples were collected in 2012. All measured exposure doses are extrapolated to the conventional 2,000-hour working year, to yield a representative and comparable exposure dose value for the different SEGs. In work areas where shift work is carried out, exposure monitoring was undertaken for all three shifts, and a time-weighted average of the exposures was determined.

The production of uranium concentrate was particularly low in 2012. This had a measurable effect on the overall exposure doses determined during the year, and led to the mine-wide weighted average dose being the lowest ever recorded, at 1.04mSv per worker per year. The 95 per cent confidence level for the weighted average dose was found to be 2.04mSv per year.

Radiation workers, defined as workers in areas where the potential annual radiation exposure dose may exceed 5mSv, are monitored continuously by their wearing thermo-luminescent dosimeters (TLD). The TLD-wearing period for radiation workers was changed from four to 12 weeks. The main reason for this change was to increase

Processing plant being scanned for radiation contamination.



the accuracy of the measurement because, for the fourweek period, many results were recorded as zero due to the fact that the doses were below the detection limit.

The results of Rössing's Occupational Radiation Monitoring programme are summarised in the figure on the left, which shows the average occupational radiation dose for the three main pathways (ie external, radon progeny and radioactive dust), as well as the 95 per cent upper confidence level for the exposure doses for the 16 SEGs under consideration.

During 2012, a total of 917 urine samples were taken. No sample exceeded the warning level of 20µg per litre, attesting to very effective prevention of ingestion of uranium contaminants.

Surface contamination is regularly monitored in the Final Product Recovery area to ensure that the spread of contamination to other areas is controlled. The target for 2012 was to keep the average contamination levels below 1.60Bq/cm<sup>2</sup>. This target was reached, as the average contamination level measurement was 1.44Bq/ cm<sup>2</sup>. The reduction of the surface contamination target in 2012 from 1.80Bq/cm<sup>2</sup> to 1.60Bq/cm<sup>2</sup> forms part of the continuous improvement programme aimed at reducing doses and contamination to ALARA (As Low As Reasonably Achievable) levels.

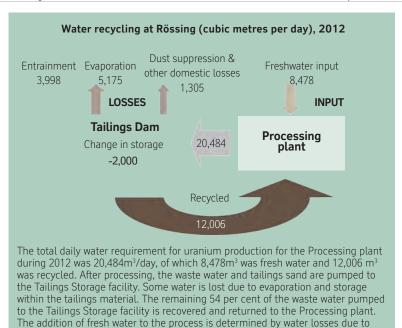
A 100-point radon monitoring grid in and around the mine site was set up in late 2010. A radon-measuring device was placed at each monitoring location to measure the radon concentration for periods between two and six months at a time. Analyses of the monitored values yield long-term average radon concentrations across the mine site, which are used as numerical controls and inputs for the ongoing radon modelling programme undertaken to determine public dose assessments. This programme serves as an additional measurement to better assess areas suspected of displaying significant radon exhalation. Thus far, the data confirms an average ambient outdoor radon concentration of roughly 50Bg/m<sup>3</sup> in areas not affected by mining activities, which is consistent with a similar radon monitoring programme performed in the same area in the 1990s.

Apart from radon monitoring, the public monitoring programme includes continuous dust and groundwater monitoring. Dust emissions are monitored using several high-volume dust samplers on site, with PM10 samplers in key locations, such as Arandis. (PM10 dust samplers at different points are used to determine the level of dust in the air.) Water from about 40 boreholes is sampled annually and submitted for radionuclide laboratory analysis. Data from these exercises is used to verify the existing public dose assessments, and serve as input for their continuous updating and improvement.

Radiation awareness training at Rössing continued in 2012. Two radiation awareness modules were offered, comprising one hour of instruction each. The requirement is for every worker to attend at least one module per year. In 2012, 1,365 workers attended classroom training.







### Water management

Water management at Rössing is guided by a formal Water Strategy and Water Management plan, developed according to the Rio Tinto Performance standard E10 (Water use and quality control), and supported by Rio Tinto's Water use and quality control guidance notes. This covers all activities connected to water abstraction, dewatering, transport, storage, usage (potable and process), and direct/indirect discharge, which involves surface water (including run-off), impounded water and groundwater. The intention of the standard is to ensure efficient, safe and sustainable use and protection of water resources and ecosystems.

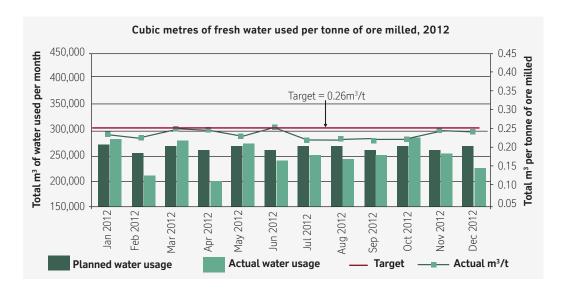
evaporation and entrainment in the tailings material.

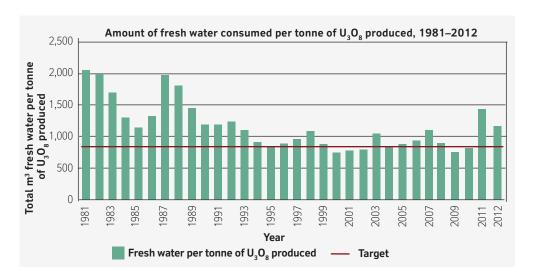
Rössing faces water usage challenges head-on. Reducing water use involves recycling water, extracting and reusing water from the Tailings Storage facility, minimising high evaporative water losses, using alternative, lower-quality water sources, and creating water conservation awareness.

Water used for cleaning in the Processing plant is captured and recycled. Effluent from workshops is pumped to an oil separation facility, from where the separated water is mixed with semi-purified sewage effluent and reused in the open pit.

The mine's groundwater flow model assists in the assessment of ongoing operations and in the consequent predictions of impacts resulting from various long-term options. Seepage of contaminants into alluvial aquifers is curbed by cut-off trenches and dewatering boreholes, which are arranged in a double line on and along the western side of the Tailings Storage facility.

Regular borehole-water monitoring confirms the efficiency of measures to control potential contamination of the Khan River. The Tailings Storage facility is continuously monitored over 24-hour periods, a cycle generally being completed every two hours. Groundwater flows and water quality are monitored at various other points, and seepage-control installations are monitored daily. Monitoring includes checks on water levels and the available capacity. Shift log sheets are completed for evaluation. Flow meter readings are taken three times a week and entered into a dedicated database in order to compile water balances and other reports. Water samples from the boreholes are analysed for radionuclide concentration in Bq per litre. Of the roughly 150 monitoring boreholes, 40 are monitored every year, on a rotation basis. Of these, only 15 boreholes are legally required to be monitored, as per the waste water effluent discharge exemption permit.





Water storage in the Tailings Storage facility is minimised through a seepage recovery system and cut-off trenches, as well as abstraction boreholes on and around the facility, which are pumped continuously to lower the water table. Water recovered in this way is reused in the Processing plant.

### Freshwater use

In 2012, the use of fresh water was 3.10 million m³, or 8,478m³/day, against an operating plan target of 3.31 million m³, or 9,060m³/day. The water performance for 2012 was lower than anticipated due to the reduction in tonnes milled.

Although the target was met and exceeded, a number of challenges relating to the sustainable management of this resource exist. These include the periodic supply cut-offs from the bulk water supplier, more frequent movements between the paddocks as depositions were made in smaller paddocks for the last half of the year, availability of seepage and return-dam solution pumping systems, as well as a storage-capacity shortage.

In view of the above, various initiatives took place during the year, including the launch of *The Water Bucket* awareness campaign, aimed at raising awareness regarding various aspects of this scarce resource, including sustainable usage. Other projects, such as the reeds elimination project, also came into effect in an effort to recover more water from the 'toe' of the Tailings Storage facility. In addition, test work was carried out on the mechanical seals at the slime station which, if successful, will result in a significant reduction in freshwater consumption in the Processing plant.

### Saline water use and quality

The abstraction of saline groundwater from the Khan River aquifer was resumed in August 2011 in order to suppress dust in the open pit. This decision was necessitated by the reduction in the amount of water reclaimed from the Tailings Storage facility.

Abstraction continued during 2012 and will do so until June 2014, when the current permit will need to be revised for renewal or termination. Abstraction is about 600m³/day, which is less than the safe allowable yield. In addition, the vegetation and water levels in the Khan and Swakop Rivers are monitored in order to assess the potential impacts of the abstraction.

We will continue to carry out awareness-raising initiatives on the use of water, both on the mine and in our local communities, and will maximise on the sustainable use of this resource. We will proactively look for opportunities to use the water in the Tailings Dam in an attempt to use less fresh water for mining operations. A number of initiatives have commenced in this regard, and we will continue to make the best of what we have, and make a positive contribution to environmental awareness.

Environmental advisor Aina Kadhila-Amoomo takes readings from an air-quality and dust monitoring station at the Fine Crushing plant.



### Air-quality management

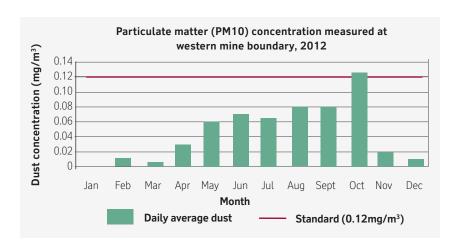
An Air-quality Management programme guides the management of environmental dust at Rössing. Air emissions are listed in an inventory, and all air-quality standards applied at the mine are documented.

Improvements to the air-quality management practice at Rössing aim at -

- a refined understanding of the mine's dust dispension as it correlates to wind regime;
- a review of the existing sources of emissions from mining operations;
- characterising ambient air quality;
- a better understanding of the correlation between blasting and its impacts, such as dust, noise and vibration;
- a better comprehension of atmospheric impacts on the biosphere; and
- reviewing control measures and recommending additional measures, if required, as well as mitigation to better manage air quality.

### **Environmental dust**

Measurements are taken to ensure that exposure levels do not exceed the prescribed occupational limits, and that existing and newly introduced controls efficiently detect differentiations resulting from process changes. Informed decisions relating to the level of control are taken for the various exposure levels, with the objective of optimising performance in terms of emission reduction and control measures. Dust fallout is monitored and reported internally – monthly on site and annually to Rio Tinto – to reduce dust through innovative controls.



Dust is measured in particulate matter (PM) ranging in diameter from 10 to 50 micronmetres, generated by activities such as mining and crushing. PM10 is the measure of particles in the atmosphere with a diameter of less than or equal to a nominal 10 micronmetres.

An additional PM10 monitoring point at the mine boundary, used to determine the level of dust in the air, has been functional since February 2012. Dust concentrations recorded were below the standard of 0.12mg/m³ throughout the year, except for October. With a predominantly westerly wind direction during October, the event that caused the exceedance of the standard for the month was incidental, and could be attributed to external sources.

Throughout 2012, the average PM10 dust levels, measured in the neighbouring town of Arandis, were consistently six-fold lower than the standard of 0.12mg/m³, averaging 0.010mg/m³.

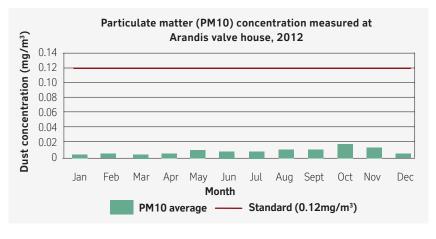
Six monitoring stations were added to the existing network during August 2012. This enabled a better understanding of dust emissions and the dynamics in terms of seasonal and spatial patterns. In addition, a Dust Management plan was completed, which contains the reviewed air-quality criteria and dust target limits.

### Noise and vibration

Noise and vibration at Rössing are monitored through a network of various points and studies. Information thus gained is used not only to assess compliance and address concerns, but also to provide feedback to the Geotechnical section, which uses it to investigate the impact of blast vibrations on the stability of the pit. The management of noise and vibration is guided by the Rio Tinto Performance standard E6 (Noise and vibration control). Environmental noise is monitored according to a specific procedure and reported on a monthly basis in order to minimise noise to threshold levels and identify events when these levels are exceeded.

Throughout 2012, both air-blast and ground vibration levels have been consistently below their limits of 134dB and 12.5mm/s, respectively. Blasting is only carried out in the open pit. As the pit becomes deeper in 2013, it is expected that the noise and vibration effects of blasting will be increasingly mitigated.

Environmental noise is measured over snapshots of ten minutes. There were seven events in 2012 during which noise levels, as recorded at the sampling points on the mine boundary, were above 45dB(A) and, thus, exceeded the standard. Station 01, at the main access road to the mine, recorded three such events, which were mainly due to the frequency of vehicle movement on the road.



The events during which noise levels exceeded the standard are not ascribed to the operational activities at Rössing, but are the result of natural sounds or passing vehicles in the immediate vicinity of the sampling points.



## **Energy efficiency and GHG emissions**

Efforts to stabilise global atmospheric concentrations of greenhouse gas (GHG) emissions at lower levels is a priority at Rio Tinto. The intensity of emissions, closely measured at Rössing, is reported per unit of product target. Sources of GHG emissions include the consumption of fuel and electricity, the transport of reagents and uranium, blasting (explosives), waste (sewage, rubbish disposal and landfill), extraction, and processing.

In 2012, the total energy consumption of the mine was 1,184,381 gigajoules (GJ) for 2,699 tonnes of uranium oxide drummed. This converts to an annual energy consumption of 686.1GJ per tonne uranium oxide produced, which is 21.74 per cent above the target of 563.5GJ per tonne uranium oxide produced.

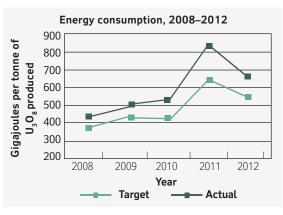
Although there was an overall reduction in energy consumption and total emissions in 2012 compared with 2011, constraints faced in the pit and the Processing plant resulted in less product drummed. This led to higher total emissions and energy use per main product.

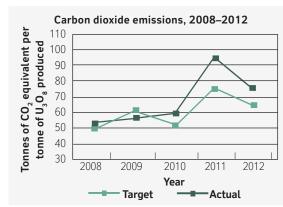
Overall, the GHG emissions intensity per unit of product target (called the *Tier 1 target*) for energy efficiency were not met. This was due to the unfavourable waste:ore ratio during the current ramp-up mode at the mine.

The Tier 2 targets, an internal target that calculates energy use per unit of 'work done', were met in 2012.

Emissions of carbon dioxide ( $CO_2$ ) per unit of production were higher than the target of 67.62 tonnes of  $CO_2$  equivalent per tonne ( $CO_2$ -e/t) of uranium oxide ( $U_3O_8$ ) produced in 2012. The actual performance achieved was 78.41 tonnes  $CO_2$ -e/t  $U_3O_8$ , which is 15.95 per cent above the target. This exceedance was due to low ore grades, high calc indexes and an unfavourable waste:ore ratio.

Haul truck 96 connected to Trolley line 13 as it drives on electricity from the loading zones in Phase 3 of the open pit.





### Waste management

In the absence of a clear legislative framework for waste management in Namibia, Rössing uses international standards, such as ISO 14001:2004, as well as the Rio Tinto Environmental performance standard E7 (Nonmineral waste), for conformances and compliance.

### Non-mineral waste

Non-mineral waste at Rössing is characterised, and an inventory and risk register are maintained. A mine-wide Non-mineral Waste Management plan is in place to ensure sound non-mineral waste management through minimisation of waste generation and safe handling, treatment and disposal of waste. The plan addresses all non-mineral waste generated at Rössing during the operational and decommissioning phases. A database for historical waste dumps is also maintained, and guidance exists for the remediation of these sites during operations.

Specific targets for waste management at Rössing are set annually, and progress is monitored and reported on monthly, six-monthly and annually. Review of the plan is conducted at least every four years.

Waste is weighed and a register is kept for reporting against targets. General waste is disposed of at a licensed landfill and managed. The landfill and external recycle sites are frequently inspected and audited on a two-yearly cycle. Records of waste generated, stored and disposed of are filed and maintained. Groundwater in the vicinity of the landfill site is monitored according to operational procedure.

Redundant material and equipment that could potentially be contaminated are segregated according to criteria and disposed of in a designated site on the Tailings Storage facility. The quantity and disposal location is recorded, and access to the contaminated waste-disposal site is controlled.

During 2012, a mine-wide survey on historical waste sites was conducted, and the register for contaminated sites updated accordingly. The sites were mapped and risk-ranked.

The measurable target for the reduction of non-mineral waste destined for disposal was set at 80 per cent for 2012. This target was achieved, as 88 per cent was the final result.

In 2012, a private company was appointed to handle and remove recyclable waste from the mine site. The contract includes an agreement on the recycling of specified items, as well as the terms for removal of waste from site against monetary targets.

### Mineral waste

*Mineral waste* is identified at Rössing as waste rock and overburden, tailings, and – possibly in future – leached ore residue (ripios).

The Rössing Mineral Waste Management plan has been developed and prepared in accordance with Namibian regulatory requirements, as well as the Rio Tinto Mineral waste management guidance notes and performance standard E8 (Mineral waste). The intention of the plan, which was revised at the end of 2011, is to ensure sound and effective mineral waste management by minimising waste generation and ensuring the safe handling, treatment and disposal of mineral waste.

The purpose of the plan is to provide a documented record of issues related to mineral waste and to manage all mineral waste produced at Rössing in such a manner that disposal facilities and sites are physically, biologically and chemically safe. Waste storage facilities are, thus, placed within permitted areas only.

Waste rock typically consists of coarse, angular fragments of very strong rock material that is resistant to mechanical disintegration and chemical decomposition, with the exceptions of amphibole schist and biotite schist. Both of these are 'minor' rocks in terms of volume, and are furthermore mostly processed as ore. Therefore, the waste rock dumps are typically made up of pervious, frictional material.

An inventory of mineral waste is kept, which reflects the tonnage per year and the cumulative tonnage, as well as the surface area, volume and location of waste. Site maps are maintained and reported on annually.

Reshaping of the huge man-made landforms represented by the waste rock dumps and the Tailings Storage facility needs to be minimised at closure and in order to achieve the aim of the Mineral Waste Management plan. Dumping should progressively meet the final landform requirements. Additional monitoring and maintenance following closure should be limited. With this in mind, Rössing follows a Waste Rock Disposal Planning and Design strategy. As regards the Tailings Storage facility, an operating manual sets out the procedures to be followed in accordance with the engineering design.

Operational manuals regulate the management of the waste rock dumps and the Tailings Storage facility and comply with the Rio Tinto Safety standard for the management of pit slopes, stockpiles, spoils and waste dumps (D3). The likelihood of injury to humans and wildlife is minimised by the design, construction and access control of these facilities, as well as by ensuring geotechnically stable conditions. In addition, the facilities are made inaccessible for temporary and long-term use or habitation.

The current volume disposed of at the waste rock dumps and the Tailings Storage facility is estimated at 743,771,717 tonnes and 383,754,155 tonnes, respectively. The combined surface area of the two disposal sites is currently calculated at 1,362.78ha. The surface area of the Tailings Storage facility did not expand during 2012, but that of the waste rock dumps increased by 5.39ha.

The waste rock dumps and the Tailings Storage facility will remain at mine closure. The visual impacts of these final landforms will be minimised to maintain the characteristics and attractiveness of the area. Deposition of mineral waste is, thus, carried out in such a way as to complement the contours of the surrounding landscape. The preferred option is to allow passive revegetation and integration into functioning ecosystems.

### **Chemical waste**

Rössing uses existing Namibian legislation and international standards, such as ISO 14001:2004 and the Rio Tinto Environmental performance standard E5 (Hazardous materials and contamination control), for conformance and compliance in the management of chemical substances.

The intention of the Rio Tinto standard is to ensure the safe and responsible use and control of all hazardous materials handled by the mine in its operations, commensurate with risks to the environment, to prevent spillage and environmental contamination from handling, storage and processing. Monitoring programmes are in place to prevent spillages and environmental contamination from the transport, use, storage and disposal of hazardous materials.

A Hazardous Material and Contamination Control Management plan is in place at Rössing, which comprises several ongoing activities.

The SJ open pit, showing the north-western corner.



### **Biodiversity management**

Continuous biodiversity management activities at Rössing include -

- monitoring, recording and reporting of biodiversity, including collection and identification;
- making biodiversity information about Rössing and the Central Namib more accessible;
- continuous stakeholder engagement and awareness creation;
- continuous updating, refining and realignment of ongoing work identified in the Biodiversity action plan; and
- investigating and planning rehabilitation at Rössing, in cooperation with land-use management and closure planning.

Rössing has built up a knowledge base over three decades, and is sharing this biodiversity information with other stakeholders. The Central Namib Biodiversity Database, an initiative of Rössing, was launched in 2012. The database enables all uranium mines in the Erongo Region to share biodiversity information to determine and better understand important species

distribution and apply best management practices for the conservation of these species. The database also contains an extensive range of specialist reports and documented surveys that are of relevance to biodiversity in the central Namib.

There is a growing need to better understand the connections, patterns and processes in the surrounding area. To address this need, Fauna and Flora International conducted and completed a landscape-level assessment for the central Namib in 2012.

Since 2001, Rössing has been involved in the protection of the Damara Tern breeding sites along the central Namibian coast. The Damara Tern is a small, fast-flying tern that breeds along the Namibian coast and is classified as Near Threatened owing to is moderately small population.

Nearly 98 per cent of the population nest between the Orange and Kunene Rivers on Namibia's southern and northern borders respectively. Over the years, the mine has supported this project in various ways, including co-funding it from the Rio Tinto–BirdLife International partnership.

The SJ open pit, showing the eastern corner.



As a precautionary principle, Rössing regards the involvement with the Damara Tern as important to continuously build and strengthen awareness about biodiversity conservation. Several meetings and discussions with Fauna and Flora International, BirdLife International, Rio Tinto, and local stakeholders were held during 2012 about the possible continuation of support to this project.

Rössing hosted the twelfth birdwatching event at the Walvis Bay Lagoon in September 2012, to coincide with the Coastal Biodiversity weekend organised by the Namibian Coast Conservation and Management project. A total of 68 learners and ten teachers from ten high schools in Arandis, Swakopmund and Walvis Bay participated in the event. As a token of appreciation, each participating school received a donation of science laboratory equipment.

Rössing was selected as a pilot site to align its current Biodiversity action plan with the revised Rio Tinto guidance, including the net positive impact calculations. The calculations will be used to determine Rössing's offset requirements and guide required future activities. Rio Tinto appointed Fauna and Flora International to assist with this task. The updated plan was received in late November 2012 and will guide activities during 2013.

### Climate change

As part of an internal networking and stakeholder engagement programme, Rössing was present at various seminars and workshops held throughout the year on climate change policy to give input and to learn from best practice.

### Closure planning

Closure planning at Rössing is driven by the Rio Tinto Closure standard and accompanying guidance notes, and takes into account guidance from the Chamber of Mines of Namibia. Closure planning entails the development, maintenance and management of a process for eventual closure that addresses all relevant aspects and impacts of closure in an integrated and multidisciplinary way, and provides a fully scoped and accurate cost of closure to the company that is documented and auditable.

Closure planning is a continuous process at Rössing. Changes in operational circumstances, environmental conditions, legislative and regulatory frameworks, and stakeholder expectations have been considered each time the mine's closure plans have been updated over the past 20 years.

The 2005 Closure plan foresaw the potential closure of Rössing in 2009 or 2016, based on the prevailing business climate at the time. The situation has changed significantly since then, with closure now being planned for 2023,

as proposed in the current mine life plan. The latest full update of the closure plan was prepared in 2011.

Rössing's closure plans are guided by an aspirational vision for closure that is translated into objectives and targets, and a closure strategy is developed to achieve them. This is done by analysing impact mitigation alternatives, using sustainable development criteria and choosing a preferred alternative for each aspect or facility. Implementation plans for these preferred alternatives are then developed and the necessary closure costs calculated. Closure cost calculations are updated annually.

A Rössing Rehabilitation Trust Fund was established that makes provision for closure expenditure which will be incurred by the mine. It complies with statutory obligations and the requirements of the Ministries of Mines and Energy and Environment and Tourism. Clause 15.2 of the fund agreement stipulates: "The mining company shall, before the end of its financial year concerned, pay to the fund a contribution towards the estimated cost of implementing the measures so approved." The agreement also stipulates the formula to be used to calculate the annual contribution. As at the end of October 2012, the fund had a cash balance of N\$256 million.

The 2011 Closure plan presents a defined closure strategy, an extensive knowledge base, and the costing and scheduling of activities that were developed for the 2023 closure scenario. Rössing intends to implement mine closure according to the discussions and conclusions detailed in this plan, and will provide adequate resources to achieve this goal. Should mine closure become inevitable unexpectedly, due to force majeure, the plan may have to be modified according to prevailing circumstances, but it will nonetheless guide the closure process according to the concepts it contains.

The 2011 Closure plan was reviewed by a Rio Tinto delegation during 2012. It was applauded for being well-presented in a user-friendly format and for being aligned with the requirements of the Rio Tinto Closure standard. It was recommended that the plan be shared with stakeholders. For this purpose, it is necessary to develop a consultation or engagement strategy with communities and stakeholders, and to align the plan with multi-year (eg five-year) community plans.

To achieve broader internal stakeholder involvement, a decision was taken to integrate closure planning activities into business operations and to provide frequent feedback on progress. A Closure steering committee was established to drive and coordinate the various follow-up and scheduled activities listed in the 2011 Closure plan.

### Land use and rehabilitation

The Land use stewardship standard (E9) is a Rio Tinto HSE performance standard that prescribes the implementation of an overall land-management direction for each site. Accordingly, concepts such as *avoidance* and *mitigation* are well-embedded in decisions that have land-use implications.

E9 is also closely associated with the Rio Tinto Rehabilitation strategy and implementation guidance notes, as well as the Rio Tinto Closure standard and accompanying guidance notes. In addition to E9, Rio Tinto's Biodiversity strategy guides the development and establishment of a Biodiversity action plan to manage biodiversity issues.

Sequence of photos showing a Z20 access track prior to disturbance, after use, during the rehabilitation process and in its rehabilitated state.

The total area of land under the auspices of Rössing is 18,413.62ha. The total area disturbed, ie the total mine footprint, was 2,530.77ha at the end of 2012. Of this area, the open pit, waste rock dumps, Tailings Storage facility and Processing plant covered a combined surface area of 2,124.45ha, which is 84 per cent of the total

mine footprint. To put this into perspective, the total mine footprint is 13.7 per cent of the land under the auspices of Rössing. The total mine footprint has increased by 164.23ha since 2003, ie it has expanded at an average rate of 18.25ha, or about 6.5 per cent per annum.

No additional land was acquired, and no land was relinquished in 2012. The ramp-up mode of the mine has resulted in expansions of mainly the open pit and waste rock dumps since 2010.

A total area of 7.71ha was added to the total disturbed area at Rössing during 2012. The open pit, Tailings Storage facility and Processing plant did not expand, but the waste rock dumps expanded by 5.46ha and the road network increased by 1.29ha.

Improved understanding of biodiversity at Rössing provides important insights into the mine's rehabilitation requirements. As 84 per cent of the disturbed area is covered by the open pit, waste rock dumps, Tailings Storage facility and Processing plant in operational use, rehabilitation interventions are limited to demolishing redundant infrastructure and facilities, as well as the stabilising and clean-up activities that take place throughout the mine life.

Since the mid-2000s, a number of areas on the mining lease have been drilled in search of new uranium bodies. The exploration budget makes allowance for these areas to be rehabilitated. Exploration and continual rehabilitation of the disturbed areas is ongoing.

The progressive rehabilitation programme at Rössing was resuscitated in 2010, with the demolition of the acid plant and other redundant infrastructure. Currently, rehabilitation entails several mechanical activities, such as demolition, remediation, geotechnical stability, and protection against erosion, as well as providing a surface cap of topsoil. Several progressive rehabilitation tasks were conducted during 2012.

A total area of 92.77ha has been rehabilitated over the years. It is anticipated that this figure will increase in the near future due to the increased focus at Rössing on the importance of rehabilitation.

By May 2012, the Z20 exploration area was completely rehabilitated in compliance with the requirements of the Directorate Parks and Wildlife Management and the mine's Environmental Management plan, which was developed to guide exploration work in the Namib-Naukluft National Park. By the end of the second phase of the drilling programme, more than 70 drillholes had been done. The work, which was inspected by the Ministry of Environment and Tourism and audited by third-party environmental consultants, was found to be of a high standard. This was achieved through close cooperation between the rehabilitation and roadbuilding contractors during the initial road construction and final rehabilitation stages. The challenge of rehabilitation in rocky terrain was overcome by using heavy earthmoving equipment to carefully remove and later relocate material ranging from sand to large boulders.

The mining of the small SK4 satellite ore body, situated 1.5km to the east of the SJ pit, was completed in 2011. A total of 6.9 million tonnes was mined in 2010 and 2011. The pit is 45m deep and measures about 230m by 80m. Due to the excessive hauling distance from the main pit to the SK4 pit, it is anticipated – according to the current mine life plan – that it will not be used for waste rock deposition. It has been decided to investigate the feasibility of using the pit as a disposal area for demolition waste at mine closure. Volume calculations show that the pit will be large enough to contain the demolition waste of the entire mine.

Although rehabilitation is carried out as far as possible, it is unlikely that all disturbed land will be rehabilitated at closure. Backfilling the open pit, for example, is not a viable option. It is, thus, important to realise at an early stage that the residual impact area has to be calculated accurately and needs to be offset.

Guidance from legislative and regulatory frameworks on rehabilitation criteria in Namibia is limited. In particular, criteria need to be determined for the sustainability of rehabilitation interventions and exit plans, as well as for clarity regarding the relinquishment of land. Rössing believes that it can play an important contributory role in facing these challenges.



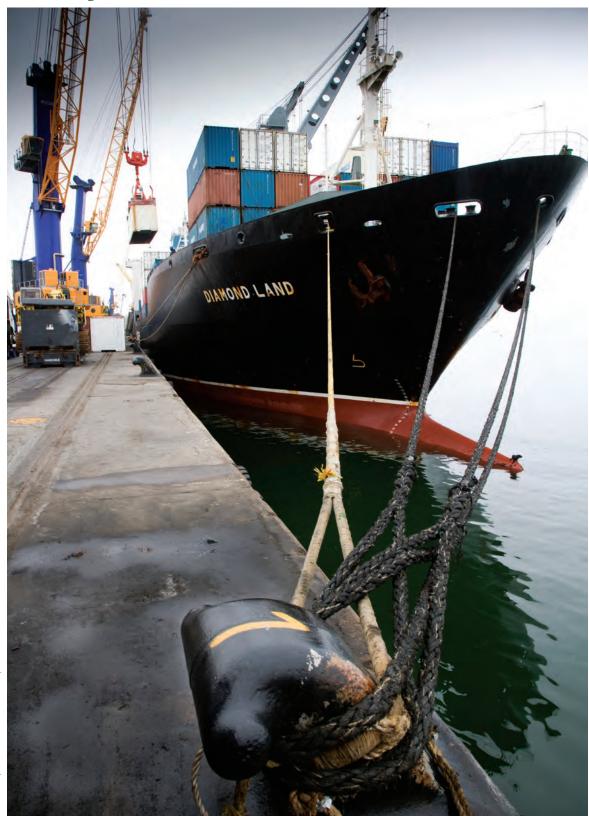




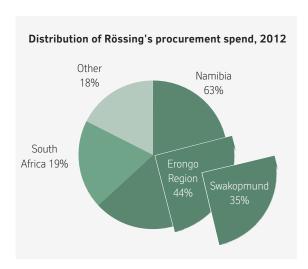


# Our value addition

Our Value Added statement (page 57) reflects the wealth created through the sale of our uranium oxide production, payments for services to suppliers, taxes to the Namibian Government, payments to employees, and investments made in the surrounding communities.



Rössing continued to demonstrate its value to Namibia through payments to state-owned enterprises such as NamPort.



Due to our high demand for goods and services within the Namibian economy, Rössing gives rise to a significant 'multiplier effect', where spending by one company creates income for and further spending by others. This leads to a long chain of value addition throughout the economy.

The uranium price came under severe pressure during 2012, which resulted in a significant decrease in turnover for Rössing, from N\$3.26 billion in 2011 to N\$2.88 billion in 2012. This decrease occurred much faster than the company could anticipate by changing its cost base, and therefore led to a consecutive negative cash flow that continued from 2011.

Rössing realised a profit of N\$2.7 billion from the sale of its effective shareholding in the Husab ore body. A first draw-down on these funds had to be made at the end of the year in order to relieve the operational cash-flow pressure.

Rössing continued to demonstrate its value to Namibia through contributions to the fiscal authorities. The company paid N\$110 million in royalty tax and generated N\$176 million in pay-as-you-earn (PAYE) tax to the Receiver of Revenue. Payments to stateowned enterprises, such as NamWater and NamPower, amounted to N\$270 million.

Employment creation continues to increase. The expansion of our operations means an associated rise in employment costs. Since 2007, when Rössing embarked on its mine life expansion programme, employment costs have more than doubled, rising from N\$310 million in 2007 to N\$817 million in 2012. While our expansion has created more employment opportunities in the Erongo Region, it is also an area of concern as it increases our salary bill. This, in turn, impacts on our cost-competitiveness.

Cost-reduction initiatives remain a challenge, especially in the current economic climate, both regionally and locally. Through procurement efficiencies and supplier engagement, we achieved US\$11.47 million (N\$94.17 million) savings, nearly double our set target of US\$6 million (N\$49.26 million).

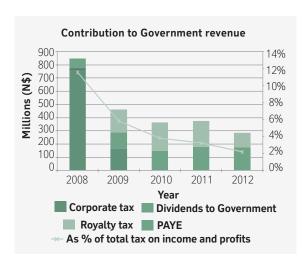
It is widely acknowledged that the mining industry has a significant procurement spend. This has the potential to boost local production, employment and enterprise development. Rössing spent N\$2.2 billion in 2012, of which N\$141 million was utilised as capital expenditure. Despite challenges in sourcing local goods and services, a significant amount of our spending – amounting to N\$1.5 billion – was allocated to Namibian-registered suppliers. South African suppliers received N\$460 million, while international suppliers received N\$419 million.

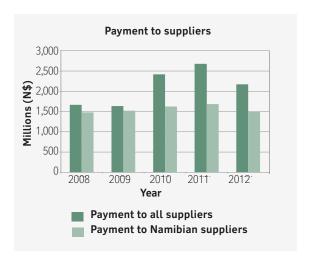
Our procurement focus will be to create sustainable value to the business. Rössing will introduce a sourcing strategy through an approved tender process that will assign preference to businesses that are either owned or operated by historically disadvantaged Namibians (HDNs), or businesses that have transformed to maximise the opportunities for these groups to participate. The aim is to increase the local procurement spend and to create an enabling environment for HDN businesses to access mainstream business opportunities.

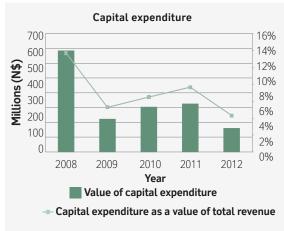
Cash flows to the various stakeholders are set out in our Value Added statement on page 57. Highlights of the different value additions that were made between 2008 and 2012 are summarised in the graphs on page 56.

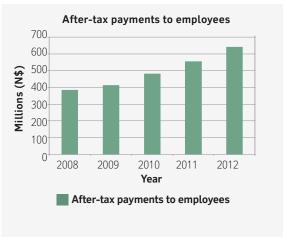
# Summary of Rössing's value addition

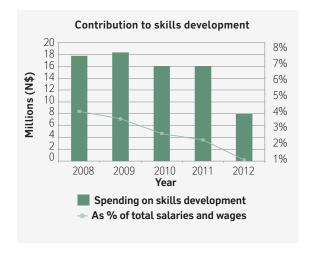
At Rössing, we believe that our business can provide a strong base for economic growth in the communities around us, in the Erongo Region, and in Namibia as a whole. Our economic contribution is made up of the value that we add by paying wages, employee benefits, Government taxes and royalties, as well as by making dividend and interest payments and retaining capital to invest in the growth of the mine. We also make significant payments to our suppliers of goods and services, both locally and nationally. The graphs shown here highlight some of the key socioeconomic contributions Rössing has made to Namibia over the past five years, from 2008 to 2012.

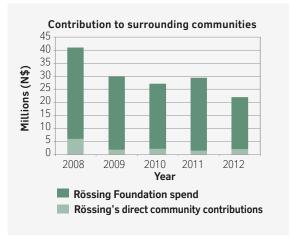












Stakeholders' Value Added Statement 1	Notes	N\$'000	N\$'000	N\$'000	N\$'000	N\$'000
For the year ended		2012	2011	2010	2009	2008
Turnover		2,880,399	3,265,170	3,609,020	3,232,493	4,492,442
Less: Purchased material and services from non-stakeholders		2,171,879	2,679,865	2,416,434	1,634,751	1,667,719
Total value added		708,520	585,305	1,192,586	1,597,742	2,824,723
Investment income		17,098	30,935	6,214	5,196	24,103
Total wealth created		725,618	616,240	1,198,800	1,602,938	2,848,826
Wealth distributed						
Employees	1	817,032	736,316	626,597	534,600	455,241
Providers of equity capital		-	-	127,215	177,603	342,441
Providers of loan capital		-	6,002	15,799	18,616	7,128
Government	2	385,224	427,035	414,056	514,506	745,789
The Rössing Foundation		-	-	-	11,586	59,181
Reinvested in the Group	3	(476,638)	(553,113)	15,133	346,027	1,239,046
Total wealth distributed		725,618	616,240	1,198,800	1,602,938	2,848,826

# <sup>1</sup> Stakeholders in this context are shareholders, Government, lenders, employees and the Rössing Foundation.

	N\$'000	N\$'000	N\$'000	N\$'000	N\$'000
1. Employees	817,032	736,316	626,597	534,600	455,24
- Net salaries and wages	640,842	557,655	481,610	412,851	381,74
- Pay-as-you-earn (PAYE) taxes	176,190	178,661	144,987	121,749	73,49
2. Government	385,224	427,035	414,056	514,506	745,78
- Dividend	-	-	4,437	6,213	11,94
- Erongo Regional Electricity Distributor	2,630	2,481	Not reported separately	Not reported separately	Not report
- Mining royalty tax	110,183	196,046	213,619	173,269	
- NamWater	39,488	37,948	25,577	25,566	26,44
- NamPost	25	7	Not reported separately	Not reported separately	Not report
- NamPort	1,897	2,688	Not reported separately	Not reported separately	Not report separate
- NamPower	189,428	137,570	125,508	118,383	95,72
- Rates, taxes and licences	2,408	1,670	1,404	1,639	1,19
- Receiver of Revenue	-	-	1,299	146,006	573,67
Current tax	-	-	1,299	146,006	573,6
- Road Fund Administration	1,123	1,204	Not reported separately	Not reported separately	Not repor
- Telecom Namibia	5,777	7,153	7,517	7,165	3,78
- TransNamib	32,265	40,268	34,695	36,265	33,0
3. Reinvested in the Group	(476,638)	(553,113)	15,133	346,027	1,239,04
- Depreciation	243,860	202,669	224,159	226,348	168,88
- Retained earnings	(473,519)	(464,931)	(174,690)	105,626	881,23
- Deferred tax	(246,979)	(290,851)	(34,336)	14,053	188,93
Capital expenditure	141,642	285,850	247,404	266,801	619,06

# Our corporate governance and condensed financial statements

Rössing adopts the Rio Tinto Integrity and compliance programme, which ensures that we meet the Group's integrity and compliance commitment, set out in *The way we work*, Rio Tinto's global code of business conduct, which applies to all employees and contractors.

### **Board of directors**

The board of directors executes the mandate it has received from the shareholders to ensure that Rössing is a world-class and responsible company by putting an executive team in place with certain targets to be achieved. The board is responsible for ensuring that the company is run in accordance with its mandate as described in Rössing's Articles of Association, and that the various stakeholder interests are balanced and receive the required attention.

The company has a unitary board. The roles of chairperson and managing director are separate and distinct, and the current number and stature of the independent directors serving on the board ensure that sufficient independence is applied when making significant decisions. The board of directors is made up of people who have the appropriate mix of skills, experience and diversity to best serve the interests of the company and its stakeholders.

### Members of board of directors

The following persons are members of the 2012 Rössing Uranium Limited board of directors:

Chairperson (independent non-executive director): RR Hoveka

Managing director (executive director): C Salisbury

Non-executive director: JS Louw

Independent non-executive directors: EHT Angula, F Fredericks, VB Moll, HP Louw (alternate to JS Louw)

Rio Tinto plc shareholder representatives (non-executive directors): SC Wensley, RJ Fagen (alternate to SC Wensley), AM Lloyd, SJ Ellinor (alternate to AM Lloyd)

Government of the Republic of Namibia's shareholder representative: (non-executive director): A lilende

### Functions of the board

A board charter governs the workings of the board, the performance of which is monitored by the Nomination and Remuneration committee. The board is responsible for adopting a corporate strategy, major plans of action, and major policies. It is also responsible for monitoring operational performance, which includes identifying risks that impact on the company's sustainability, and monitoring risk management, internal controls, compliance management, corporate governance, business plans, and key performance indicators, including non-financial criteria and annual budgets.

Furthermore, the board is responsible for managing successful and productive stakeholder relationships. All directors carry full fiduciary responsibility, and owe a duty of care and skill to the company.

The board meets quarterly, with additional meetings convened as required.

### Special-purpose vehicles

The company has established two special-purpose vehicles, the Rössing Foundation and the Rössing Environmental Rehabilitation Fund, which are managed independently of Rössing by their own sets of trustees. Rössing board members are represented on these Boards of Trustees, but are in the minority.

The Rössing Foundation was established in 1978 by Rössing Uranium Limited through a deed of trust to implement and facilitate its corporate social responsibility activities within Namibian communities.

The trustees of the Rössing Environmental Rehabilitation Fund review the closure plans and trust funds set aside for the eventual rehabilitation of the mine site.

### **Financial statements**

The directors are responsible for monitoring and approving the financial statements to ensure that they fairly present the company's affairs and the profit or loss at the end of each financial year. Independent auditors

are responsible for expressing an opinion on the fairness with which these financial statements represent the company's financial position.

The financial statements are prepared by management in accordance with the International Financial Reporting Standards (IFRS) and in the manner required by the Companies Act, 2004 (Act No. 28 of 2004). The statements are based on appropriate accounting policies that have been consistently applied and which are supported by reasonable and prudent judgements and estimates.

### Independence of external auditors

The company's annual financial statements are audited by independent auditors PricewaterhouseCoopers. The company believes that the auditors have observed the highest level of professional ethics and has no reason to suspect that the auditors have not acted independently of the company. The Audit and Risk committee have confirmed the independence of the external auditors for the reporting period.

### Internal audit

The company's internal audit function performs an independent appraisal activity with the full cooperation of the board and management. The internal auditors have the authority to independently determine the scope and extent of work to be performed. The objective of an internal audit report is to assist executive management with the effective discharge of its responsibilities by examining and evaluating the company's activities, resultant business risks, and systems of internal control. The mandate of the internal auditors requires them to bring any significant control weaknesses to the attention of management and the Audit and Risk committee for remedial action.

The internal audit function for the year was outsourced to KPMG, who took over the functionality from Ernst & Young in April 2012. Internal audit reports functionally to the company's Audit and Risk committee, and administratively to the manager Compliance and Legal Services.

### Risk report

Risk management is a fundamental part of the company's business. It is, therefore, kept central to the company's activities by encouraging a culture in which risk management is embedded in the everyday management of the business. The board acknowledges both its overall responsibility for the process of risk management and for reviewing its effectiveness. Executive management is accountable to the board for designing, implementing and monitoring the risk-management process, as well as integrating it with day-to-day activities. In this regard, the company has fully adopted and implemented the Rio Tinto Group Risk policy and methodology.

### King III

Rössing has accepted guidance from the code of and report on governance principles for South Africa (King III), where applicable to the company's operations. Deviations from the King III guidelines are as follows:

Guideline 1.27: "Companies should disclose the remuneration of each individual director and certain senior executives": The remuneration of directors and senior management is disclosed to shareholders. Rössing does not propose to disclose this information to the public.

Guideline 1.29: "Shareholders should approve the company's remuneration policy": Remuneration is reviewed in detail by the Nomination and Remuneration committee and approved in principle by shareholders.

### Internal control

*Internal control* comprises methods and procedures implemented by management to ensure -

- compliance with policies, procedures, laws and regulations;
- authorisation through implementation and appropriate review and approval procedures;
- reliability and accuracy of data and information (information used in the decision-making process at Rössing needs to be accurate, timely, useful, reliable and relevant);
- effectiveness and efficiency (all operations at Rössing need to be effective and efficient, with the most economical use of resources, and add value, which is accomplished by the continuous monitoring of goals, ie that which is measured is controlled); and
- safeguarding of assets (assets are protected from theft, misuse, use for fraudulent purposes and/or destruction).

The directors are responsible for maintaining an adequate system of internal control which reduces, but cannot eliminate, the possibility of fraud and error.

### Company secretary

The company secretary, Ms GD Labuschagne, is suitably qualified and has access to the company's resources to effectively execute her duties. She provides support and guidance to the board in matters relating to governance and compliance practices across the company. All directors have unrestricted access to the company secretary.

# **Condensed Annual Financial Statements**

Condensed Statement of Financial Position as at 31 December 2012

		Audited	Audited	Audited
		2012	2011	2010
	Notes	N\$'000	N\$'000	N\$'00
			Restated	Restate
ASSETS				
Non-current assets		2,207,556	5,399,040	4,484,26
Property, plant and equipment	6	1,730,583	1,833,773	1,329,45
Available-for-sale financial assets		-	3,371,590	2,991,94
Deferred tax assets		70,817	-	
Defined benefit pension asset		150,157	-	
Rössing Environmental Rehabilitation Fund		255,999	193,677	162,86
Current assets		3,891,386	1,774,741	2,881,96
nventories	7	942,332	825,146	1,557,92
Current income tax asset		-	46,941	36,80
Trade and other receivables		730,879	568,620	362,84
Rio Tinto Finance Limited		2,078,708	_	
Cash and cash equivalents		86,311	283,109	875,692
Restricted cash		53,156	50,925	48,68
Total assets		6,098,942	7,173,781	7,366,23
EQUITY AND LIABILITIES				
Capital and reserves		4,408,615	4,711,709	4,965,72
Share capital		223,020	223,020	223,02
Available-for-sale revaluation reserve		-	2,869,151	2,489,50
Retained earnings		4,185,595	1,619,538	2,253,19
Non-current liabilities		948,410	1,821,905	1,505,07
Interest-bearing borrowings	8	13,583	14,352	11,31
Rio Tinto International Holdings Australia (Pty) Ltd		-	752,787	584,05
Deferred tax liabilities		-	176,162	458,13
Provision for closure and restoration costs		931,087	874,864	446,45
Post-employment obligation		3,740	3,740	5,10
Current liabilities		741,917	640,167	895,43
Bank overdraft		104,367	60,503	387,79
Trade and other payables		635,731	577,926	505,71
Current portion of interest-bearing borrowings	8	1,819	1,738	1,92
		6,098,942	7,173,781	7,366,23

Condensed Statement of Changes in Equity for the year ended 31 December 2012

	Share capital	Audited Available- for-sale investment revaluation reserve	Retained earnings	Total
	N\$'000	N\$'000	N\$'000	N\$'000
Balance at 1 January 2012 (restated)	223,020	2,869,151	1,619,538	4,711,709
Total comprehensive income and expenses	-	(2,869,151)	2,566,057	(303,094)
Dividend declared during the year	-	-	-	-
Balance at 31 December 2012	223,020		4,185,595	4,408,615
-				
Balance at 1 January 2011 (restated)	223,020	2,489,508	2,253,197	4,965,725
Total comprehensive income and expenses (restated)	-	379,643	(633,659)	(254,016)
Dividend declared during the year				
Balance at 31 December 2011 (restated)	223,020	2,869,151	1,619,538	4,711,709
Balance at 1 January 2010	223,020	2,033,628	2,467,360	4,724,008
Total comprehensive income and expenses (restated)	-	455,880	( 82,511)	373,369
Dividend declared during the year	-	-	(131,652)	(131,652)
Balance at 31 December 2010 (restated)	223,020	2,489,508	2,253,197	4,965,725

Condensed Statement Of Comprehensive Income and Expenses for the year ended 31 December 2012

		Audited	Audited
		2012	201
	Notes	N\$'000	N\$'000
			Restated
Continuing operations			
Sale of uranium oxide		2,880,399	3,265,170
Other income		8,837	3,596
Revenue		2,889,236	3,268,766
Operating costs		(3,232,689)	(3,837,444
Depreciation, amortisation and impairment charges		(243,860)	(202,669
Other net gains		2,897,527	32,514
Royalties - mining		(110,183)	(196,046
Operating profit/(loss)		2,200,031	(934,879
Finance income		17,098	30,935
Finance costs		(68,476)	(20,566
Profit/(loss) before income tax		2,148,653	(924,510)
Income tax	5	246,979	290,851
Profit/(loss) for the year		2,395,632	(633,659)
Other comprehensive income for the year			
Revaluation on available-for-sale financial assets		(2,869,151)	379,643
Actuarial gains on defined benefit pension asset		170,425	
Total comprehensive income for the year attributable to equity holders of company		(303,094)	(254,016)
Reconciliation of total comprehensive income for the year to net loss after tax from normal operations			
Total comprehensive income for the year as above		(303 094)	(254 016
- Actuarial gains on defined benefit asset		(170 425)	
- Net effect of accounting for stake in Kalahari and Extract			(210 915
Net loss after tax from normal operations		(473 519)	(464 931)

### Condensed Statement of Cash Flows for the year ended 31 December 2012 **Audited** Audited 2012 2011 Notes N\$'000 N\$'000 Restated Cash flows from operating activities Cash (utilised)/generated by operations (640,342)277,290 Finance income 17,098 30,935 Finance costs paid (11,281)(13,747)46,941 Income tax received/(paid) (1,256)293,222 Net cash (utilised)/generated from operating activities (587,584)Cash flows from investing activities Purchases of property, plant and equipment 6 (141,642)(285,849)Non-cash movement on closure cost assets 6 972 (421,587)Proceeds from sale of property, plant and equipment 268 Investment made at Rio Tinto Finance Limited (2,078,708)Contributions made to Rössing Environmental Rehabilitation (49,584)(20,686)Fund Net cash utilised by investing activities (2,268,962)(727,854)Cash flows from financing activities (Decrease)/increase in amount due to Rio Tinto International (752,787)168,728 Holdings (Decrease)/increase in interest-bearing borrowings (688)2,846 Decrease in available-for-sale assets 3,371,590 Net cash generated from financing activities 2,618,115 171,574 Decrease in cash and cash equivalents (238,431)(263,058)Cash and cash equivalents at beginning of year 273,531 536,589 Cash and cash equivalents at end of year 35,100 273,531

Notes to the Condensed Annual Financial Statements for the year ended 31 December 2012

### 1. Reporting entity

Rössing Uranium Limited is a company domiciled in the Republic of Namibia. These are the condensed annual financial statements of the company as at and for the year ended 31 December 2012. The audited annual financial statements of the company as at and for the year ended 31 December 2012 are available upon request from the company's registered office.

### 2. Statement of compliance

These condensed annual financial statements have been prepared in accordance with the framework concepts and the measurement and recognition requirements of IFRS and disclosure requirements of International Accounting Standards (IAS) 34, Interim Financial Reporting and the requirements of the Namibia's Companies Act. They do not include all of the information required for full annual financial statements, and should be read in conjunction with the annual financial statements of the company as at and for the year ended 31 December 2012.

### 3. Significant accounting policies

The accounting policies applied by the company in its condensed annual financial statements are the same as those applied by the company it its annual financial statements as at and for the year ended 31 December 2012.

### 4. Comparatives

In 2004 the company set up the Rössing Environmental Rehabilitation Fund with the main objective of ensuring sufficient funds are set aside over the remaining mine life to fund the rehabilitation of the mine area. Annual contributions have been made to the bank accounts of the fund since its inception. The interest that was generated from these bank accounts was previously not included in the statement of comprehensive income in line with the requirements of IAS 27 and International Financial Reporting Interpretations Committee (IFRIC) 5. This has been rectified and comparatives adjusted accordingly.

The effect of this is as follows:	Audited 2012 N\$'000	Audited 2011 N\$'000 Restated	Audited 2010 N\$'000 Restated
Statement of financial position		Restated	restated
Increase/(decrease) Provision for clean-up cost Deferred tax liability Retained earnings	(63,168) 23,688 39,480	(50,430) 18,911 31,519	( 40,308) 15,115 25,193
Statement of comprehensive income			
Increase/(decrease) in total comprehensive income for the year Interest received Taxation - deferred tax Net increase in total comprehensive income for the year	12,738 ( 4,777) 7,961	10,122 ( 3,796) 6,326	40,308 ( 15,115) 25,193
		Audited 2012 N\$'000	Audited 2011 N\$'000 Restated
5. Taxation Namibia - current taxation		_	_
Namibia - deferred taxation		(246,979) (246,979)	(290,851) (290,851)
6. Property, plant and equipment			
Net book value at beginning of the year Additions		1,833,773 141,642	1,329,453 285,849
Disposals		-	(447)
Depreciation and impairment (Decrease)/increase in closure provision		(243,860) (972)	(202,669) 421,587
Net book value at end of the year		<u>1,730,583</u>	1,833,773
7. Inventory Inventory is stated after - Providing for obsolescence			
- raw materials		21,582	18,945
<ul><li>Writing down carrying value to net realisable value</li><li>work in progress</li><li>finished goods</li></ul>		-	8,952 60,467

		Audited 2012 N\$'000	Audited 2011 N\$'000 Restated
8. Interest-bearing borrowing Non-current liabilities	ngs		
Capitalised finance lease agre	eements	1.819	1,738
Current liabilities		1,010	.,, 00
Capitalised finance lease agre	eements	13,583	14,352
		<u>15,402</u>	<u>16,090</u>
9. Capital commitments			
	d but not yet incurred as at 31 December 2012	14,539	11,321
68,58% of the company's issu	Skeleton Coast Diamonds Limited which owns led shares. The remaining 31,42% of the shares are ding company is Rio Tinto plc, a company registered		
Summary of related party to Purchase of services Receivables from related parties Payables to related parties		1,136,634 201,916 8,743	264,796 601 819,353

### **COMPANY OPERATIONAL AND FINANCIAL REVIEW**

### Financial performance

Revenue decreased by 12% compared with the previous year. The company incurred a net loss after tax of N\$474 million (2011: N\$465 million) from normal operations. Further details of the company's financial performance are set out in the condensed statement of comprehensive income.

### Operations

Production of uranium oxide for the year was 2,699 metric tonnes compared with 2,148 metric tonnes in 2011.

### **Dividend declaration**

No dividends were declared for the year.

### Subsequent events

During January 2013 a revision relating to the resource and reserves model was approved in line with the company's policies. The new revised resource and reserve model will reduce the current mine life plan by one year and the previously published reserves will be reduced by 18%. If the revision was approved before the year end, the Provision for Closure Cost and the corresponding Closure Asset would have increased by N\$17,820,000. The change in the estimate will be applied prospectively from 1 January 2013.

No other material event or circumstance occurred between the year-end date and the date of this report.

### Auditors' review opinion

The condensed results for the year ended 31 December 2012 have been reviewed by PricewaterhouseCoopers. The auditors' unqualified review opinion is available for inspection at the company's registered office.

### Directors

RR Hoveka (Chairman), C Salisbury\*\*\* (Managing), EHT Angula, F Fredericks, JS Louw\* (alternate HP Louw\*), VB Moll\*, AM Lloyd\*\*\* (alternate SJ Ellinor\*\*\*), SC Wensley\*\*\* (alternate RJ Fagen\*\*\*)
\*South African \*\*\*Australian

### **Company secretary**

GD Labuschagne PO Box 22391 Windhoek

### **Auditors**

PricewaterhouseCoopers PO Box 1571 Windhoek

### **Assurance**

Our vision is to carry out our business with integrity, honesty and fairness at all times. We build from a foundation of compliance with relevant laws, regulations and international standards, and are in line with various Rio Tinto and Rössing guidelines on leading business practices, such as *The way we work*, Rio Tinto's global code of business conduct.

Various external assurance and verification processes are conducted throughout the year on much of our work. For example, our financial statements are audited by external auditors, and our environmental figures are audited annually by an external environmental auditing company. The following auditing companies, Government bodies and other institutions reviewed the company's practices in 2012:

- PricewaterhouseCoopers (Rio Tinto Corporate annual report data assurance, designed to provide assurance over selected items; in Rössing's case, the AIFR data);
- KPMG (internal audits);
- Rio Tinto Group Audit and Assurance (internal audits);
- Det Norske Veritas (ISO 14001:2004 certification and Rio Tinto Health, Safety, Environment and Quality management system business conformance);
- International Atomic Energy Agency (industry control);
- Metago Environmental Engineers (annual review of tailings and associated environmental aspects);
- Environmental Resources Management Limited (Rio Tinto operations and business unit assessment);
- Ministry of Labour and Social Welfare: Affirmative Action (Employment) (compliance verification in respect of labour-related Acts);
- National Radiation Protection Authority, Ministry of Health and Social Services (compliance verification in respect of health and related Acts);
- Ministry of Agriculture, Water and Forestry (compliance verification in respect of effluent management and water-related Acts);
- Ministry of Mines and Energy (compliance verification in respect of mining operation-related Acts); and
- Ministry of Finance (compliance verification in respect of income tax and financial Acts).

### List of references

The way we work: Our code of business conduct

The way we buy

Human rights guidance

Compliance guidance

Business integrity guidance

Corporate governance guidance

Antitrust policy and guidance

Our key relationships

Sustainable development

Rio Tinto HSEQ management system standard

Operational standards – Safety

Operational standards - Occupational health

Operational standards - Environment

Corporate standards - Communities

Corporate standards - Closure

These reference documents are all available electronically at www.riotinto.com, or in hard copy by writing to Rio Tinto, 2 Eastbourne Terrace, London, W2 6LG, United Kingdom.

Performance data table	2012	2011	2010	2009	2008
Employees					
Number of employees	1,528	1,637	1,592	1,415	1,307
Production					
Uranium oxide produced (tonnes)	2,699	2,148	3,628	4,150	4,108
Ore processed ('000 tonnes)	12,127	10,729	11,598	12,633	12,858
Waste rock removed ('000 tonnes)	31,737	39,913	41,955	38,755	33,899
Ratio of ore processed to waste rock removed	0.38	0.27	0.28	0.33	0.38
Health, safety and environment					
Number of personal annual radiation exposures above 20mSv/annum	1	0	0	0	0
New cases of pneumoconiosis	0	0	0	0	0
New cases of dermatitis	3	0	1	0	0
New cases of hearing loss	0	0	0	0	0
New cases of chronic bronchitis	0	0	0	0	0
All Injury Frequency Rate (AIFR)	0.49	0.81	0.89	0.73	0.91
Number of lost-day injuries	4	11	14	6	8
Source dust levels at Fine Crushing plant (mg/m³)	2.35	2.55	4.02	2.33	1.52
Freshwater consumption ('000m <sup>3</sup> )	3,103	3,060	2,870	3,131	3,700
Fresh water per tonne of ore processed (m <sup>3</sup> /t)	0.26	0.29	0.25	0.25	0.29
Ratio of fresh water to total water	0.38	0.39	0.31	0.33	0.36
Seepage water collected ('000m³)	2,387	2,349	2,680	2,879	2,740
Energy use on site (GJ x 1,000)	1,852	1,897	1,996	2,168	1,812
Energy use per tonne of ore processed (MJ/t)	153.03	182.90	172.1	174.3	140.9
CO <sub>2</sub> total emission (kt CO <sub>2</sub> equivalent)	211.6	208.08	221.0	243.2	222.6
CO <sub>2</sub> equivalent emission per tonne of production (e/t uranium oxide)	78.41	97.37	60.70	58.60	54.20
Product and customers					
Uranium spot market price (US\$/lb) (average)	48.70	56.75	46	46	61

# A glimpse back to the beginning of Rössing mine

John Louw celebrated his 40th year as a Rössing board director in 2012. He is one of the three sons of the geologist Captain Peter Louw, who discovered the first traces of uranium in the Namib Desert, which ultimately led to the establishment of Rössing. Below is an extract from a speech given by him at a dinner held in his honour towards the end of 2012.

I would like to tell you a little story.

Rewind to the mid-1920s. My parents had settled in Swakopmund, which prior to World War One (1914-1918) had been part of German South West Africa. Swakopmund was little more than a village in the grips of the beginning of the Great Depression (1929-1934). The entire world seemed to be suffering, and Swakop was no exception.

With several friends, including German residents from earlier years, my parents started to investigate the possibility of local mineral prospects, particularly radium. Traces of radium had apparently been identified near Rössing Mountain by geologists who had done a sterling survey of the mineral wealth of South West Africa when it was part of the German Empire. My British mother, who came from a medical background, was quick to realise the possible value of radium, used to this day in the treatment of cancerous tumours.

So, the group went prospecting and searched certain target areas. Eventually, they found some of the smallish black stones which showed a 'metallescent' fracture when broken. These were considered to be markers for a possible radium source. Samples were duly collected and sorted, and under my mother's guidance they were dispatched to Teddington laboratory in Britain for evaluation. The samples were confirmed to be radioactive but, regrettably, of no apparent financial value.

Now fast-forward to the latter days of World War Two (1939-1945). I was a young sapper in active service in Italy. The war in Europe was clearly drawing to a close; indeed, hostilities in Europe ended in May 1945. In the Far East, however, Japan was still actively engaged in war against the USA and its allies, with considerable casualties on both sides and no sign of a Japanese surrender. In early August, the USA ended the war by dropping atomic bombs on the Japanese cities of Hiroshima and Nagasaki. Both cities were completely destroyed. The world instantly became aware of the awesome power of uranium.

By the mid-1950s, the energy potential of a peaceful application of nuclear power was fully recognised. The first nuclear reactors for the production of electricity were taking shape. This, in turn, led to a growing need for an adequate and reliable supply of uranium. As a student of industrial chemistry, employed in the laboratories of an energy-conscious petroleum company in Cape Town, I began to think again about the small black stones I knew as a boy. I understood from the periodic table of elements that uranium

could belong to the same family of minerals as radium, and that the presence of radium might well indicate a source of uranium in the area of Swakopmund.

Some time later, on a visit to Swakopmund, I discussed my theory with my father and suggested we drive out to the old radium prospect area of those early years to



investigate the possibility of a uranium presence. Somewhat reluctantly he agreed, and early the following morning we set out for what we remembered to be the original site. An hour or so later, my father turned off to the right of the main road, a bit beyond Rössing Mountain, and stopped not too far from where Rössing built its landing strip many years later.

It was time for a cup of tea, so we sat on the ground in the shade of the vehicle and planned our course of action. We would each take an area to either side of the vehicle and search for small black stones about the size of a hen's egg. This we duly did, and when our canvas bags were full – some 20 stones in each – we returned to the vehicle to find out the truth with the aid of a Geiger counter.

We anxiously checked the first bag, small black stone by small black stone, slowly and carefully. Not a single chirp or beep from the Geiger counter. Only silence. Then we checked the second bag; again, deafening silence from the counter ... until, about five stones from the bottom of the bag, the counter took off in wild excitement. That was the birth of Rössing Uranium Limited: one lonely black stone, not much bigger than a hen's egg.

As I had to return to Cape Town the next day, we carefully marked the spot so that my brother, Graham, would be able to find the area. Graham did a comprehensive check of the entire vicinity to determine the best location for his first four claims. Subsequently, as the 'family prospector', he identified more radioactive anomalies in the vicinity, which then led to the declaration of an official mining area. And the rest, as the saying goes, is history.

# Rössing's production of uranium oxide and the nuclear fuel cycle

Uranium is a relatively common element that is found in the earth all over the world, mined in many countries and processed into yellow cake, ie uranium oxide (U<sub>3</sub>O<sub>8</sub>). Uranium oxide has to be processed before it can be used as a fuel for a nuclear reactor, that is, where electricity is generated to produce heat and steam in order to drive a turbine connected to a generator.



**1. Drilling and blasting** Through drilling, blasting, loading and haulage, the uranium ore at Rössing is mined. Due to the erratic distribution of minerals in the ground, waste and ore are often mixed. Radiometric scanners measure the radioactivity level of each truckload, determining whether the material is sent to the primary crushers or to the low-grade stockpile. Waste is transported to a separate storage area.



### 2. Crushing

Ore is delivered to the primary crushers by haul truck and then by conveyor to the coarse ore stockpile. It passes through a further series of crushers and screens until the particles are smaller than 19 mm. After weighing, the fine ore is stored on another stockpile.



# 3. Grinding

Wet grinding of the crushed ore by means of steel rods reduces it further to slurry with the consistency of mud. The four rod mills, which are 4.3m in diameter, are utilised as required by production levels and operate in parallel.



**4. Leaching** A combined leaching and oxidation process takes place in large mechanically agitated tanks. The uranium content of the pulped ore is oxidised by ferric sulphate and dissolved in a sulphuric acid solution.



### 5. Slime separation

Rössing Uranium's operations

The product of leaching is a pulp containing suspended sand and slime. Cyclones separate these components and, after washing in rotoscoops to remove traces of uranium-bearing solution, the sand is transported via a sand conveyor to a tailings disposal area.



### 6. Thickening

Counter-current decantation thickeners wash the slimes from previous stages. A clear uraniumbearing solution ('pregnant' solution) overflows from the thickeners, while the washed slime is mixed with the sands and pumped to the tailings area



### 8. Solvent extraction (SX)

The acidic eluate from the ion exchange plant is mixed with an organic solvent which takes up the uranium-bearing component. In a second stage, the organic solution is mixed with a neutral aqueous ammonium sulphate solution which takes up the uranium-rich 'OK liquor'. The acidic 'barren aqueous' solution is returned to the elution columns.



removes the uranium from the

beads. The resulting eluate is a purified and more concentrated

uranium solution.



The ammonium diuranate is recovered on rotating drum filters



### 11. Drying and roasting 12. Loading and despatch

Final roasting drives off the ammonia, leaving uranium oxide. The drums of uranium oxide are loaded and exported to overseas The product is then packed into metal drums. Neither ammonium converters for further processing. At full capacity, the plant can produce diuranate nor uranium oxide are 4,500 tonnes of uranium oxide each year. This step completes the Rössing production process. explosive substances



The addition of gaseous ammonia to the 'OK liquor' raises the solution pH, resulting in precipitation of ammonium diuranate, which is then thickened to a yellow slurry.

The uranium oxide is converted

to uranium hexafluoride crystals. Conversion plants operate

commercially in Canada, China,

France, the UK, and the USA.





### 14. Enrichment

This step increases the concentration of the isotope uranium-235 (235U) from its naturally occurring level of 0.7 per cent to higher levels required for nuclear reactors - about three



Enriched uranium is converted into uranium dioxide, formed into solid cylindrical pellets, sealed in metal fuel rods, and bundled into fuel



### 16. Power generation

Fuel assemblies are loaded into nuclear reactors where the  $^{235}\mathrm{U}$ fissions, producing heat and steam used to generate electricity. (\*Photos: www.areva.com)





# Please contact us for any feedback, comments, concerns or suggestions about this report.

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