

RioTinto

Rössing Uranium Limited  
Working for Namibia

Report to stakeholders 2015

Moving ahead,  
realising our vision



# The Rössing Uranium 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 deposit in 1966. Ten years later, in 1976, Rössing Uranium, Namibia's first commercial uranium mine, began operating, celebrating its 40th year of production in 2016.

Today, Namibia has two significant uranium mines, which together provide for roughly 5 per cent of the world's uranium oxide mining output; Rössing Uranium produces about 2 per cent of the world's output. The mine has a nameplate capacity of 4,500 tonnes of uranium per year and, by the end of 2015, had supplied a total of 128,650 tonnes of uranium oxide to the world.

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

The mining operation is located in an arid environment. Insolation at Rössing Uranium is high, and as a result, daytime ranges of temperatures are wide, especially during May and September, when the difference between minimum and maximum temperatures exceeds 20°C daily. The lowest temperatures are normally recorded during August, but frost is rare. The highest temperatures are recorded in the late summer, particularly March.

The mine site encompasses a mining licence and accessory works areas of about 180 km<sup>2</sup>, of which 25 km<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 3 km by 1.5 km, and is 390 m deep.

Our partnerships include individual citizens and their communities as well as non-governmental organisations, small-scale enterprises and multinational corporations.

Thus, the benefits of our operations are felt locally, nationally, across the African continent and internationally.

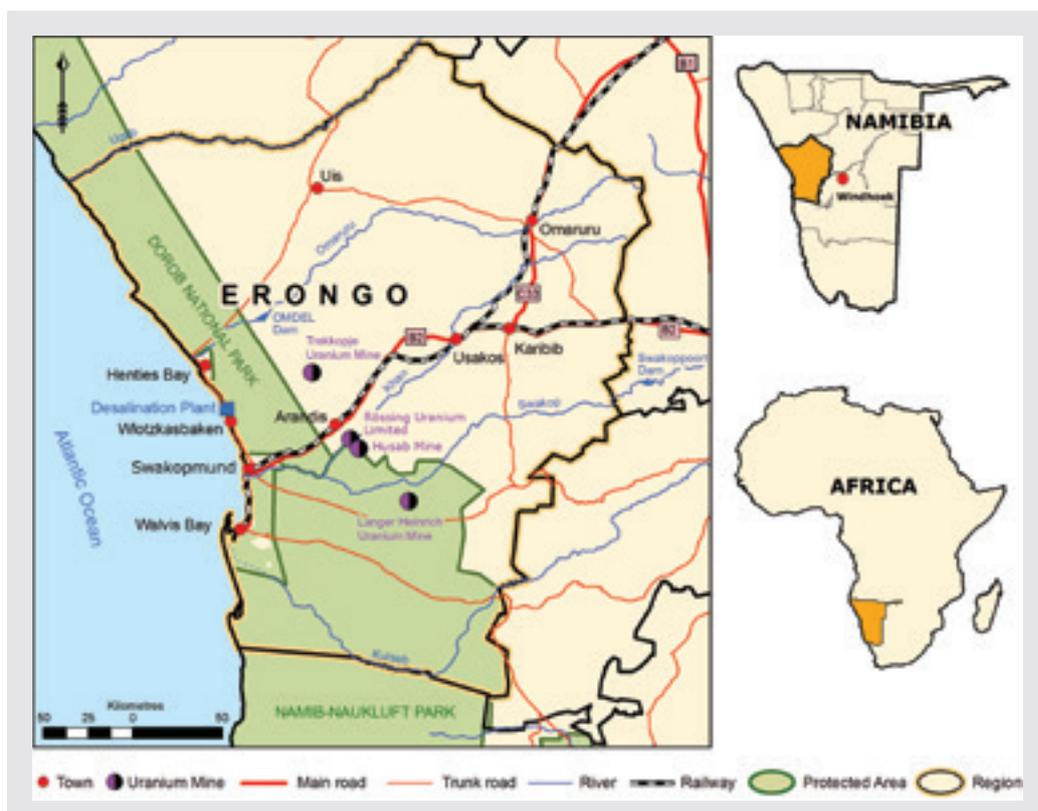
## Shareholding

Rio Tinto owns the majority of shares (69 per cent) in Rössing Uranium Limited. The Namibian Government has a 3 per cent shareholding, but it has the majority (51 per cent) when it comes to voting rights. The Iranian Foreign Investment Company owns 15 per cent, a stake it acquired during the set-up of the company in the early 1970s. The Industrial Development Corporation (IDC) of South Africa owns 10 per cent, while local individual shareholders own a combined 3 per cent shareholding. The shareholders do not have uranium product offtake rights.

In 2015, the Rio Tinto Group employed 55,000 people world-wide, including the Group's share of joint ventures and associates. Of these, approximately 29,000 were located in Australasia, 16,000 in the Americas, 7,000 in Africa, and 3,000 in Europe.

*Right: Map of the Erongo Region indicating the location of the Rössing Uranium mine.*

*Front page: Activities such as mining, crushing and driving of heavy mobile equipment on unpaved roads are the main emitters of dust at Rössing Uranium. Going forward, invertebrate and flora biodiversity in historically active but now dormant areas will be monitored to see how the natural environment has re-established itself over longer periods. Biodiversity adviser, Loide Hausiku, makes use of a magnifying glass to check the condition of a Monechma plant in the mining licence area.*



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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 Uranium) from January to December 2015, including our interaction with society, the economy and the environment. Although the Rio Tinto Group is the majority shareholder of Rössing Uranium, 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 report offers locally relevant information about our business and about issues raised during the year. We believe in open communication and transparency, and simultaneously instil a culture of sustainable development throughout our company.

We would appreciate your feedback on this report. You can send us a text message to +264 81 143 3627; an e-mail to [RUL.communications@riotinto.com](mailto:RUL.communications@riotinto.com); contact us via our website at [www.rossing.com](http://www.rossing.com); or phone us on +264 64 520 9111.

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## Message from the managing director

# Tough times, but moving ahead towards our vision

It is my pleasure to present Rössing Uranium's Report to stakeholders 2015. This report explains our business and our approach to what we do. It outlines how we performed in the past year, measured against our key drivers.

It is well-known that the uranium industry, locally and internationally, is going through tough times, but it is equally acknowledged that the long-term prospect of our industry remains positive.

As expected, 2015 was a tough year, but we are positive that we will survive — and even prosper — in the years to come. This is especially relevant as we invested substantial resources during the past few years to gain access to higher grade ore.

We have seen some improvements on our safety performance compared to the previous reporting year, but had ten potentially fatal incidents where ten colleagues could have lost their lives at work. This is of great concern to us, and we are placing renewed focus on improving our safety performance. During 2015 we moved our Critical risk management programme of fatality prevention from pilot to full implementation.

From a production point of view, we further reduced our uranium oxide production during 2015. This is in line with our decision taken in 2014 to down-scale our production and supplying mainly our long-term contract customers.

We produced 1,245 tonnes uranium oxide compared with 1,543 tonnes the previous year. Understandably this situation had a serious impact on our free cash flow position in the short term.

As we entered 2015, the mine sustained an incident that affected us in the first quarter of the year — a fire broke out at our Final Product Recovery Plant. As only part of the plant was damaged, we continued with uranium production.

After curtailing our operational plan in 2014 when we moved to a non-continuous operation in the mining and processing areas, we restarted with full continuous operations in October 2015. This required us to increase our workforce with 92 employees, impacting further on our cash flow. We are, however, confident that we will reap the fruits of this investment in the years to come.

Globally the uranium market stabilised somewhat in 2015 with less volatility compared to the previous year. Late 2015 saw the re-start of two nuclear plants in Japan, the first to resume operations since the Fukushima incident.

While this did not reverse the effects of the current supply-demand imbalance in the market, it was an important first step in the market's recovery. It is expected that additional reactor re-starts in Japan will take place during 2016, leading to a further recovery in the market price.

Looking ahead, the next few years will remain challenging, but in the mining industry we are used to look beyond the immediate challenges. To find and maximise our opportunities in the future, we will take a close look at how efficiently we work. Our priority is to keep our business profitable.

We are proud of our achievements regarding our cash generation initiatives. We are in a process of making use of integrated productivity improvement principles to unlock even more value and improved future cashflows from our operations.

The two main focus areas for 2016 will be:

- the successful implementation of our Critical risk management (CRM) programme to ensure our safety performance improves; and
- the implementation of our Integrated productivity model to focus on and meet our production targets, and to support our cash generation.

We are in a race against time if we want to secure the right to develop Phase 4 of our Life-of-mine extension programme. To this extent we need to reduce our unit costs significantly.

Despite the challenges we are facing, we are particularly proud that our employees have shown resilience, commitment and creativity in overcoming tough times. We are looking beyond the current difficult times and remain positive about the future of our business.

In 2016 we celebrate a milestone — 40 years of production at the mine. If we can achieve and exceed our targets over the next couple of years, there is no reason why we can't look forward to another successful 40 years for the longest-running open pit uranium mine in the world — Rössing Uranium.

**Werner Duvenhage**  
**Managing director**  
 25 April 2016

## Executive Committee



**Werner Duvenhage**  
Managing director

**Martin Tjipita**  
General manager,  
Operations

**Leah Von Hagen**  
General manager,  
Organisational Resources

**Shaan van Schalkwyk**  
Chief financial officer

## Celebrating 40 years of production in 2016

Rössing Uranium started operations in 1976. According to our records, our first yellow cake was produced on 15 June 1976, and the first uranium oxide drummed on 25 June 1976. In 2016 we will celebrate our anniversary with our employees and other key stakeholders through a number of activities, and we developed a 40 year-logo that will remind us of this achievement. Below is the logo, designed by Rössing Uranium employee, Brian Tuzembeho, and the meaning of the different elements.



The Rio Tinto logo: Rio Tinto means 'red river' in Spanish and refers to a river in southwestern Spain.

The number '40' refers to our 40 years of production. We first produced yellow cake and uranium oxide in 1976. Forty years later we are the world's longest-running, open pit uranium mine and still going strong in 2016.

The local word 'Omake' was popularised by Namibia's current state president, His Excellency Hage Geingob, and means 'to give applause'. At Rössing Uranium we call all our celebrations of success OMAKE events.

The atom symbol represents the uranium mineral. The symbol was part of our previous branding elements.

The red banner below the number '40' represents our road to success over 40 years of production. The banner is in the Rio Tinto red primary colour of our current branding elements and symbolises the majority shareholding of Rio Tinto in Rössing Uranium. The banner is strategically placed under the number 40, to symbolise Rio Tinto's support over our 40 years of existence.

Our slogan 'Working for Namibia' symbolises our enormous contribution to the socioeconomic development of Namibia over Rössing Uranium's 40 years of production.

## Our sustainable development approach

# Focusing on the issues that matter most

### Economy

#### Economic viability

In order to provide the best returns on our shareholders' investment, we need to understand the long-term demand for our product as well as the cost, resource availability and value creation associated with that demand. Economic viability also ensures that we continue to make significant contributions to Namibia's economy and her people in various ways.

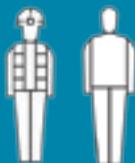


### Social People

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 which surround us, and through continuous interaction with them, we can respond to their concerns and needs. Moreover, the communities surrounding us should realise a net benefit and a long-lasting, positive effect from our activities.



### Environment and product stewardship

#### Environmental and asset resource stewardship

We aim to be the leader in environmental stewardship in Namibia 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 sustainably, and creating a net positive impact.

#### 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.



### Governance

#### Corporate governance and compliance

We strive to be transparent and proactive in all our business operations. To this end we have auditable business systems in place which form the backbone of good corporate governance.



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

Driving the integration of sustainable development at Rössing Uranium are the six themes highlighted above. These themes form the framework in which our business is conducted.

Everything we do is in line with the generally accepted definition of *sustainable development*, namely 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 well-being, today and tomorrow.

Our vision remains focused on:

- creating long-lasting positive effects for the people of the Erongo Region and Namibia;
- building capacity to ensure that we contribute to the future well-being of our employees;
- minimising negative impacts and optimising positive ones; and
- maintaining our reputation as a responsible corporate citizen of Namibia.

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

- use our assets — both our own resources and environmental resources — to reflect our integrated approach in terms of profit, people and planet;
- contribute positively to the needs of society by providing support to stakeholder communities without creating dependency; and
- generate economic wealth.

## Our key drivers

# Rössing Uranium's strategic themes for 2015/16

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

**Vision**

To be the safest and most efficient, long-life uranium producer in the world.

**Mission**

To be a uranium supplier to the global nuclear power industry creating maximum return for our shareholders, whilst delivering benefits to all stakeholders.

**Core values**

Accountability; Respect; Teamwork; Integrity

Strategic themes 	Operational efficiency	High performance culture	Zero Harm
Financial	Reduce unit costs	Enhance cash generation	Secure adequate closure funding
Stakeholder value	Maximise throughput and recovery	Unlocking shareholder value	Enhance stakeholder relations and support
Internal core processes	Ensure security of supply in utilities	Leverage opportunities (infrastructure, Phase 4 and SAG-mill)	Manage environmental exposure
	Reinstate asset integrity	Improve knowledge management	Entrench Rössing Uranium safety strategy
	Optimise asset management processes	Develop and implement Integrated leadership strategy and business model	Address health imperatives
Rössing Uranium people capacity	Enhance employee competencies and performance		

# 2015 AT A GLANCE

As a major employer and purchaser of goods and services we make a significant, annual contribution to economic development in the Erongo Region in particular and to Namibia at large.



## N\$372m

We paid N\$54 million and N\$4 million to the Namibian Government in royalties and dividends respectively and N\$314 million to state-owned enterprises.



## N\$542m

We paid N\$542 million in salaries benefiting our 948 permanent employees.



## -N\$385m

We realised a net loss from normal operation of N\$385 million, compared with N\$91 million net loss in 2014.



## N\$5.4m

We invested N\$5.4 million in training and development programmes, benefiting 75 participants.

The uranium market stabilised somewhat in 2015 with less volatility compared to the previous year. Spot prices ranged from a low of US\$34.00 to a high of US\$39.50 per pound — the latter occurring for several weeks early in the year, and mostly traded between US\$35 and US\$37 per pound.

## 19.3mt

We mined 19.3 million tonnes of rock from the open pit during 2015, compared with 23.3 million tonnes in the previous year.



## 6.9mt

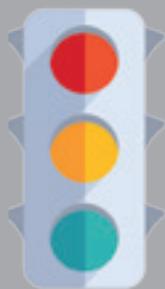
Of the 19.3 million tonnes rock mined, 6.9 million tonnes were uranium-bearing ore destined for further processing.



## 1,245t

We drummed 1,245 tonnes of uranium oxide compared with 1,543 tonnes the previous year.





A highlight of the year was a safety awareness initiative called *Project Safety W.I.S.E.*, which will run over a three-year period. The aim of the initiative is to support the creation of a safety culture amongst primary education learners in Arandis, Swakopmund and Walvis Bay. The target is to reach 10,000 learners with this important programme during the three-year period.



98%

of our employees are Namibians, demonstrating our commitment to local employment.



18%

of our employees are female, consisting of 16% historically disadvantaged Namibian women and 2% previously advantaged Namibian women.

## DUST REDUCTION

We recorded a significant reduction in the amount of dust generated and subsequent emissions in the Fine Crushing Plant. We were able to reduce emissions from 4.02 mg/m<sup>3</sup> in 2010 to only 1.25 mg/m<sup>3</sup> in 2015. The Fine crushing ducting replacement project was a big contributor to this achievement.

ISO

We proudly maintained our certification for ISO 14001:2004 in 2015.

0.74

We recorded an All-Injury Frequency Rate (AIFR) of 0.74, which is an improvement on the previous year's AIFR of 0.81.

COMMUNITY INVESTMENT N\$18m

# Marketing our product

Rössing Uranium's final product  $U_3O_8$  is drummed through an automated process. The drums are loaded and exported to overseas converters for further processing. Working safely, the drums are checked and loaded by forklift operator Immanuel Witbooi and Final Product Recovery operator Napoleon Stephanus.

*All uranium produced by Rio Tinto's mines is marketed by Singapore-based Rio Tinto Uranium under a buy-sell arrangement with the mines. Rössing Uranium, one of the longest-operating uranium mines in the world, supplies its material via Rio Tinto to electricity companies located in all three major markets namely Asia, North America and Europe/Middle East/Africa. Almost all of our production is marketed through long-term contracts with a diverse selection of customers worldwide.*

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Utility buyers remained generally inactive, buying on a strictly discretionary basis when prices appeared advantageous. This is the natural result of customers holding such high inventory levels in all regions. Utility inventory levels are at 20-year highs across the three main markets of North America, Europe and Asia.

Fortunately term prices remained fairly stable throughout the year, finishing 2015 at US\$44 per pound. As most of our production is sold into long-term contracts utilising various term pricing mechanisms, this provides protection against spot volatility, and our actual realised sales price continues to exceed spot levels by a significant margin.

The market continues to be plagued by oversupply, including higher-than-expected levels of secondary supplies. Despite the expiration of the US-Russia High-Enriched Uranium (HEU) down-blending programme a few years ago, supplies from non-mine sources remain high. A significant part of this is coming from excess uranium stocks produced by enrichment facilities. Enrichers are able to utilise their excess capacity to upgrade enrichment tails (waste) material and turn it into natural uranium, which in turn competes in the market with primary mine supply.

Given the efficiency of the centrifuge enrichment process and the overcapacity that exists in Russian and European enrichment facilities, this source of supply is unlikely to diminish anytime soon. This excess enrichment capacity, like the excess mine production currently overhanging the market, is also a result of reduced reactor demand since the Fukushima incident in March 2011.



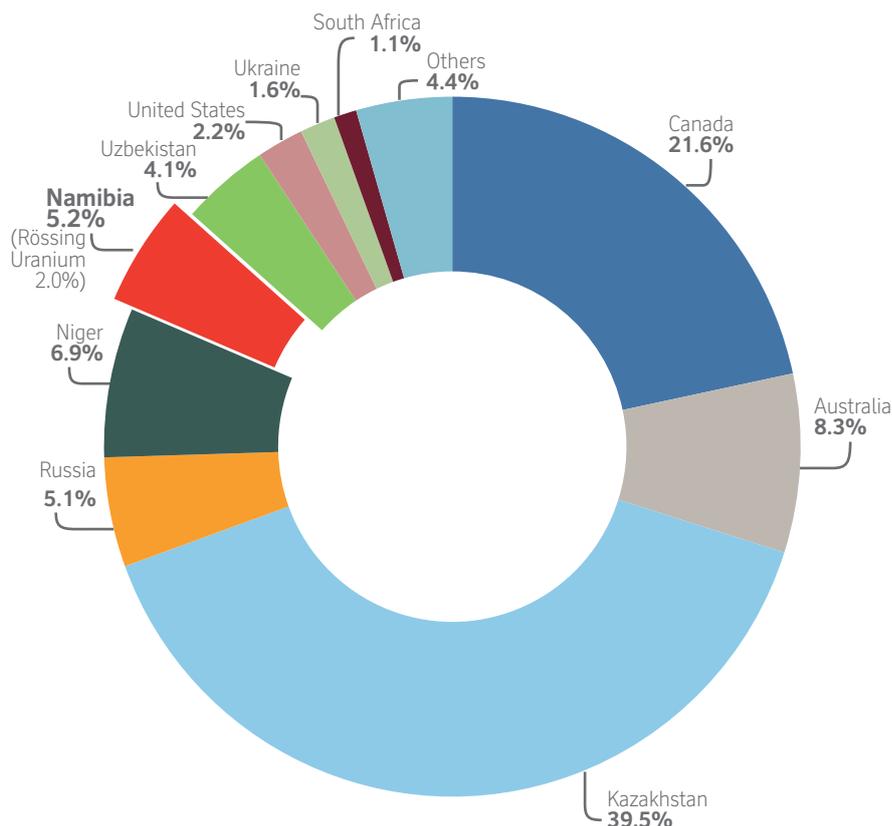
## AT A GLANCE: Marketing our product

- The uranium market stabilised somewhat in 2015 with less volatility compared to the previous year. Spot prices ranged from a low of US\$34.00 to a high of US\$39.50 per pound — the latter occurring for several weeks early in the year — and mostly traded between US\$35 and US\$37 per pound.
- On the positive side, Japanese re-starts are now underway and several more units are expected to resume operations in 2016.
- China’s aggressive plans for new nuclear build continue to be realised. China is expected to surpass the US fleet of 100 reactors some time before 2025.
- While challenges remain, particularly in the area of low market prices which may persist for several more years, the longer-term outlook for the nuclear industry remains bright.

For the same reasons long-term utility demand was fairly weak in 2015, although several buyers in the US and Asia entered the market in the second half of the year to seek extra supplies for the 2016-20 mid-term period. Demand for contracting beyond 2020 was quite limited, in part because of the uncertain status of some older reactors in the US and Europe. Extra long-term demand is expected in 2016 and 2017 as utilities seek to secure fuel coverage for their post-2020 needs. As a long-term supplier with a strong track record, we are well placed to supply this demand as the interest emerges.

The difficulties that our utility customers are having in some of the regional power markets continued in 2015, resulting in the announcement of the early pending shutdown of six older units in the US and Sweden. This again demonstrates the negative effect that distorted power markets are having on some nuclear operators around the world.

**World primary production of uranium oxide (%), 2015**



## China is expected to surpass the US fleet of 100 reactors some time before 2025. As the first foreign uranium supplier to China, we remain well-placed to capture a significant share of this demand.

Heavy government subsidies for renewable energy sources, combined with low prices of coal and natural gas, are making for a more competitive environment for nuclear operators in some regions.

Therefore, while China is adding new units at a rapid pace, some of this demand is offset by early or unanticipated closures of existing reactors in more mature markets.

The industry is working with power regulators and governments to ensure that these large-scale, clean and reliable units are properly valued for their contribution to low-cost electricity supply, grid reliability, and low-carbon energy, in the hopes that no further operating units will be closed down prematurely.

As in previous years, mine-production increases are also contributing to the current supply-demand imbalance. This was exacerbated in 2015 by the entry of one of the largest new uranium mines, Cigar Lake in Canada.

While long expected and the subject of several delays to commencing operation, the entry of a large, high-grade mine at the present time creates extra market challenges when utility demand is still slow to fully recover from the effects of the Fukushima incident.

Smaller production increases continued in Kazakhstan — the world's largest uranium producing country — and there were no notable shutdowns of mines elsewhere, thus the excess production and secondary supplies continue to add to the global inventory overhang.

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**“The uranium market experienced another tough year in 2015, but prices traded in a narrower range with less downside volatility than was seen in 2014, exhibiting some market stability for the first time in several years. Importantly, late 2015 witnessed the re-start of two nuclear plants in Japan, the first to resume operations since the Fukushima incident in March 2011. While this did little to reverse the effects of the supply-demand imbalance afflicting the market, it was an important first step in the market’s recovery. As a result, Rössing Uranium was able to return to continuous production, and the outlook for 2016 is for additional reactor re-starts in Japan and hopefully a further recovery in the market to price levels that better support mine production worldwide.”**

**Clark Beyer**  
**Managing director,**  
**Rio Tinto Uranium**



On the positive side, Japanese re-starts are now underway and several more units are expected to resume operations in 2016.

Moreover, China's aggressive plans for new nuclear build continue to be realised, and recent signs indicate the pace of construction may accelerate in the wake of the global COP-21<sup>1</sup> climate talks in Paris in late 2015. Well-publicised periods of heavy air pollution caused by coal burning in China are also contributing toward the push for more nuclear development.

China currently operates 30 nuclear units — with a further 21 under construction — and dozens more planned for the 2020s. In fact, China is expected to surpass the US fleet of 100 reactors some time before 2025. As the first foreign uranium supplier to China, Rössing Uranium and Rio Tinto Uranium remain well-placed to capture a significant share of this demand going forward.

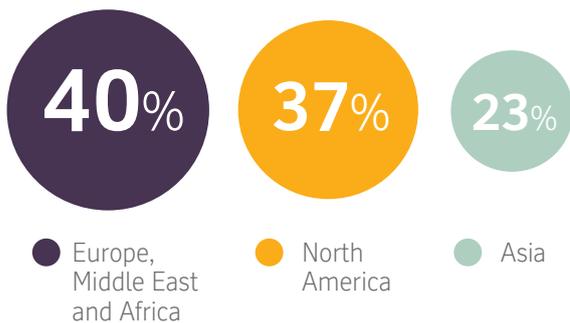
Thus, while challenges remain, particularly in the area of low market prices which may persist for several more years, the longer-term outlook for the nuclear industry remains bright. No other source of electricity can deliver large volumes of CO<sub>2</sub>-free power on a reliable, continuous basis, 24 hours a day.

Demand will gradually start to increase and public attitudes toward nuclear energy continue to improve. For higher-cost producers such as us, the next few years will remain difficult, but the nuclear fuel market continues to value the stability, reliability and diversification that Rössing Uranium and Namibia provide.

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<sup>1</sup> The term COP stands for Conference of Parties. Parties is a reference to the (now) 196 signatories of the United Nations Framework Convention on Climate Change, or UNFCCC, as it is called. The Framework Convention came into force in 1994, two years after its text was finalised at the Earth Summit in Rio de Janeiro in Brazil. Every year since 1994 the parties to the UNFCCC have met at different venues at the end of each year to discuss a global agreement to cut emissions of greenhouse gases in the atmosphere — the main reason why average global temperatures have been rising. The 2015 Paris meeting was the 21st in the series, hence the name ‘COP-21’.

Rio Tinto Uranium customers by region (%), 2015



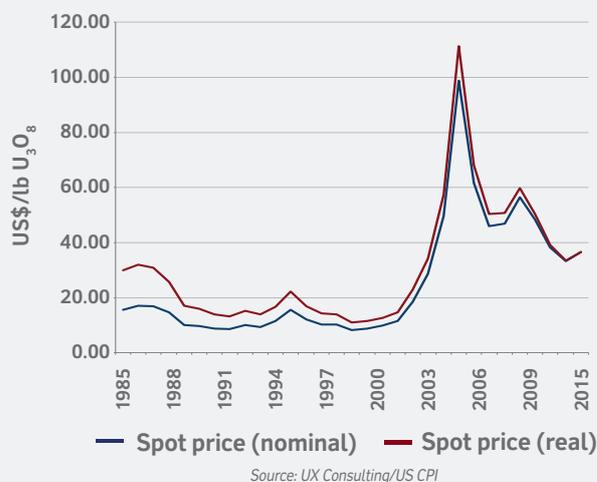
Rössing Uranium joined the Diamonds and Minerals group as part of Rio Tinto's organisational structure changes. Alan Davies is the chief executive of the Diamonds and Minerals group.



Uranium prices (US\$/lb U<sub>3</sub>O<sub>8</sub>), 2006 to 2015



Uranium spot prices (US\$/lb U<sub>3</sub>O<sub>8</sub>: annual averages), 1985 to 2015





# Our operations

*The uranium-bearing ore at Rössing Uranium is mined through drilling, blasting, loading, and hauling from the open pit. The ore is delivered to the primary crushers. It passes through a further series of crushers and a grinding process before extraction of the uranium can be done. Checking on the production in the open pit are haul truck operator Oligen Lucas (right) and mining engineer Protasius Aluvilu.*

*Our operations consist of two distinct activities: mining uranium-bearing rock, and processing this ore to produce uranium oxide for the world's nuclear energy market for the generation of electricity. All our attention is directed towards creating shareholder value and keeping the business safe and viable, as well as towards ensuring that we remain a long-term contributor to Namibia's economy.*

The uranium in our mining licence area is found in very hard and abrasive granitic rock, called *alaskite*. To move the required amount of ore and waste, we have to conduct blasting operations at least once a week. Electric and diesel-powered shovels load the uranium-bearing ore onto haul trucks, which then transport the ore to the primary crushers for the first stage in the crushing process.

From there, the crushed ore is conveyed to the coarse ore stockpile, where it is reclaimed and put through several more crushing stages in the Fine Crushing Plant, before the processing stage of our operations begins.

## Exploration

No exploration and prospecting work were performed during 2015. The Z20 deposit remains part of Rössing Uranium's resource for further development, pending improvement of market conditions. No additional exploration is planned for 2016.

## Mining operations

Mining production was reduced to match the processing capacity of the plant in line with the mine's change-over to a three-panel shift roster and a five-day operations schedule since August 2014. This followed a Board of Directors' decision to curtail production to meet only contractual commitments, with the resulting curtailed production plan. By October 2015 the mine returned to a four-panel shift roster and a seven-day operations schedule to increase production.

Against a plan of 18.9 million tonnes, we mined a total of 19.3 million tonnes of rock from the open pit during 2015, compared with 23.3 million tonnes in the previous reporting year. Of the 19.3 million tonnes of rock mined, 6.8 million tonnes were uranium-bearing ore, while 12.5 million tonnes were waste — giving a waste-to-ore strip ratio of 1.80 and a ratio of 0.55 in respect of ore processed to waste rock removed, with 0.1 million tonnes of ore processed from stockpiles.



The north-west part of the open pit, referred to as Phase 2 of the SJ Pit, was the main source of uranium-bearing ore during 2015.

In addition, waste stripping in Phase 3 of the south-eastern part of the SJ Pit tapered off to produce more ore. While the grade of the ore was as expected, the calcium carbonate (calc) level increased to a level higher than expected.

A high calc index in the ore has an adverse effect on the extraction of uranium in the Processing Plant.

A key focus during the reporting year was to continue with opportunities to improve productivity and reduce costs across all of the main mining activities, ie in drilling, blasting, loading, hauling and ore supply.

Significant cost savings were indeed achieved and the total cost for mining operations was 10 per cent under budget.

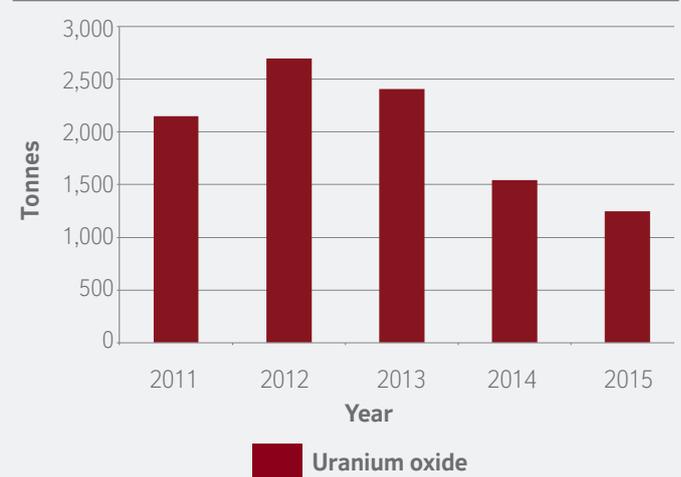
## AT A GLANCE: Our operations

- We mined a total of 19.3 million tonnes of rock from the open pit during 2015, compared with 23.3 million tonnes in the previous reporting year.
- Of the 19.3 million tonnes rock mined, 6.8 million tonnes were uranium-bearing ore destined for further processing. The balance of 12.5 million tonnes was waste rock, giving a waste-to-ore strip ratio of 1.80 and a ratio of 0.55 in respect of ore processed to waste rock removed, with 0.1 million tonnes processed from stockpiles.
- We drummed 1,245 tonnes of uranium oxide compared with 1,543 tonnes in the previous reporting year.

**Production 2011 to 2015: Waste rock and ore mined (million tonnes)**



**Production 2011 to 2015: Uranium oxide produced (tonnes)**



Investigating a number of the cost-saving activities will continue in 2016, namely to benefit from an improved cycle time for haul trucks, hauling waste to stockpiles closer to the open pit. In ore supply a higher proportion of direct feed from the pit, together with reclamation from run-of-mine stockpiles, is expected to provide cost savings on reduced equipment hours.

A key focus in 2015 was improving the effective utilisation of mining equipment even further through initiatives such as multiskilling and improving operator attendance at work.

Following a reduction in the use of explosives during 2015, a study on improving blast fragmentation will be carried out in 2016.

The return to a four-shift panel required the recruitment in August of 70 mining operators to fill vacancies. Following training of the mining operators, an increase in mining was notable by December 2015.

The objectives in 2016 are to improve availability of mining equipment, maintain a high effective utilisation of the equipment, and improve scheduling, together with an upgrade of the mining dispatch system.

The production target for 2016 is to mine 27.5 million tonnes, crush 10.2 million tonnes and drum 2,051 tonnes of uranium oxide.

#### Long-term planning

The Phase 4 plan for expansion of the SJ Pit in the north-east area will see activity on the pre-feasibility study. The plan will become part of the life-of-mine plan in order to be ready when the uranium market price improves.

#### Processing operations

The Processing Plant is responsible for the extraction of uranium from the ore through a number of stages to produce uranium oxide ( $U_3O_8$ ). Our product is then securely packed and shipped to our customers for further conversion. The aim of the plant is to produce planned quantities of uranium oxide in the most efficient and safe manner possible.

In terms of milled production (ore that is crushed and ground to liberate the mineral particles) 2015 started off on a positive note, closing the first month of the year with 9 per cent above target.

Unfortunately in February a fire broke out in the roaster area of the Final Product Recovery (FPR) Plant, derailing production plans.

We decided to continue with mill production by increasing the tank storage capacity in the FPR and to store yellow cake, whilst the Roaster rebuild project was underway.

By doing this, we could continue with production, while delaying uranium oxide shipments and sales to later in the year, once yellow cake calcining resumed.

We completed the Roaster rebuild project on time and on budget. In May we restarted roasting and calcining the stored yellow cake, as well as with drumming of uranium oxide. From the middle of the year, we started sending out our shipments and making sales again.

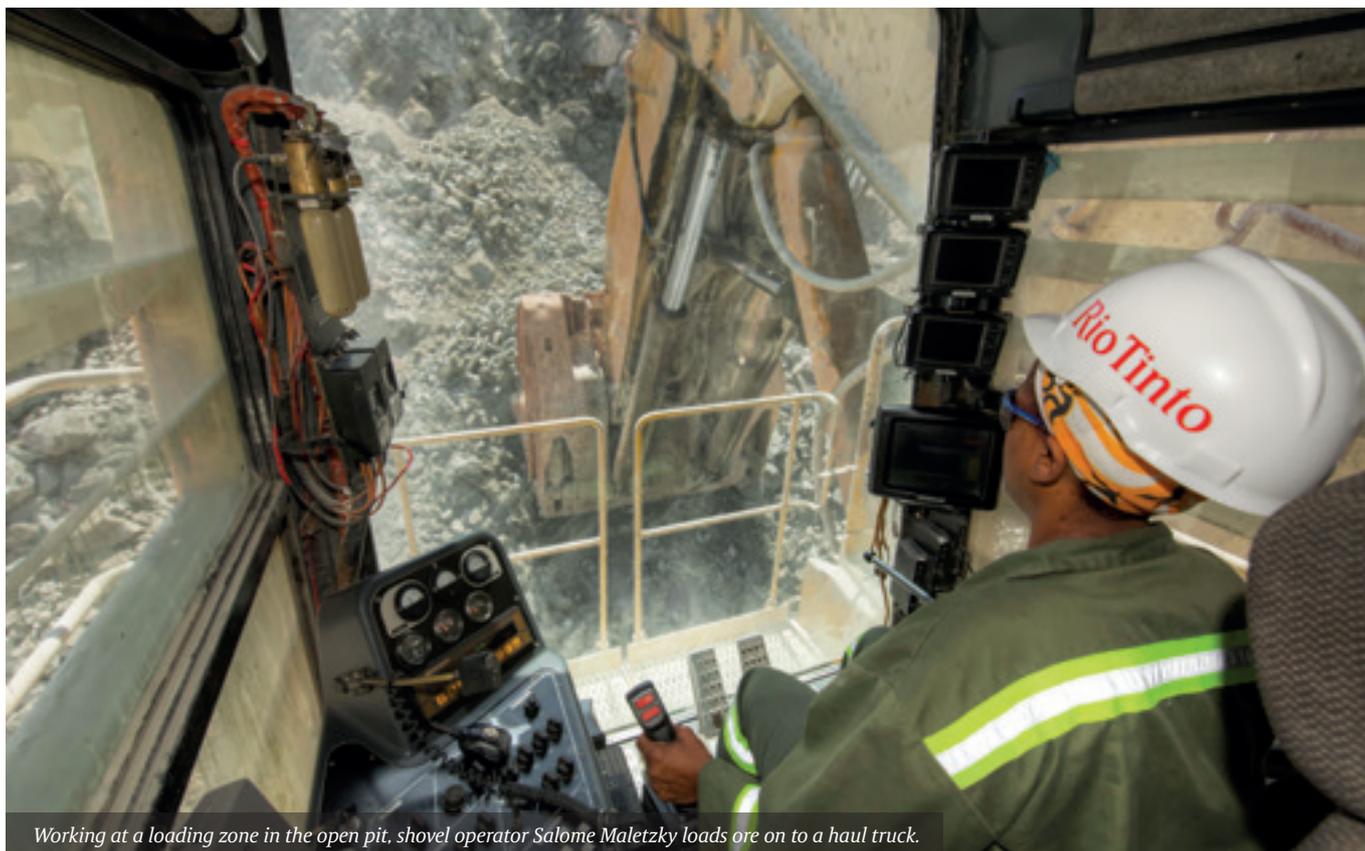
In total we drummed 1,245 tonnes of uranium oxide compared with 1,543 tonnes in the previous reporting year.

We also made great strides in terms of improving the useful life of the plant and reducing the maintenance debt on major pieces of equipment.

We completed a successful major maintenance shutdown in July, maintaining critical pieces of equipment and upgrading the Honeywell Mining<sup>2</sup> system in the Central Processing Control (CPC) room.

Throughout the year we continued working on the Tank and structural refurbishment

<sup>2</sup>Honeywell Mining is an international company that specialises in the provision of automation and control systems for the mining industry worldwide.



Working at a loading zone in the open pit, shovel operator Salome Maletzky loads ore on to a haul truck.

project and completed major refurbishments on a number of leach tanks and other critical vessels around the plant.

We also experienced major challenges at the counter current decantation thickeners and at one stage experienced only 50 per cent availability of thickeners, exposing us severely. With the help of the Maintenance and Engineering departments, we finalised an approach to get these vessels back online and maintenance up to date as soon as possible. This will be a major focus area for 2016.

In October we resumed our operations on a seven-day, 24-hour basis from the five-day, 24-hour basis we operated on since the fire in the FPR Plant. This was a critical step in achieving our throughput targets.

In December mill production exceeded operating target and achieved a milestone 890,000 tonnes — the highest production since the leach tank failure in December 2013. This confirmed the steady improvement in our plant's performance.

Three important projects that we finished successfully during the reporting year were the Buttress project, Starter embankment project and the Fine Crushing Plant ducting replacement project.

An exciting project scheduled for 2016 is the High calc (calcium carbonate) project. In the following years we expect to mine higher grade ore with a high calc index, and thus it is important for the plant to be able to process it. The High calc project will improve the plant's ability to handle higher calc ore, which is critical.

#### **Buttress project and Starter embankment project**

The scale of these two projects is massive and we commissioned the contractor Fraser Alexander to help us with the construction of the buttress (or support structure) to improve the stability of the Tailings Storage Facility (TSF).

They also constructed the starter embankments for the new paddocks where tailings will be deposited in the coming years. We already started depositing tailing in our new paddocks during the year under review.

The project enlarged our TSF substantially, giving us extra tailing storage space for the rest of the life of mine.

The project was completed successfully and on time.

#### **Fine Crushing Plant ducting replacement project**

During the past few years managing dust generation and spillages within the Fine Crushing Plant was a major challenge.

The dust needs to be collected in ducts, transported to suitable storage bins, and then be removed and reintroduced into the system in a sensible manner without creating a hazard.

Although the plant is equipped with dust collectors, the abrasiveness of the dust wears out the ducting. Once the ducting loses its integrity, the dust becomes airborne. This creates both a health and a safety hazard, as visibility becomes impaired.

During 2015 all deteriorated dust ducting was repaired and replaced. Although there is still some work that needs to be done, the bulk of the project was completed successfully.

We already saw an improvement in the dust management at the Fine Crushing Plant.



*The company's heavy mining equipment maintenance teams take great care to follow maintenance schedules which involve inspecting and testing the equipment, among others. Berno Peterson (Electrician), Angelo Nel (Fitter) and Romano Shaduka (Fitter) are busy with the fitment of a haul truck wheel motor in the Heavy Mobile Equipment Workshop.*

## Engineering

During 2015 the Projects section was responsible for designing and implementing various capital and operational improvement projects.

### Final Product Recovery fire

Unfortunately, on 12 February 2015, we had a fire in Final Product Recovery's roaster area. Most importantly, no one was hurt during this incident.

The Roaster rebuild project, with support from the Maintenance Improvement section, was completed on time and within budget, getting us back to full production by May.

### Major maintenance shutdown

In July we had a successful, major maintenance shutdown, doing maintenance on critical pieces of equipment. We used this opportunity to do upgrades of our Honeywell system in the Central Processing Control room. We also completed major refurbishments on a number of our leach tanks and other critical tanks around the plant.

### Tailings Storage Facility

Two important projects that we finished successfully during the year were the Starter embankment project and the Buttress project for an amount of N\$100 million. This enlarged our Tailings Storage Facility and provided us with extra space for the rest of the life of mine.

### Fine Crushing Plant ducting replacement project

The Fine Crushing Plant ducting replacement project was successfully completed and although there is still some additional work to do, we already saw improvement in dust management in the area.

### Leach and other tank refurbishments

Following the failure of one of the leach tanks at the end of 2013, we initiated an overall programme for the refurbishment of metal structures and tanks across the mine site.

In total 84 process tanks containing various types of materials and chemicals were assessed and repair work prioritised accordingly. From this assessment we identified 30 tanks that need repairs over the next three years. To execute this

refurbishment programme we established a separate project management team to be assisted by two contracting companies.

### Reagent Plant upgrade

The construction work on this project was interrupted three times with the civil, mechanical and electrical contracts that had to be cancelled as a result of non-performance. The project commenced in 2013 and will now continue into 2016.

The plant is being constructed next to the Reagent Store that was completed end of 2014. Once the plant is completed it will eliminate the need for a permanent mobile crane to batch the reagents and will reduce the dust pollution caused by handling megabags.

### Walvis Bay acid offloading to facilitate decanting of rail tankers into storage tanks

The take-or-pay agreement for sulphuric acid supply from Dundee Precious Metals from Tsumeb brought forward the risk of oversupply in the event of the Processing Plant not being able to consume as planned. In order to manage the risk it was decided to create the opportunity to offload rail tankers into storage tanks in Walvis Bay. The project commenced during the third quarter of 2015 and is scheduled to be completed during the second quarter of 2016.

### Looking at 2016

Unfortunately we experienced some major challenges with our counter current decantation thickeners during 2015 and at one stage had half the number of thickeners offline. With the assistance of the Maintenance and Engineering departments we finalised an approach to get these vessels back online and maintenance up to date as soon as possible. This will be a major focus area in the new year.

Another important project scheduled for 2016 is the High calc project. This will improve the plant's ability to handle ore with a higher calcium carbonate concentration. This is critical, as the higher uranium grade expected for the foreseeable future also comes with high calc concentrations and thus it is important for the plant to be able to process it.

## Information technology

### Knowledge management

We collected operational data since the inception of Rössing Uranium nearly 40 years ago. The data and reports generated over the years contain all the laboratory test work and trials, plant test work and trials, investigation reports, fault finding reports, changes and new implementations. In addition, the library in the Processing Plant contains information on our original plant design, operating procedures and reports from consultants.

During the reporting year we launched a pilot project in the Processing Plant to restructure the shared hard drives and library according to Rio Tinto's file plan structure.

We aim to implement an integrated web-based solution for electronic information or document management that will enable us to access documents through a secure environment for data validation and audits, thereby reducing redundancy and complexity.

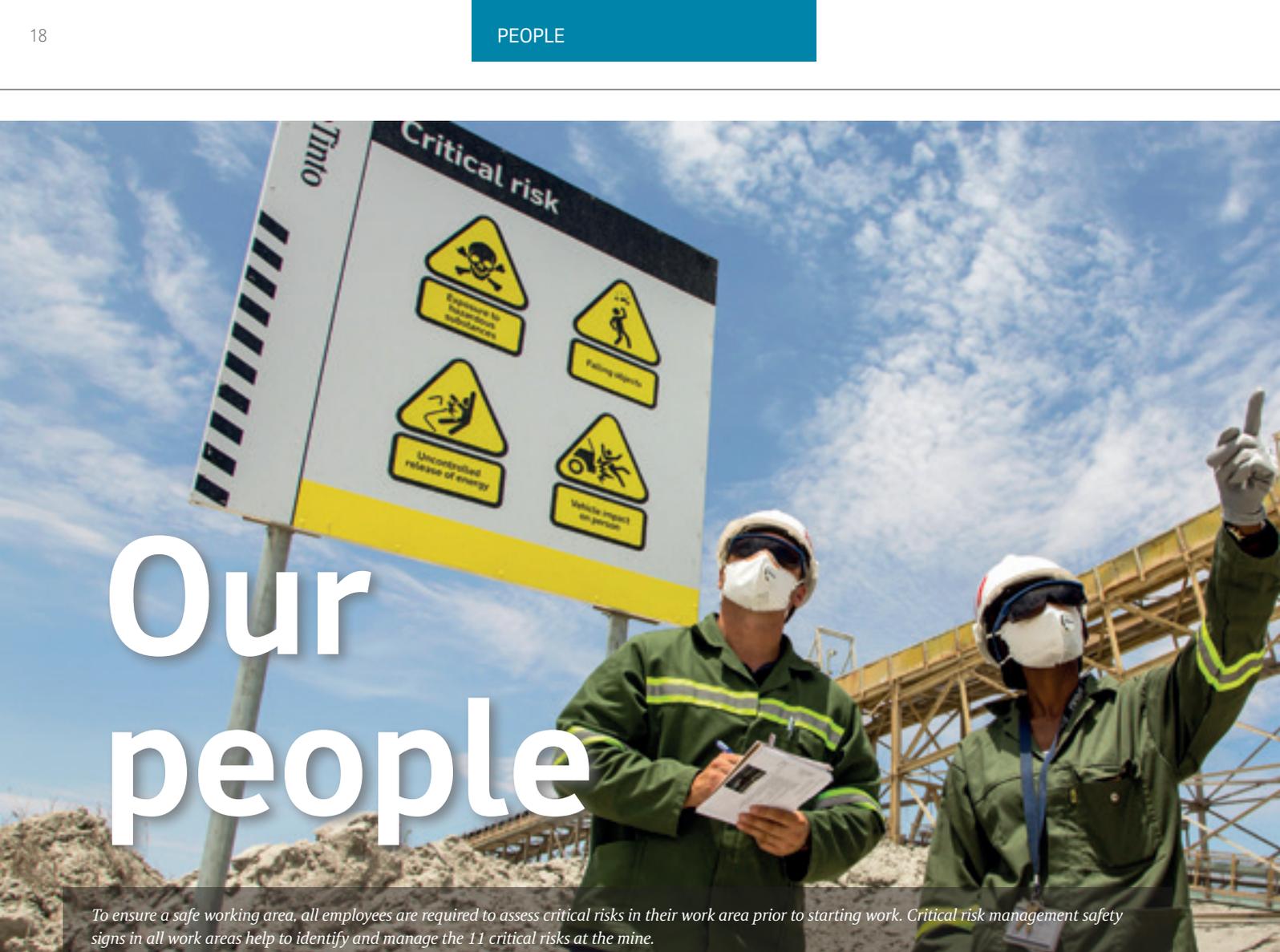
This will ensure that data is not lost and can easily be retrieved when needed. The lessons learned from this pilot project will be considered when this solution is rolled-out throughout the mine during the coming years.

### Efficient control of printing

During the previous financial year we initiated a system to control and manage the office printing needs throughout the company.

During the reporting year we replaced all the office printers with 103 new printers and installed printing management software. This centralised printer monitoring software enables us to track and monitor devices and printer consumables in a cost-effective manner.

We also introduced *Follow-You* printing functionality, which can help reduce waste, while improving security.



# Our people

*To ensure a safe working area, all employees are required to assess critical risks in their work area prior to starting work. Critical risk management safety signs in all work areas help to identify and manage the 11 critical risks at the mine.*

*Our workforce remains the backbone of our business, as they drive productivity to achieve our goals and objectives. Our people continue to be a key focus in our sustainable development approach. This approach assures a safe and healthy workplace, geared for human resource development – allowing us to attract and retain employees.*

Aspiring to be an employer of choice, Rössing Uranium provides long-term and rewarding employment.

We believe that, through employment creation, the mine is making significant contributions to society and the economy. We therefore strive to keep our workforce engaged through implementing initiatives that benefits the company and our employees.

The Human Resources department supports our organisational objectives by maximising the employment value proposition through the attraction, development and retention of employees, making Rössing Uranium an employer of choice in the Namibian mining industry.

## Workforce at a glance

In the previous reporting period, we changed from continuous operations to a five-day operating model due to volatile market conditions.

However, from 1 October 2015, we returned to continuous operations to meet operational requirements. We employed an additional 92 employees to be able to do so and therefore, by the end of 2015, our staff complement consisted of 948 full-time employees, compared to 850 at the end of 2014.

The average number of contractors at the mine for the reporting period was 880.



## AT A GLANCE: Our people

- Our workforce is the backbone of our business as they drive productivity to achieve our goals and objectives.
- We returned to continuous operations to meet operational requirements.
- We employed an additional 92 employees to be able to meet operational requirements, and by the end of 2015, our staff complement consisted of 948 full-time employees.
- A total of ten bursary students received support to study at college or university; a further ten trade bursaries were awarded during 2015.
- Despite low uranium oxide production and challenging economic times, we invested a total of N\$5.4 million in various training programmes during 2015, benefiting 75 participants.

### Employee relations

Employee relations continued to be an important focus area for our business during 2015. We strive to maintain harmonious employee relations with our workforce. A communication and engagement strategy is in place to ensure that all employee relation issues are addressed timeously.

The three-year salary agreement that was signed during the 2014 reporting year for the period 2015 to 2017 between the company and the Rössing Uranium branch of the Mineworkers Union of Namibia remains in force.

### Inclusion and diversity

We are committed to embracing inclusion and diversity as part of our organisational culture and operational model. This is in line with Rio Tinto's core values to

ensure that our employees feel included, respected and empowered to contribute their best. Evidence of our approach is clear from the data in the table on page 21, which shows our workforce profile for the past five years.

### Organisational effectiveness

Our people make our company what it is and 2015 saw many initiatives underway to help support and grow our staff.

As always, we are committed to being a major contributor to building capacity among our employees through various capacity development programmes.

These activities serve as the basis of employee retention and growth within Rössing Uranium, as well as developing young Namibians as part of our social corporate responsibility.

In addition, performance management remains pivotal in ensuring that our business targets are linked to employees' performance objectives and are measured annually. A culture of recognition through performance management has been embedded in the company for many years and aims at driving continuous business improvement.

The next few pages highlight the initiatives that will support us in achieving our goal of empowering and developing our workforce.

### Learning and development

#### University bursary scheme

A total of ten bursary students received Rössing Uranium support during 2015 to study at college or university at a total investment of N\$763,166 (excluding vacation work).

## 20 trade and university bursary students received support from Rössing Uranium during 2015.

Seven new bursaries in the fields of Chemistry, as well as Chemical, Mining and Mechanical Engineering were awarded during 2015 for 2016 in line with operational requirements determined by the annual human resources plan review.

The educational assistance scheme for employee dependants at tertiary level supported 25 individuals at a total investment of N\$258,326.

### **Apprentice training**

A total of ten apprentices on bursaries were supported during 2015 and completed their job attachments as part of their tertiary curriculum. The job attachments exposed them to on-the-job learning within their various disciplines.

### **Organisational development**

#### **Vocational Education and Training (VET) levy**

The Namibian Government's aim with this levy is to facilitate and encourage vocational education and training. The levy rate is 1 per cent of an employer's total annual payroll.

We have participated in the VET levy system since the regulations took effect in April 2014. We contributed N\$5.11 million

for the period April 2014 to March 2015, of which N\$3.92 million were submitted for refund purposes.

### **The 'Making a difference' initiative**

Recognition is a key driver to improve employee performance and build employee engagement and pride. In 2014 we launched the 'Making a difference' (MAD) initiative.

Through this programme employees are eligible to receive awards in six categories:

- Living our values
- Health, safety, environment and community
- Business value
- Replication
- Team membership/leadership
- Community involvement

During the reporting year a total of 107 employees received MAD awards.

### **Technical training**

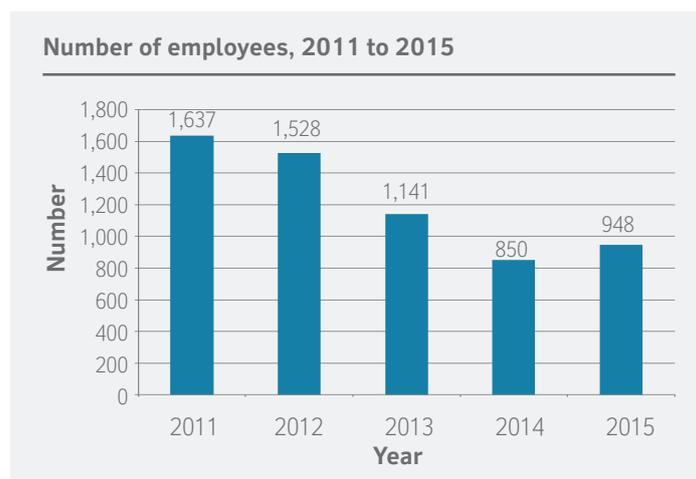
We trained 89 new operators on various types of heavy mobile equipment, engineering equipment and processing equipment during 2015.



David Noabeb and 17 colleagues' illustrious careers were celebrated during a Rössing Long-Service Awards function. The recipients' service time were 35 years and 40 years. He is congratulated by Werner Duvenhage, managing director and Leah Von Hagen, general manager, Organisational Resources.



The 2015 recipients of Making a difference (MAD) awards were joined by members of Rössing Uranium's Board of Directors during the handover ceremony.



Workforce profile	2011 (%)	2012 (%)	2013 (%)	2014 (%)	2015 (%)
Historically disadvantaged Namibian men	80.0	80.0	79.1	76.0	77.1
Historically disadvantaged Namibian women	12.8	13.1	13.7	16.0	15.7
Previously advantaged Namibian women	1.1	0.9	1.1	1.6	1.7
Previously advantaged Namibian men	4.5	4.3	4.5	4.7	3.7
Non-Namibian men	1.5	1.4	1.6	1.6	1.5
Non-Namibian women	0.1	0.1	0.0	0.0	0.1
Persons with disabilities: men	0.1	0.1	0.2	0.2	0.2
Persons with disabilities: women	0.0	0.0	0.0	0.0	0.0

### Statistical information on our workforce, 2015

Local and foreign employees:

- Namibians: 98.4 per cent (933)
- Non-Namibians: 1.6 per cent (15), including:
  - 0.5 per cent (5) work permit holders, and
  - 1.1 per cent (10) permanent residence permit holders
- Female representation: 17.5 per cent (166)
- Average age of new employees: 30.95 years
- Number of employees who left the mine's employment: 113
- Number of new employees recruited: 212

### People supported by Rössing Uranium — 2011 to 2015: Number of participants in training and development programmes

Nature of participation	December 2011	December 2012	December 2013	December 2014	December 2015
Trade bursaries	118	55	54	20	10
Trade job attachments	11	0	0	0	10
Apprentice employees	2	2	2	2	1
College/university bursaries	45	29	23	16	10
College/university job attachments outside company bursary scheme	12	1	0	3	0
Employees enrolled at a technical college (full-time studies)	4	0	0	1	1
Employees enrolled at a college/university (full-time studies)	6	5	2	3	3
Employees involved in correspondence programmes	55	39	5	4	12
Employees enrolled in the Leadership Development Programme	50	26	0	0	0
Development positions	0	1	0	0	0
Rössing dependant scholarships awarded	118	85	35	31	25
Employees in limited-contact studies in various fields	5	3	2	5	3
<b>Total number of participants</b>	<b>426</b>	<b>246</b>	<b>123</b>	<b>85</b>	<b>75</b>
<b>Training programme costs (N\$) — this figure includes all other training initiatives carried out as part of capability development</b>	<b>15,529,708</b>	<b>8,110,937</b>	<b>5,569,885</b>	<b>6,062,321</b>	<b>5,437,587</b>



# Health and safety

Rössing Uranium and contractor employees are required to undergo regular basic fire fighting training on site.

*Workplace health is a basic employment right. As ever, the health, safety and wellness of our employees remain a priority. The use of a formalised, integrative Health, Safety and Environmental (HSE) management system is essential in enabling Rössing Uranium to optimise, coordinate and manage our operations, personnel, plant and equipment. In addition, this management system also informs our interactions with the environment and neighbouring communities in a manner that demonstrates the company's consistent application of best practices.*

## The HSE Management system

We manage our operational activities to ensure that all impacts, whether on the biophysical or socioeconomic environment, are reduced to acceptable limits. Our operations are governed by applicable national legislative and regulatory frameworks and then controlled by way of an integrated HSE management system.

The structure of the HSE management system generally follows the layout of common international standards such as the International Organization for Standardization (ISO) 14001 (Environment), ISO 9001 (Quality) and Occupational Health and Safety Advisory series (OHSAS) British Standard (BS) 18001.

The HSE management system is designed to assist in achieving our goals, including our legal obligations. This systematic approach to management performance promotes the most efficient use of

resources. The system also offers us the prospect of financial gain, which generates a win-win outcome in terms of HSE and business performance.

An audit programme periodically evaluates the effectiveness of the HSE management system. All potential impacts are listed on a risk register with related mitigating and operational controls.

We proudly maintained our certification for ISO 14001:2004 in 2015.

## Occupational health management

We review and update our risk-based Occupational hygiene monitoring programme once a year according to health hazards and levels of risk identified as prevailing or emerging. The programme currently applies to similar exposure groups (SEGs), which include all Rössing Uranium 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 such tasks and the similar materials and processes with which they work.

During 2015 our Occupational hygiene monitoring programme included measurement of noise, illumination, respirable dust (including metals and silica in dust), inhalable dust (including manganese), organic vapours, fumes and legionella (a water-borne bacterium that can cause legionnaires' disease).

Dust and noise, as our identified critical health risks with critical control monitoring plans, are explained in more detail in the next few pages.

## AT A GLANCE: Health and safety

- We recorded a significant reduction in the amount of dust generated and subsequent emissions in the Fine Crushing Plant. We were able to reduce it from 4.02 mg/m<sup>3</sup> in 2010 to 1.25 mg/m<sup>3</sup> in 2015, following the implementation of the ducting replacement programme, among others.
- We proudly maintained our certification for ISO 14001:2004 in 2015.
- We recorded an All-Injury Frequency Rate (AIFR) of 0.74, which is an improvement on the previous year's AIFR of 0.81.



*Environmental adviser: Air quality, Vistorina Nangolo, downloading weather-related data from an observation station at the open pit.*

**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. Dust sources may be:

- localised, eg from blasting, loading trucks, crushing ore, or transfer by conveyor;
- diffused, eg from waste rock dumps or areas of disturbed ground; or
- linear, eg from haul roads.

Mining produces predominantly ‘fugitive dust’, that is, dust derived from a mixture of sources, or sources that are not easily defined.

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. The graph of area respirable dust in the Fine Crushing Plant

depicts fixed position measurements to indicate effectiveness of engineering controls.

Dust control within the Fine Crushing Plant as an area of higher dust exposure again received significant attention during the reporting year.

We recorded a significant reduction in the amount of dust generated and subsequent emissions in the Fine Crushing Plant. The annual average dust level of 1.25 mg/m<sup>3</sup> measured during 2015 is significantly lower than that of 2.03 mg/m<sup>3</sup> in 2014 and 2.95 mg/m<sup>3</sup> in 2013.

These were the lowest average dust levels in eight years recorded for the area.

This reduction is a result of the implementation of:

- the Dust management control and response plan of which 88 per cent compliance has been achieved;
- the replacement of identified critical dust collector ducting; and
- the systematic replacement and maintenance of the remaining ducting and dust collector system components, which will continue during 2016.

Focus areas for 2016 for dust control in the Fine Crushing Plant include:

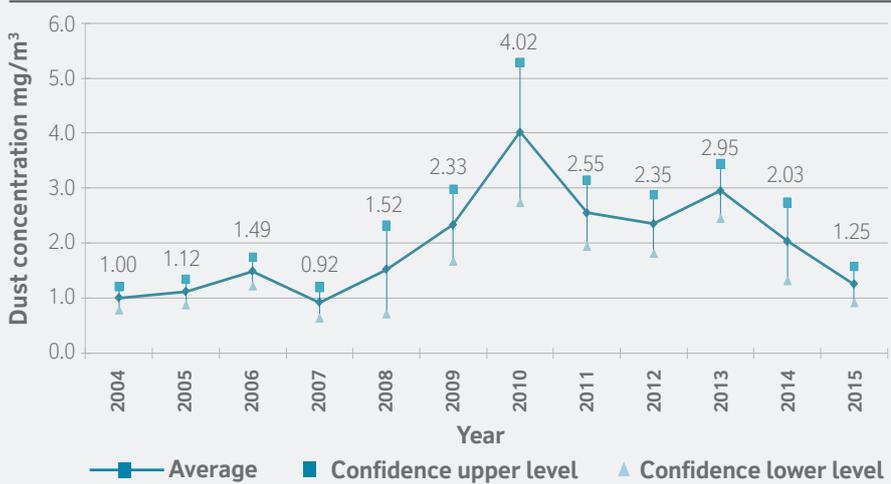
- the replacement and maintenance of the remaining ducting and dust collector system components;
- achievement of 95 per cent of the dust management control and response plan; reviewing its effectiveness and amending the plan where necessary;
- removal of spillage heaps; and
- implementation of dust suppression on the gravel roads in the Fine Crushing Plant.

**Noise**

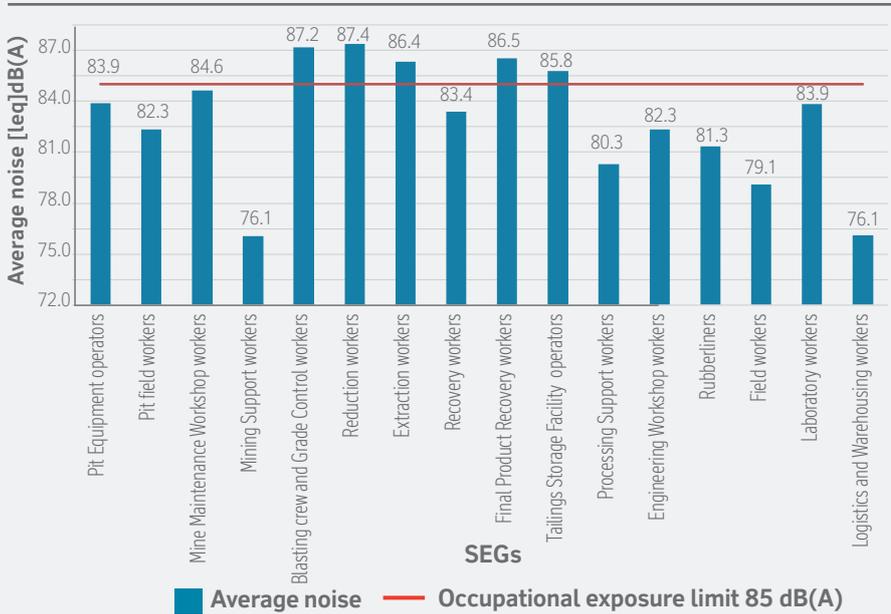
Noise is an integral part of mining, because large pieces of equipment and machinery are constantly in operation. The human ear is most sensitive to sounds at or near the centre of its frequency range.

To assess the impact of noise on people, a scale of frequency weighting is used, where A indicates the action level of 82 dB(A). Exposure to noise should be below the stipulated occupational exposure limit (OEL) of 85 dB(A).

**Dust concentration levels at the Fine Crushing Plant, 2004 to 2015**



**Average personal noise exposures, 2015**



## Rössing Uranium Limited

### Health, Safety, Environmental and Communities (HSEC) Policy

**Excellence in HSEC management is one of the foundations of Rössing Uranium's vision to be the safest and most efficient producer of uranium in the world. This is in line with our commitment to Zero Harm, corporate citizenship, social responsibility, and sustainability.**

To accomplish this, Rössing Uranium is committed to:

- the protection of the health and safety of our employees, contractors, stakeholders, and neighbouring communities;
- operating 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;
- work with integrity and be in full compliance with applicable legislation and industry best practice;
- seek continual and sustained improvement in HSEC performance to create a zero harm work environment;
- 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 HSEC issues in our neighbouring communities;
- regularly review our performance and publicly report our progress; and
- communicate our commitment to this HSEC policy to all interested and affected parties.

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

Noise zoning is applied in high-risk areas, together with the application of personalised (custom-made) hearing-protection devices. In other areas disposable ear plugs are used. In high-risk areas, engineering and administrative controls alone are not sufficient to protect workers due to the nature of the tasks being performed.

Of the 16 similar exposure groups (SEGs) monitored for personal noise exposures, five exceeded the 85 dB(A) OEL for noise. Contributing factors to these exceedances include the use of impact tools, general plant and equipment noise.

Critical control monitoring plans have been put in place and will be sustained. All employees in high risk areas are issued with customised hearing protection devices. These devices are maintained and fit tested on an annual basis. The attenuation on these customised personal hearing protection devices are adjusted where applicable.

The measured doses do not take into account the protection factor provided by the custom-made hearing protection

devices. The customised hearing protection devices are permanently calibrated to filter out all noise levels above 82 dB(A), and the disposable earplugs provide a noise-reduction rating of 26.

The graph on the previous page depicts the average annual personal noise dose measured for the different similar exposure groups in 2015.

### Occupational medical surveillance

All employees and contractors undergo pre-employment medical examinations to ensure that they are fit to work. These are followed by periodic risk-based medical examinations during employment and an exit medical examination when leaving Rössing Uranium.

Other medical examinations during employment include transfer medicals and return-to-work fitness medicals.

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.

In 2015 a total of 200 pre-employment, 684 periodical and 112 exit medical examinations were completed for employees.

A total of 1,142 pre-employment, 779 periodical and 318 exit medical examinations were completed for contractors.

### Wellness

Our workplace wellness programmes are designed to help us in creating a work environment that is healthy for our employees. Encouraging employees to look after their health and well-being is a critical component of our overall approach to health and safety. The programmes also involve increasing knowledge and awareness through campaigns and education sessions and introducing policies that help employees make healthier choices.

Various activities were undertaken during 2015 to support these programmes. The



All operators at Rössing Uranium's Final Product Recovery Plant are required to wear dosimeters while on duty. Boards are used to ensure reliable distribution and storage of dosimeters, and serve to display compliance with uranium in urine bioassay<sup>3</sup> requirements.

Rössing Wellness Week in collaboration with Namibian Health Plan (NHP) was held on site for the second consecutive year during the first week of September with the theme 'Health is Wealth'. The programme included health screenings, awareness sessions in mental health, diet and nutrition, as well as financial awareness sessions. Participation of our employees increased with 16.5 per cent compared to 2014 and this reporting year a total of 80 contractors also participated.

#### Health Champion Challenge

Sixty-three employees registered for the Health Champion Challenge launched in May 2015 and running over six months. Each participant set their own goals and agreed on an action plan for improvement of specific health aspects. The wellness adviser and a nurse tracked their progress through regular assessments.

#### Blood donation clinic

The Blood Transfusion Service of Namibia held three blood donation clinics on site where a total of 164 units of blood were donated.

We received the Namibian Blood Transfusion Coastal Industrial Award, as well as the Corporate Challenge Floating Trophy at a special event, in recognition of the mine employees' support.

#### Employees knowing their HIV status

During 2015 a total of 13.67 per cent of our employees were recorded as knowing their HIV status.

No voluntary counselling and testing drive was presented on site during the reporting year, but awareness through the peer educator programme and support from the Aid for Aids disease management programme — which is linked to the Medical Aid Benefits of employees — continued throughout the year.

#### The year ahead

The three focus areas for 2016 in the management of our employees' health are:

- conducting the two-yearly Health Semi-quantitative Risk Assessment (HSQRA); and
- developing a mine-wide dust control strategy and plan.

## Radiation safety

Radiation safety is and continues to be a discipline that employees and the public are deeply emotional about. With the multitude of allegations and stories abounding, it is often difficult for people to differentiate between rumours and facts.

It is therefore important to continuously inform both employees and the public about the perceived and actual risks posed by radiation exposures resulting from the mine, and empower them with sufficient information to assess the risks independently of anecdotal contributions to this topic.

For public information we have launched a series of reports, fact sheets and information pieces on our website ([www.rossing.com](http://www.rossing.com)), under the 'Reports & Research' tab.

The articles and reports published there provide information and analysis about some of the topics that were found to be most on people's minds. More information will gradually be added as the need arises.

<sup>3</sup> Uranium bioassay: measurement of relative concentration of uranium excreted in urine, as a check of potential accidental internal contamination with uranium.

Among the topics discussed are:

- concerns about radiation exposure in public spaces in the Khan River and adjacent to the mine;
- concerns about the inhalation of the dust emitted from the mine during mining operations;
- concerns about the origins of drinking water in the coastal towns of the Erongo Region; and
- concerns about potential inhalation of radon caused by mining operations, amongst others.

Some basic fact sheets about radiation provide simple introductory explanations about the terminology and issues relevant to radiation safety. We have also published our Radiation management plan and the latest annual reports to the Namibian Radiation Protection Authority (NRPA) on the website for more information about our radiation protection programme.

Employees undergo a two-hour session about radiation when they join the mine,

followed by regular refresher training thereafter, as well as specific information sessions for different working groups.

Via our intranet, each employee has access to his or her dose records, as reported annually to the NRPA. The intranet also provides urine sampling records via the same tool. These records remain anonymised, ie employees only have access to their own records, via their log-on credentials.

We distinguish between two groups of workers at the mine:

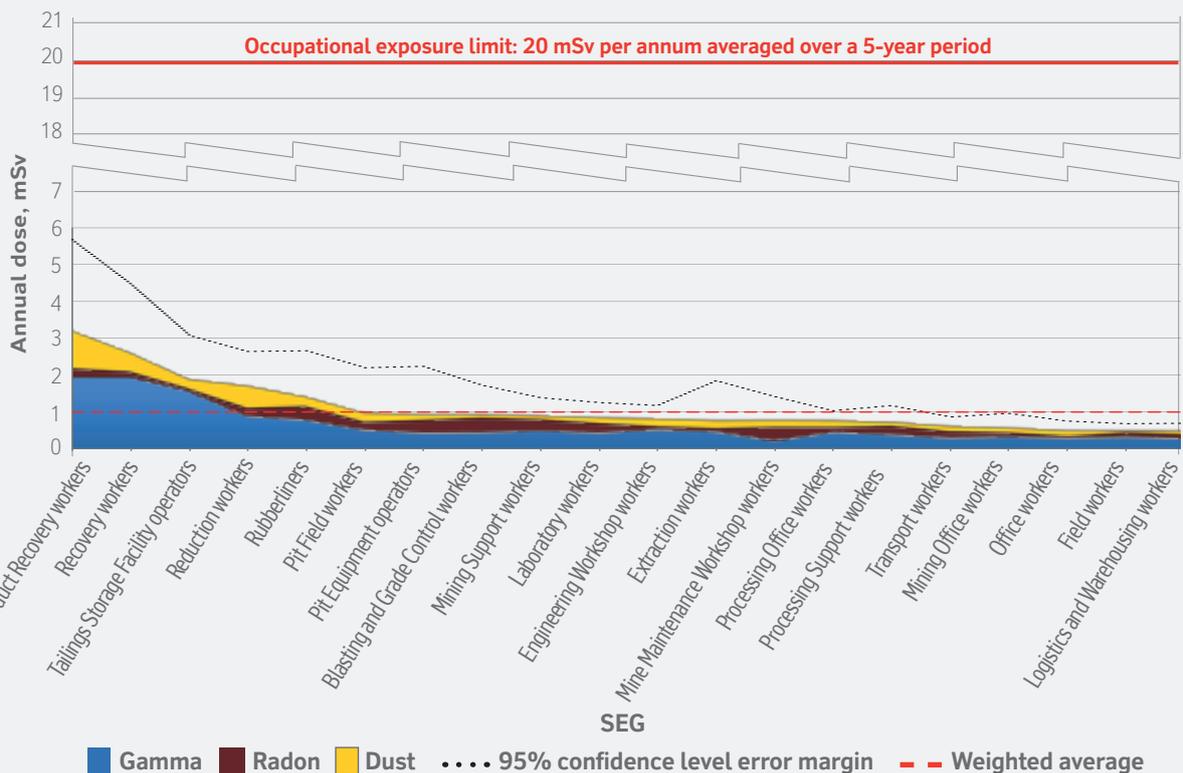
1. Workers that, through an assessment of historical records and workplace monitoring, are at potential risk of exposures to 5 milli-Sieverts per annum (mSv/a) or more. Workers in this group are designated radiation workers, with their exposure to penetrating radiation monitored continuously. All the workers who are assigned to the similar exposure groups (SEG) 'Final Product Recovery' and 'Recovery' fall within this

category. In addition to continuous monitoring of gamma radiation, radiation workers also undergo regular uranium in urine bioassays to confirm the absence of any internal contamination, and females in this group undergo a monthly pregnancy test so that compliance with the public dose limit of 1 mSv per annum can be confidently ensured.

2. All other workers are considered to be occupationally exposed, but monitoring is conducted randomly and for each SEG separately. Monitoring includes personal measurement of exposure to gamma radiation and personal monitoring of the internal dose due to the inhalation of radon decay products and radioactive dust respectively.

When averaging the dose records of all workers on the mine, the average dose is close to 1 mSv/a, as has been confirmed for the past four years.

**Radiation monitoring results (dose per person) by similar exposure group (SEG), 2015**



The average dose measured for the 20 different SEGs is summarised in the graph on the previous page, which displays similar low level dose records for most groups, except for those identified as designated radiation workers. Nevertheless, even for designated radiation workers, the average dose measured is significantly below 5 mSv/a and hence not of concern.

Only two workers were found to have a total annual dose exceeding 5 mSv, at 5.9 and 5.3 mSv respectively.

During 2015 no urine sampling results exceeded the warning or action levels for uranium in urine — 20 and 40 micrograms of uranium per litre of urine respectively.

After the fire at the Final Product Recovery (FPR) Plant occurred in February 2015, the old roasters had to be replaced with new ones and during the replacement period sampling was done on a weekly (rather than monthly) basis to ensure no incidents of potential internal contamination were missed.

In addition to the urine bioassays described above (to check for internal contamination) the surface contamination levels in the FPR area are recorded weekly. The target for maximum allowable contamination levels for this area has been successively reduced in recent years, in order to incentivise avoidance of the potential spread of contamination.

The target for 2015 was moved down to 1.0 Bq/cm<sup>2</sup> maximum surface contamination in FPR from 1.2 Bq/cm<sup>2</sup> in 2014. The measured average contamination level in this area was recorded as 1.1 Bq/cm, and hence the ambitious target was not reached for the year 2015.

A further measure to prevent contamination from leaving the mine is our dedicated system of radiation clearances for items removed from site. We have streamlined and reorganised this process with a series of communications and posters that are displayed in areas where this information is needed.

For the past years we have worked towards conducting a scientific study to demonstrate that the radiation exposures at the mine do not lead to excess cancer incidence in the working population.

While we conducted a scoping exercise in 2014, analysing the type and quality of data we have available on our workforce, the actual study was able to kick off in earnest in 2015, building on the scope determined in 2014.

The research team selected to conduct the study is the Centre for Occupational and Environmental Health at the University of Manchester, led by Professor Raymond Agius, Professor of Occupational and Environmental Medicine.

The design of the study, titled '*An epidemiological study of uranium mineworkers*', will follow the case-cohort approach. In this type of study, the study 'cohort' includes all workers who have started working at Rössing Uranium since 1976 until 2010 and who have worked at the mine for more than one year.

From this cohort, with the support of the Namibia Cancer Registry, all cases will be identified who have been diagnosed with cancers that could potentially have resulted from working at the mine, ie respiratory cancers, cancers of the blood and blood forming organs, as well as brain and kidney cancers.

For each case a number of 'controls' (between five and ten) will be randomly selected from the cohort. 'Controls' are employees who are known not to have been diagnosed with these specific cancers, while 'cases' are employees who are known to have been diagnosed with these specific cancers.

Then, the occupational exposures of the cases and control groups will be compared with each other, allowing a judgement whether an excess occupational exposure might have caused an excess cancer incidence.

All data used in the study will be anonymised so that no personal information is conveyed to the researchers or anyone else. We committed ourselves to obtain consent from each person selected for the study for using their information in anonymised form for this study.

An External Advisory Committee consisting of members of the Mineworkers Union of Namibia (MUN), the Namibian Uranium Association (NUA) and the Ministries of Health and Social Services and of Mines and Energy was appointed to provide community oversight and input to the project.

Committee members are the Honourable Asser Kapere, chairperson of the committee (past chairperson of the National Council of Namibia), Dr Wotan Swiegers, secretary of the committee (past chairperson of the Atomic Energy Board of Namibia), Mr Ismael Kasuto (President of the Mineworkers Union of Namibia), Mr Willem van Rooyen (former general manager: Operations at Rössing Uranium), Mr Samson Nghiteeka (Ministry of Mines and Energy) and a representative of the Ministry of Health and Social Services.

The collection of data and subsequent analysis is expected to take approximately two years, after which time the study will be submitted for publication in the internationally peer reviewed scientific literature.

In order to reinforce the importance of radiation protection and the skill bases needed for a comprehensive radiation protection programme, Rössing Uranium continues to support and contribute towards the training programme for Radiation Safety Officers offered at the Namibian Uranium Association's Uranium Institute.

Several training courses are offered for Radiation Safety Officers, including an annual two-day refresher course aimed at bringing experts of the industry together to learn about contemporary issues in radiation safety.

## Safety in our operations

We place great importance on safety issues in all areas of our operations and we continuously focus on making the workplace accident-free. We believe all incidents, injuries and occupational illnesses are preventable and, thus, our goal is Zero Harm. Our safety aims and objectives intend to encourage our employees to behave in ways which project a positive and proactive attitude towards safety.

This reporting year our safety performance has not been ideal. Whilst we had five Zero Harm-months — which demonstrate that it is possible to work injury-free — we had ten Potential Fatal Incidents where ten colleagues could have lost their lives at work. This is of great concern and a stark reminder to all of us that safety needs to be internalised as a core value and not just as a priority.

During 2015 we carried out a gap analysis on the new Rio Tinto performance safety standards and aligned our safety strategy with the three-pillar safety improvement strategy. This strategy focuses on three important aspects, namely fatality elimination, reduction of injuries and prevention of a catastrophic event.

As part of our intensified drive to make our workplace safe, the Critical risk management (CRM) programme was launched at all Rio Tinto operations worldwide. This programme replaces our Critical controls monitoring plans which were used for the past years. The CRM programme aims to protect us from risks that could kill any one of us.

Rössing Uranium's CRM pilot project began more than a year ago, with some specific areas targeted first. Subsequently, we expanded the project into full scale rollout across site, and in December we officially launched the CRM programme, attended by more than 400 employees at the mine's main entrance. This will focus on the critical risks and involves everyone checking that critical controls are in place and working before starting the job.

CRM works alongside our safety standards, our safety tools such as *Take 5*, our safety interactions, Safe Shift Start meetings, Leadership-in-the-field activities, incident investigations and lessons-learned actions.

Rio Tinto Group identified 22 critical risks that could cause death or injuries in any of its operations around the world. Our current safety signage was rebranded to focus on critical risks as well as our Lifesaving rules and placed at appropriate positions all around our mine site.

A safety diagnostic was conducted to help us understand what drives the current safety culture and a number of actions implemented, including the Rössing Uranium Leadership Safety Charter.

To help us learn more effectively from incidents in order to prevent recurrence, the Critical lesson-learned communication project was piloted and will be implemented site-wide during 2016.

During the reporting year we recorded an All-injury Frequency Rate (AIFR) of 0.74 against the target of 0.72. This is an improvement on the previous year's AIFR of 0.81.

The following injuries and significant potential incidents occurred on the mine during the reporting period:

- Lost-day injuries: 7
- Restricted workday injuries: 2
- Incidents requiring medical treatment: 4
- Incidents requiring basic first aid treatment: 26
- Potential incidents/significant potential fatal incidents: 10

In 2016 some of the focus areas in our continuous journey towards Zero Harm will include the following:

- continue with the CRM programme as part of a broader approach at Rio Tinto to stop fatalities;
- continue with our Leadership-in-the-field project;
- development of supervisors in areas such as hazard identification and risk assessment applications;
- continue with our initiatives aimed at safer driving and vehicle-pedestrian segregation; and
- communicating critical learnings from incident investigations.

All-injury Frequency Rate (AIFR), 2011 to 2015



The AIFR is calculated by multiplying the number of all injuries (Lost-day injuries, Medical treatment cases and Restricted workday injuries) by 200,000 and then dividing the result by the total number of hours worked.



Rössing Uranium's eight Lifesaving rules aim to protect employees and contractors from safety-related incidents. Eleven critical risks associated with these Lifesaving rules are continuously assessed by employees prior to work to ensure that work is safely done at the mine.



# Our neighbouring communities

*The Rössing Foundation junior library in Arandis is well utilised by young learners.*

*We recognise that the long-term sustainability of our business is dependent on establishing and maintaining enduring and effective relationships with our neighbouring communities that are characterised by mutual respect, active partnerships and long-term commitment.*

Since its establishment as Namibia's first uranium mine 39 years ago, Rössing Uranium has recognised that contributing towards the sustainability of our neighbouring communities is a corporate responsibility.

We also acknowledge that operating within a sustainable community gives our business distinct benefits such as skilled and locally available employees, capable and local suppliers of goods and services, access to sustainably managed natural resources, and healthy and safe environments for our employees and their families.

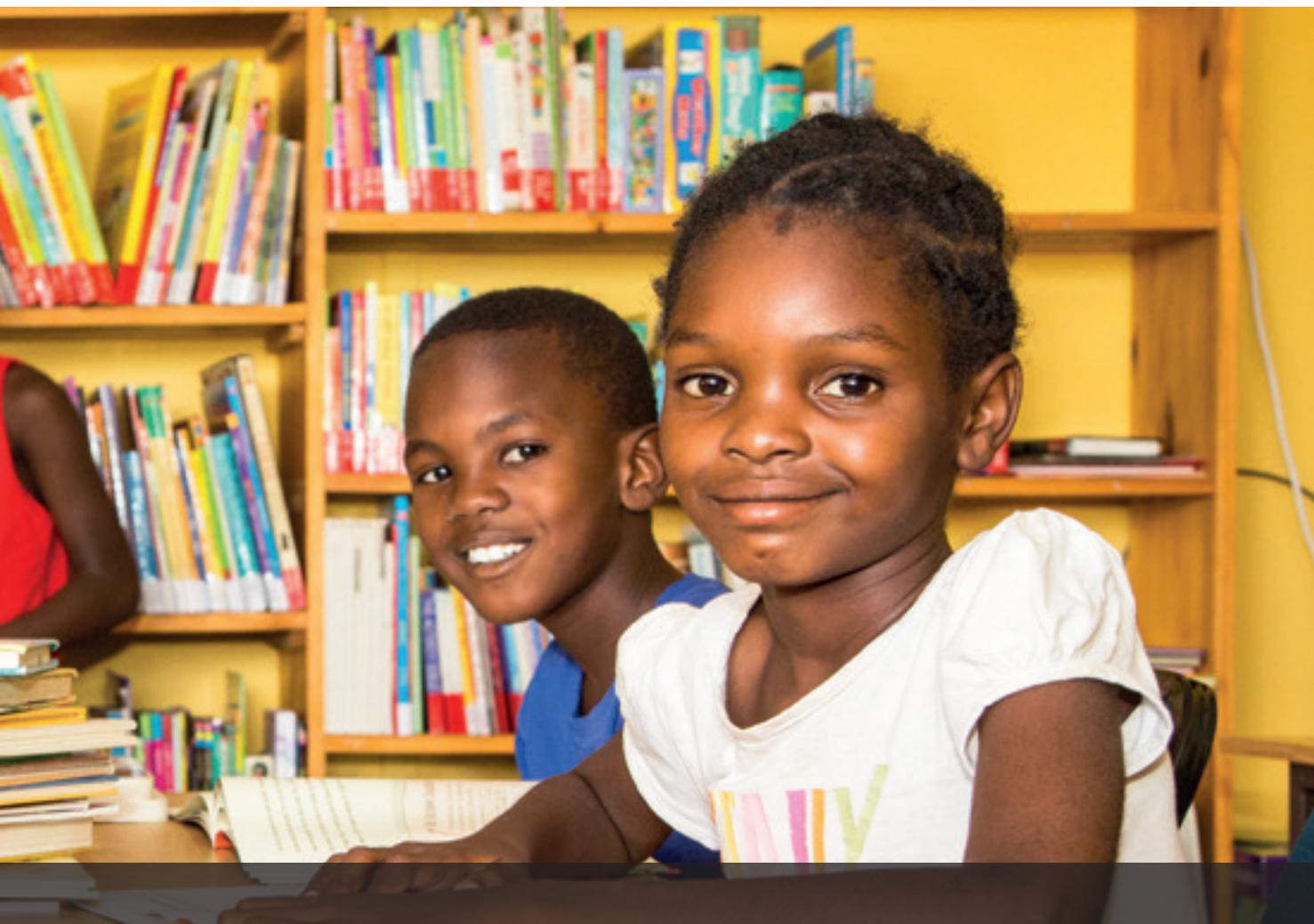
In 2015, therefore, we successfully continued our efforts to maintain these mutually beneficial relationships.

## **Community relations**

We are aware that our operations impact the communities and society in which we operate in various ways. We regard the responsible management of our community and stakeholder relationships as being as necessary to our business success as the management of our operations.

To this end, we take great care in understanding and responding responsibly to our neighbouring communities in order to maintain a positive social performance overall. The next few pages illustrate some of the many activities implemented by various sections of the mine during the reporting period.

Even though we faced various production and market challenges during 2015, we remained steadfast in honouring our corporate social responsibility. This we do through continued and generous investments, supporting the sustainability of our neighbouring communities.



We accurately maintain various due diligence processes to understand and mitigate possible operational impacts on them. In addition, we continue to focus on sustaining mutual beneficial relations with our stakeholders.

As always, we strongly support the national socioeconomic development priorities. To this end we align our community and social investment focus with the requirements of Namibia's Mining Charter.

The Charter, overseen by the Chamber of Mines of Namibia, is aimed at positively and proactively addressing sustainable and broad-based economic and social transformation in the Namibian mining sector and is grounded in key Government policies such as Vision 2030 and the National Development Plan 4 (NDP4).

Throughout 2015 we ensured accountability by tracking our compliance against the charter's targets.

## AT A GLANCE: Our neighbouring communities

- We committed just more than N\$18 million towards the implementation of community initiatives and activities. We channel most of our community and social investments through the Rössing Foundation.
- A highlight of the year was a safety awareness initiative, called Project Safety W.I.S.E. This three-year initiative aims to support the creation of a safety culture amongst primary education learners in Arandis, Swakopmund and Walvis Bay.

During the year under review, we committed just more than N\$18 million towards the implementation of community initiatives and activities. This is over and above the direct and indirect economic benefits we created through local employment and procurement of goods and services from local businesses. Although we channel most of our community and social investments through the Rössing Foundation, we also supported various community investment initiatives directly.

The Rössing Foundation was established in 1978 through a Deed of Trust as a vehicle to oversee the mine's corporate social responsibility activities in Namibia.

The Foundation focuses mainly on programmes which target:

- improved primary and secondary education through the implementation of various learner and teacher support programmes;
- local workforce and specialised vocational skills development through the provision of scholarships, apprenticeships and part-time study opportunities; and

- local economic diversification and strengthening through the support of small- and medium-scale enterprise development.

Because we pro-actively promote healthy, safe and environmentally responsible lifestyles amongst our neighbouring communities, we also made direct contributions to initiatives targeting:

- increased awareness of personal health and HIV/Aids;
- biodiversity protection through support of the annual birdwatching event; and
- waste management activities at local primary and secondary schools.

A highlight of the year was a safety awareness initiative, called *Project Safety W.I.S.E.*, implemented in partnership with AREVA Resources Namibia and the Directorate of Education, Arts and Culture of the Erongo Regional Council. This three-year initiative aims to support the creation of a safety culture amongst primary education learners in Arandis, Swakopmund and Walvis Bay. Teacher support materials were developed to enhance the delivery of personal safety

themes contained within the national primary education curricula.

The materials focused on topics such as safety risk assessment; prevention of drug and alcohol abuse; the importance of healthy sleeping and eating habits; the dangers of playing at heights and in confined spaces; electricity and fire safety; and water and traffic safety, amongst others.

Tailor-made stories, songs, poems, puppet shows, activity sheets and illustrations depict situations relevant to the learner at home, on the way between home and school, and at school to teach children about safety in an interactive and fun way.

We believe that if learners are exposed to safety awareness in small and progressively increasing quantities throughout their education, it will become part of their behaviour throughout their lives. We further believe that children skilled in assessing their own safety and the safety of others are less vulnerable to injuries and even death.

We also support other initiatives such as the Erongo House of Safety in Swakopmund through our partnership



Rössing Uranium hosted its 15th annual birdwatching event in 2015. Every year about 50 learners from schools in Walvis Bay, Swakopmund and Arandis and local bird guides participate. The event is part of the Rio Tinto Birdlife International partnership and is locally commemorated as part of the Coastal Biodiversity Week.

with the Erongo Development Foundation; the Swakopmund Museum; the West Coast Safety Initiative; the B2 emergency response pilot programme coordinated by the Arandis Town Council; as well as the Arandis Investment Conference and uranium festival held in August 2015.

We continued to celebrate top-performing teachers and learners in our host region through the Regional Directorate of Education, Arts and Culture and by supporting prize-giving events at all schools in the region.

In addition to our financial contributions, we used our employees' technical expertise to engage with the public and with community-based organisations in order to increase health, safety and environmental awareness within the Erongo Region.

One such activity is the radiation safety training offered to members of the public in collaboration with the Namibian Uranium Institute. We also provided expertise to the Namibian Uranium Association on water management issues to reduce the mining sector's footprint on regional water resources.

## External and internal communication activities

Rössing Uranium's Corporate Communications section has developed various platforms and activities to establish, nurture and maintain good relationships and information sharing about our operations with stakeholders. These include our internal stakeholders such as employees and contractors, as well as our external stakeholders.

During the reporting year, various strategic communication functions were carried out in order to disseminate information via a multitude of channels in the print and electronic media, as well as by means of face-to-face communication.

Our visitors' programme is a key means of engaging guests from around the world. It welcomes specialists, academics, Government officials and members of the public. In 2015, we hosted 49 tours to the mine for a total of 900 visitors.

Some of the prominent visitors in 2015 were a group from the Southern African Institute of Mining and Metallurgy's Namibia Chapter, mining students from the Colorado School of Mining in the US, and the British High Commissioner to Namibia.

We kept the Namibian Government well informed about our operations. This was accomplished through the mine's senior management engaging politicians and senior Government officials on matters of mutual interest. A number of stakeholder engagement events with the Namibia business community were also hosted to share information on our business performance throughout the year.

Media relations were facilitated through the management of various media enquiries, as well as a number of information-sharing events with the media that resulted in continued relationship-building and balanced coverage.

Various other communication activities involved a number of external stakeholders. We hosted the 15th annual Rio Tinto Rössing birdwatching event, which is part of the larger partnership between Rio Tinto and Birdlife International. We also hosted the 24th Rössing Marathon National Championship, which attracted around 250 athletes. The competitors participated in a marathon and a 10 km-race, while a 5 km-fun walk was held in aid of the Cancer Association of Namibia.

In 2015 the cash and in-kind sponsorships and donations effected through the Corporate Communications section totalled N\$329,000.



*Rössing Uranium's stakeholder engagement activities include social events for employees and their families (photo left), as well as an annual fun walk in aid of the Cancer Association of Namibia (photo right).*

## CASE STUDY:

# Making a colourful difference

Staff volunteerism has proven to be a positive conduit for improving staff commitment, instilling new and valuable job skills, and thereby advancing one's career. Volunteering also increases one's social and relationship skills as it facilitates a personal connection with the community. Of course, it is also a fun and easy way to explore personal interests and passions. Even helping out with the smallest tasks can make a real difference to the lives of people, animals, and organisations in need.

Our volunteer programme joined the Arandis Town Council in bringing colour to the town's Orphans and Vulnerable Children Centre. In 2015 we launched our employee volunteer programme, called *Rössing in the Community*, with a colourful bang. Employees, supported by Arandis residents and members of the Arandis Town Council (ATC), painted a house that will serve as a new soup kitchen for vulnerable residents and an office block for community-based organisations.

About 60 people, each armed with a paint brush, came together to give the house — donated by the ATC — a much-needed paint-over. Of course, only after a proper risk assessment and Safe Shift Start was done!

The employee volunteer programme aims at encouraging and supporting employees to get involved in volunteer activities within our neighbouring communities.

Painting the soup kitchen presented a fun opportunity to get many people involved. It also created a natural synergy with our corporate and social investment approach of local business development and food security to vulnerable members of society. Manfred Murangi of the Office of the Mayor in Arandis also joined the painting and said that the ATC is aiming to address the identified needs of the town's vulnerable community with this initiative and that our volunteer programme "is a step in the right direction". He made a point to thank our employees for reaching out to the Arandis community.

While taking a break from all the painting in the hot sun, Victor Rooinasie, foreman of our Contractor management and Building maintenance sections, who has been living in and helping the Arandis community for the last 35 years, said: "Being able to help the children and vulnerable members of society makes me proud. We have to do our part while we still have time to do so."

The day of volunteering in Arandis was a great team effort and a big success.







*The Arandis-based Asser Kapere Community Pre-primary School was supported by the Rössing Foundation with advice on various financial services.*

## The Rössing Foundation

Rössing Uranium established the Rössing Foundation in 1978 through a Deed of Trust to implement and facilitate programmes and projects that expressed our corporate social responsibility towards Namibian communities.

The Rössing Foundation undertakes a broad range of activities across a wide spectrum of community development areas. These activities are concentrated in the Erongo Region, where the Rössing Mine is located, but they also fan out to the

Omakehe, Hardap, Ohangwena, Oshana, Omusati and Zambezi regions.

All the activities that the Rössing Foundation drives and supports are formulated in a Memorandum of Understanding between the Foundation and partner organisations, but in particular the seven education directorates.

These critical partners include the Ministry of Education, Arts and Culture; the Ministry of Mines and Energy; the National Institute for Educational Development (NIED); the United Nation's Children Fund (UNICEF);

the Erongo Regional Council and the Arandis Town Council.

### Education programme

The Rössing Foundation has been working in partnership with the Ministry of Education, Arts and Culture since Namibia's independence in 1990. The partnership includes activities such as strengthening the capacity of teachers and learners, leadership and management programmes, resource sharing and exchanging expertise between the two partners.



The critical issue of poor performance at school level, coupled with the low output of qualification at junior to tertiary levels are indicators of an education system that does not adequately prepare learners to cope with challenges beyond school. Furthermore, the negative perception instilled in many learners that Mathematics and Science subjects are difficult subjects and only meant for clever students, discouraged many learners and students to take these subjects at school level, restricting their career options. Proficiency in the English language continues to be a challenge as well.

To address education challenges facing Namibia, the Rössing Foundation assists the Government of Namibia through the Ministry of Education, Arts and Culture by availing opportunities to teachers and learners to acquire subject-content knowledge in order to improve their competencies in English, Mathematics and the Sciences.

To this effect, the Rössing Foundation built and operates three state-of-the-art English, Mathematics and Science centres in the towns of Arandis and Swakopmund in the Erongo Region, and in Ondangwa in the Oshana Region.

In addition to the three centres, the Rössing Foundation initiated an innovative undertaking — the introduction of an English, Mathematics and Science Mobile Laboratory.

This mobile vehicle, fully equipped with the required materials and equipment, will travel to outlying areas of the country. This will greatly benefit rural schools, as many learners cannot afford to travel to the Rössing Foundation centres.

The centres and the mobile laboratory will continue to serve as a hub of support programmes, not only to learners and teachers, but also to the neighbouring communities.

### Learners' support programmes

#### English centre-based activities

The Ondangwa Centre supported a total of 150 learners in English examination preparation activities in 2015. Of the 150 learners, 25 were Grade 10 learners; 105 Grade 12 NSSC (Ordinary level) learners and 20 Grade 12 Higher Level learners. Activities covered were tenses, active and passive voice, direct and reported speech, summary writing, writing of short and longer pieces, listening and oral activities.

In the Erongo Region, a total of 54 learners were enrolled at the Tamariskia Centre and supported in the following English skills: reading and directed writing, argumentative, narrative, report writing, literature notes, grammar and listening comprehension, and intensive literature according to the syllabus.

Learners were assisted with language structures and conventions that are an integral component of the exploration, analysis and examination of texts, as well as of learners' writing tasks, and with listening or aural and oral proficiency.

#### Mathematics centre-based activities

At the Ondangwa Centre, 697 learners in Grade 7, Grade 10 and Grade 12 were supported through Master Maths activities. The supported learners completed about 30 Master Maths modules (lessons) with an average score of 79 per cent.

In the Erongo Region, 3,977 learners from Grade 5 to Grade 12 registered, utilised and visited the Master Maths facilities in Arandis and Swakopmund throughout 2015.

Learners were tutored and at the end of the year they wrote either Ordinary or Higher Level examinations. Learners were from various schools in the region, namely Kolin Foundation Secondary School, UB Dax Primary School, Arandis Primary School, Mondesa Youth Opportunities (MYO), Pro Ed Academy Private School, Swakopmund Primary School, Coastal High School and Swakopmund Secondary School.

These face-to-face interactions involved topics such as calculus, algebra, geometry, trigonometric identities and graphs, vectors and coordinate geometry, which formed part of the Master Maths programme tutoring.

#### Science centre-based activities

While 1,970 learners in Grade 6 to Grade 12 were supported through Science-related activities this year at the Ondangwa Centre, only 193 learners registered as profiled learners. The learners were supported through regular face-to-face tutoring sessions, holiday classes and enrichment programmes.

An average score of 78 per cent was attained by the Grade 7, Grade 10, and Grade 12 Ordinary Level learners while an average of grade 3 was attained by the Grade 12 Higher Level learners.

Overall, 625 learners from Swakopmund-based schools were tutored at the Tamariskia Centre in subjects such as Physical Science, Chemistry, Biology and Life Sciences, with emphasis on practical activities.

#### Support to Erongo Region Science Fair

Through Science projects and fairs, learners acquire opportunities to apply technical knowledge and skills during their studies and strengthen their understanding of scientific research methods. Practical scientific projects also eased teaching in both Mathematics and Sciences subjects.

## CASE STUDY:

# Mobile education centre a first for Namibia



*Namibia's Minister of Education, Arts and Culture, Hon. Katrina Hanse-Himarwa, at the Rössing Foundation Mobile Laboratory, which will be deployed to rural schools where tuition of Mathematics, Science and English is hampered by a lack of facilities. The Rössing Foundation and Nedbank Namibia joined hands to furnish the first of three mobile labs.*

An educational concept that delivered exceptional results in Arandis, Ondangwa and Swakopmund, has been replicated in mobile form and was launched towards the end of the reporting year.

The Rössing Foundation's three centres in Arandis, Ondangwa and Swakopmund benefit mainly teachers and learners living in close proximity of the towns where the centres are located, as transport and other related costs are often too high for learners and teachers located away from these towns. Thus, the majority of rural schools in poor communities continue to miss out on the valuable opportunities offered by this programme.

In our quest to support as many learners and teachers as possible throughout Namibia, the Rössing Foundation initiated the concept of a mobile laboratory that can serve the same purpose as the three centres. We approached local bank, Nedbank Namibia, to assist in making the concept of Foundation's centres mobile, and so the Rössing Foundation Mobile Laboratory was born.

Nedbank has committed to sponsoring three of these vehicles, fully equipped with the necessary instruments and material to bring much needed educational aid in the three critical subjects of Mathematics, Science and English to rural schools. The first vehicle was launched in November 2015, and Nedbank will sponsor the other two vans over the next three years.

Speaking at the launch, managing director of Nedbank, Lionel Matthews, said that education is one of the three defining pillars underpinning Nedbank's philosophy in terms of corporate social investment.

He said, "Education remains a prime ingredient in providing access to employment, economic prosperity, improved quality of life, personal fulfilment and growth for all Namibia's people. That is an undeniable fact. And as a good corporate citizen, Nedbank Namibia will never shun our obligation in this regard. We have visions of the mobile lab being welcomed with joy and enthusiasm by communities in the furthest recesses of our country. But more importantly, we have visions of touching the lives of numerous teachers and learners alike, and inspiring them to embrace a future of untold interest in science and mathematics."

The Minister of Education, Arts and Culture, Honourable Katrina Hanse-Himarwa commended Nedbank and the Rössing Foundation, saying: "With hard work and dedication the two partners have managed to implement an innovative approach to extending the enrichment benefits to rural schools through the practical presence of the Rössing Foundation Mobile Lab and we commend you for it."

The first mobile lab will become operational in 2016.

The Rössing Foundation assisted the Swakopmund Circuit to organise and carry out a circuit-based Science Fair with ten teachers participating in the event. The Omaruru Circuit was also assisted in organising and carrying out a circuit-based Science Fair with 14 teachers participating. In addition, a Science Fair judging workshop was conducted for 17 teachers to equip them with sufficient knowledge and skills in judging projects.

The Ondangwa Centre team supported 120 Omusati learners in preparation for participation in the 2015 National Mathematics and Science Fair.

#### **Outreach and Holiday Support Programmes**

At the Ondangwa Centre, 360 learners attended vacation classes either during the May or August holidays. Special examination preparation support was given to Grade 10 Junior Secondary Level and Grade 12 Ordinary and Higher Level learners. The average assessment attainment for Higher Level learners was grade 4, while the Ordinary Level learners attained an average score of 70 per cent.

The Ondangwa team also supported 35 Grade 8 learners from Omukukutu Combined School and 35 Grade 10 learners from Okalumbu Combined School through short-term centre visits. The support covered topics identified through needs assessment of Grade 10 and 12 learners. In addition, 40 Grade 10, 20 Grade 12 Higher Level learners and 60 Grade 12 Ordinary Level learners were supported during the school holidays.

In the Erongo Region, a total of 1,573 Grade 10, Grade 11 and Grade 12 Higher Level learners from the Walvis Bay Education Circuit, Usakos Secondary School, Kuisebmond Secondary School, Petrus Ganeb Secondary School, and S.I. Gobs Secondary School in Omaruru participated in the April and August 2015 Spring and Autumn Schools.

The holiday schools were organised by the Ministry of Education, Arts and Culture in

order to revise subjects taught during the trimesters in order to cement learners' competencies and understanding. The Rössing Foundation availed its staff as additional resources in Mathematics, Sciences and English subjects.

#### **Teachers' support programmes**

The Rössing Foundation supported a total of 233 teachers through professional development training workshops. Eight Grade 10 Mathematics teachers from the Hardap Region and 23 Grade 10 teachers from the Zambezi Region were trained in Pedagogical Content Knowledge (PCK) in identified topics from needs assessments. PCK is a theoretical framework that emphasises content and pedagogical knowledge to enhance concept-based learning.

The different training programmes covered demonstration lessons and co-teaching, while lesson observation and feedback discussions were used to enhance the skills shared. PCK training for the Higher Level Mathematics teachers was also incorporated in a hands-on approach through demonstration lessons, team preparation and teaching. Teachers emerged with positive attitudes towards the concept-based learning approach.

In the Erongo Region we experienced an increase in the number of teachers from Swakopmund-based schools visiting the centre, as many learners from their schools registered and attended afternoon classes.

During the reporting year we also supported 68 Grade 10 to Grade 12 Mathematics, Sciences and English teachers from coastal schools in organising and conducting practical sciences activities, both at school and at the centres. School teachers utilised the centres for lesson preparation, worksheets and face-to-face teaching of learners.

The support to teachers is designed and geared towards equipping teachers with skills in practical Science experiments to improve academic performance.

We also supported another 205 teachers from Zambezi, Hardap, Omusati and Oshana regions.

They were trained in pedagogical and content knowledge for Biology and Physical Science, designing and developing practical investigation worksheets, and in the process of Mathematics and Science Fair judging through outreach programmes.

In addition, 558 teachers visited the Rössing Foundation library and utilised the teacher reference section, while 40 teachers registered as library members.

#### **Centre visits and training workshops**

The Rössing Foundation education centres remain popular destinations for school tours and holiday classes by various schools from all the regions of Namibia.

During 2015, more than 1,000 teachers and learners visited the two coastal centres, representing Witkrans Primary School in Hardap Region; John A. Pandeni Combined School from Omusati Region; Usakos Secondary School and Okaepe Primary School from Otjozondjupa Region; Amazing Kids Private School from Khomas Region; and the Friedtjo Nasen Akademie from Germany.

These visits enable the Foundation to form working relationships with various schools by providing resources to Mathematics, Science and English teachers.

In Ondangwa, 203 teachers visited the centre either for PCK training, examinations setting, to be supported with teaching and learning resources or accessing Master Maths Programme resources.

#### **Professional Forums**

We supported 40 teachers through professional development presentations at the Oshana Region E-learning conference in March 2015.

## Community support programmes

### *Social Accountability and School Governance project*

UNICEF, in partnership with the Ministry of Education, Arts and Culture, initiated the Social Accountability and School Governance project with the overall aim of promoting quality education delivery as a shared responsibility with the involvement of stakeholders in Namibia. This three-year project, started in 2012, was extended for another year, which ended in October 2015. Rössing Foundation, as implementing partner, was tasked with the responsibility of training 148 school boards in the Hardap and Ohangwena regions.

Through the project the Foundation conducted the following activities in 2015:

- Key stakeholders such as regional and traditional authorities were sensitised to discuss roles to be played by community members through local and traditional leadership.
- A baseline study was conducted to determine dynamics of school communities was conducted.
- A school board training guide was compiled and used to train school boards.
- School boards received information on the right to education, education purposes, policies and practices, monitoring education performance and the use of social accountability tools.
- Exchange/exposure programmes between schools and between the two regions were initiated to share and learn from each other.

### *Out-of-school youth support*

Continuing its support to the community, the Rössing Foundation assisted 151 out-of-school youth based in the Erongo Region that were enrolled with the Namibia College of Open Learning (NAMCOL) to improve their grades for possible admission to institutions of higher learning. The Ondangwa Centre assisted 70 Grade 12 NAMCOL learners in the NSSCO examination preparation.

### *Library services to the community*

The main purpose of the Rössing Foundation's libraries is to ensure that learners, teachers and other community members have access to information and books, as the improvement of reading skills in turn contributes to the attainment of good results at school and a broader range of knowledge in general.

In 2015, 27,488 learners, teachers and community members utilised the Foundation's libraries at the Swakopmund and Arandis centres, while 6,888 learners visited the Ondangwa Centre's library.

### *Enterprise development support Support to community agribusiness*

The Rössing Foundation provided agribusiness mentorship to the Dreamland gardening project members in Arandis through face-to-face consultation and informal training, as well as encouraging retention of newly developed skills. The project has secured a fixed market and supplies fresh produce on a weekly basis to Swakopmund markets.

Installation of the automated irrigation system is 90 per cent complete and will enable Dreamland to use water more efficiently than their usual manual watering method. The installation of a solar-power system was necessary to ensure operation of the automated watering system.

The Dreamland garden project members also undertook an exchange visit to three projects funded by the Social Security Commission Development Fund in Oshana and Oshikoto regions, namely the Endombo, the Kondjashili and the Tulongeni projects. They shared successes, challenges and lesson learned during project implementation.

### *Ûiba-Ôas Crystal Market*

The Rössing Foundation has for many years supported the small-scale miners in the Erongo Region, most of whom operate from the Ûiba-Ôas Crystal Market situated on the main road between Usakos and Karibib. The Social Security Commission's Development Fund joined in and offered

the community a grant to construct a cutting and polishing workshop.

The grant also made provision for the purchasing of a cutting-and-polishing machine and training of two members in its operation, thereby enabling the members of the Ûiba-Ôas Small-scale Miners' Cooperative to create value-added products to sell at higher prices than obtained for raw stones. Previously, members had to take raw stones to Karibib or Swakopmund for cutting and polishing, incurring considerable expense. Having the facility on site enables them to maximise profit potential.

As with the nearby kiosk that offers refreshments to visitors, having a clean and comfortable ablution facility encourages tour operators to bring their customers to the market, resulting in higher sales of stones and crafts. A newly-erected toilet block serves that purpose. The cooperative members charge a nominal fee to keep the facility clean for visitors, thereby improving the quality of life for members and visitors alike.

During the course of the year the Rössing Foundation continued to offer cooperative members training in basic business skills, financial literacy and other topics such as stone cutting and polishing.

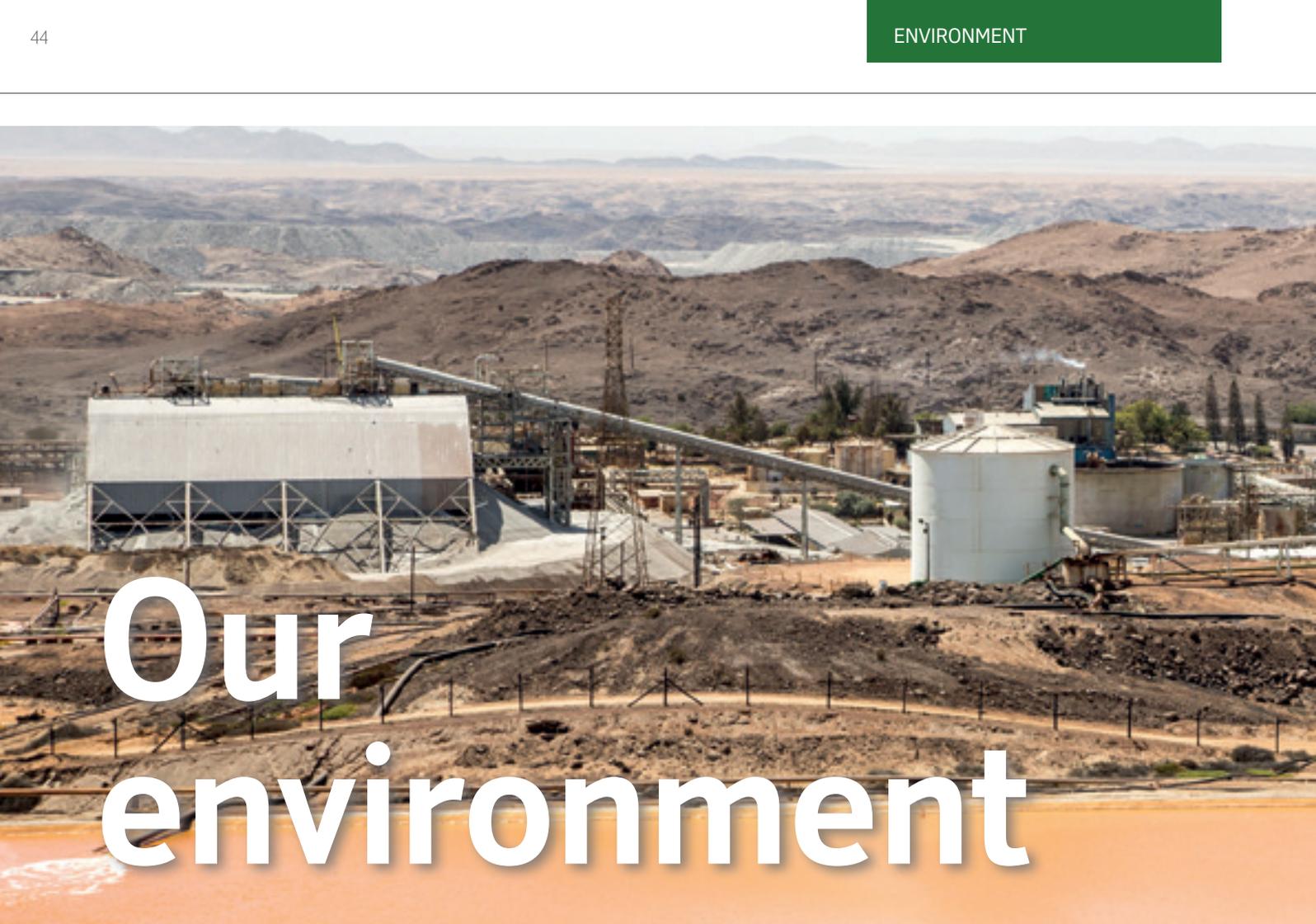
### *Support to Ohungu Conservancy*

During the reporting year, the Rössing Foundation assisted the Ohungu Conservancy to submit a proposal to the Namibian Environment Investment Fund (EIF) to secure two horses and accessories to be used for monitoring the conservancy area in order to curb illegal hunting of wildlife. After several incidents of poaching in the conservancy area, the conservancy management committee and community game guard concluded that the game guard system needs to be supported by providing them with at least horses and saddles for patrol to support their nature conservation effort.

Currently the Foundation is busy developing a full scale project that will attempt to reduce conflicts between the community and the wildlife in the conservancy.



Members of the Ūiba-Ôas Small-scale Miners' Cooperative, located at the Ūiba-Ôas Crystal Market, in front of the new cutting and polishing workshop, showing some of the uncut, cut and polished gemstones. From left to right: Patricia Uri-Khos, Diana Maletzky (chairperson of the cooperative), Gerhard Geibeb and Hilda Hunes. The workshop will enable the members to sell their value-added products at higher prices than could be obtained from raw stones.



# Our environment

*Rössing Uranium's water management is one of the most significant environmental and operational aspects of our activities. Most of the mine's water management takes place at the Tailings Storage Facility and water recycling and reuse are the foundation of the mine's water saving programme.*

*Rössing Uranium aims to be a leader in environmental stewardship and to maintain its reputation as a responsible corporate citizen. This aim can be realised by understanding and appreciating our natural resources, and using them in a manner that will have created a positive impact after mining operations are completed.*

As a resource-intensive industry, Rössing Uranium's operations impact on natural resources and the environment. We therefore continuously observe our performance in order to improve environmental management.

Key programmes include those on:

- water and tailings management (water demand and quality control, tailings stability);
- air quality control (dust, blasting noise and vibrations, environmental noise);
- waste management (of both mineral and non-mineral waste); and
- land-use management (including biodiversity, rehabilitation and closure planning).

Performances against our objectives and plans are discussed over the next few pages.

## Water management

Since the mine is located in the Namib Desert, water management is one of the most significant environmental and operational aspects of our activities.

It entails all aspects of water abstraction, dewatering, transport, storage and usage (potable and process), and involves surface water (including run-off), impounded water and groundwater.

Guiding our Water management plan is a formal Water strategy developed according to Rio Tinto's performance standards and guidelines. The aim of the plan is to ensure efficient, safe and sustainable use and protection of water resources and ecosystems.

A cornerstone of the mine's water and seepage management is its comprehensive monitoring programme, which starts at the Tailings Storage Facility (TSF).



## AT A GLANCE: Our environment

- Water is reused in the Processing Plant. With the aid of frequent flow meter readings taken at various areas, an overview of the water balance is maintained at any given time.
- Our operating plan made provision for a target use of 2.3 million cubic metres (m<sup>3</sup>) of fresh water; the actual consumption of fresh water amounted to 2.1 million m<sup>3</sup>.
- Monitoring showed that ground vibration and blasting noise stayed within the limits of 12.5 mm/s and 134 dB respectively throughout the year.
- An erosion protection and sediment retention structure was completed in Dome Gorge, a tributary to the Khan River. This will prevent sediment from the rock dump deposited close to the Khan to reach the river.
- A social and environmental impact assessment was completed which assessed the feasibility of establishing a Rössing Uranium-owned desalination plant at the Mile 4 salt works.

The programme is designed to achieve three main objectives:

- ensure sufficient capacity at deposition areas;
- ensure low water levels in the tailings pools; and
- ensure proper functioning of all seepage control systems.

Water is reused in the Processing Plant. With the aid of frequent flow meter readings taken at various areas, an overview of the water balance is maintained at any given time. All spillages in the Processing Plant are captured and channelled to a large recycle sump for reuse.

Effluents from the workshops are treated to remove oils, and sewage is treated in the on-site Sewerage Plant. These purified effluents are used in the open pit for dust control purposes.

We recognise that the TSF's structural integrity is a critical risk component that needs to be looked after on a continuous basis.

The stability of the TSF forms the cornerstone of the safe operation of our entire asset and the fact that it continued to increase in height prompted us to embark on two major stability reinforcement projects.

These projects include the construction of starter embankments on the north-to-north-eastern part of the TSF, as well as the buttress on the western side.

The construction work started in October 2014 and was completed successfully in October 2015, as per plan. Both projects were necessary not only with regard to extending the life of the TSF, but also to ensure its fundamental stability.



*Following a review of the Tailings deposition plan, it was decided to construct a starter embankment on the north-to-north eastern side of the Tailings Storage Facility and a buttress on the western side, with the work completed towards the end of 2015. These two stability reinforcement projects will ultimately enable us to deposit tailings in an area on the facility that was previously not suitable for tailings deposition.*

For further monitoring of the stability of the TSF, we embarked on a Piezometer installation project to monitor the stability at different areas of the TSF and to enable remediation in case of exceedances, which is highly unlikely. The project is due to be completed by mid-May 2016.

Surface water from pools forming at tailings deposition areas is recycled and reused on a continuous basis in the Processing Plant, minimising evaporation and infiltration into the tailings pile.

Remaining water that has infiltrated is recovered by pumping boreholes and open trenches installed on the facility itself to reduce the volume of underground water within the tailings pile.

Seepage recovery systems are also employed outside the TSF. They include a surface seepage collection dam to capture water from the engineered tailings toe drains, cut-off trenches in sand-filled river channels, dewatering boreholes situated

on geological faults and fracture systems on the downstream western side of the facility.

All systems are designed to lower the water table to the extent that flow towards the Khan River is interrupted. The recovered water is reused in the Processing Plant.

To ensure that all systems are functional and zero discharge to the Khan River is maintained, water level measurements are taken on a network of more than 100 monitoring points.

A number of these points are also sampled to determine the quality of the groundwater, including the concentration of uranium and other radionuclides.

As a condition of the permit issued by the Ministry of Agriculture, Water and Forestry's Department of Water Affairs and Forestry, monitoring results are submitted to the department at regular intervals for review.

The position of the seepage plume around the TSF did not change during 2015. The map on the right shows the plume. Results of sampling carried out towards the end of 2015 are not available yet.

#### **Freshwater use**

Our operating plan for 2015 made provision for a target use of 2.3 million cubic metres (m<sup>3</sup>) of fresh water and the actual consumption of fresh water amounted to 2.1 million m<sup>3</sup>. Unlike the previous reporting year, the freshwater use for 2015 was therefore lower than anticipated.

This was mainly due to the reduction in total tonnes of ore milled in the plant, as well as changes in the operating model. Lower tonnages at fixed water usage, combined with lower grades, result in a higher consumption of fresh water per tonne of U<sub>3</sub>O<sub>8</sub>, as shown in the graph on page 48.

Sustainable management of fresh water remains a key challenge for us, with issues relating to periodic supply interruptions from the bulk water supplier, interruptions in the functioning of pumping systems, unavailability of parts, and a lack of adequate storage capacity for the water in circulation.

In view of the above, various campaigns were implemented among our employees and contractors to heighten awareness about reducing demand and using supply responsibly during the year.

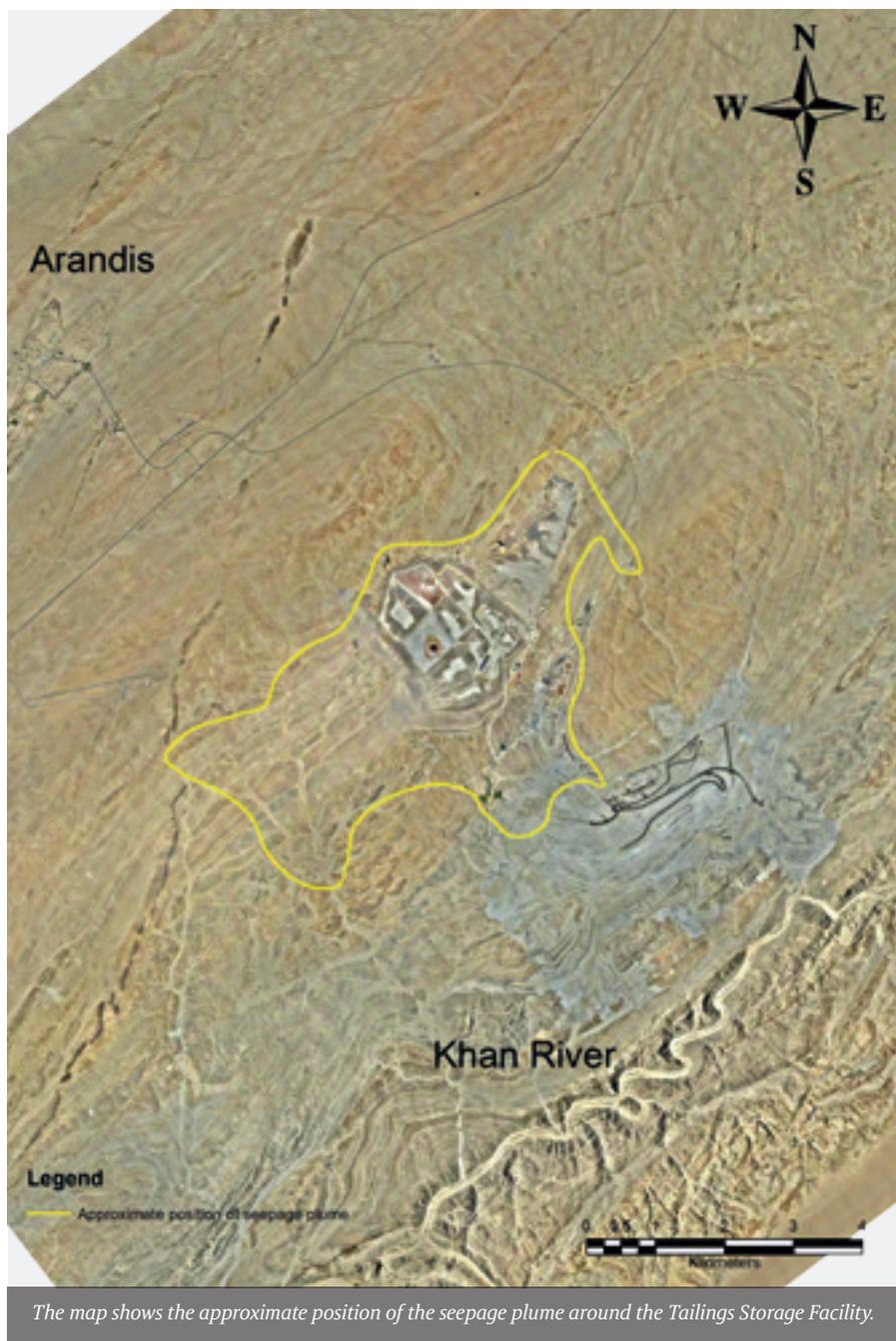
During the reporting year we therefore continued our internal *Water Bucket* awareness campaign published in our in-house newsletter, the *e-Rössing Bulletin*, to flag important issues to all water users. Other activities, such as the reed elimination project, continued as an effort to reduce water loss through evapotranspiration by reeds.

We were prompted to look into other water conservation alternatives when promising water reduction test work carried out at the tailings pumping system was unsuccessful.

These other alternatives included the TSFs Dewatering system project and the Water extraction project, aimed at maximising the recovery of groundwater stored in the tailings pile. These projects included the installation of replacement boreholes in the facility's dewatering system and in its water extraction bore fields, and were implemented and completed in 2015, with active monitoring ongoing. Both these projects are expected to yield much-needed low-quality water, which will in turn result in a significant replacement of freshwater consumption in the Processing Plant.

The reporting year saw the Mechanical seals project materialise whereby seals were installed on the slurry pumps at the slimes station in an effort to reduce freshwater consumption within the Processing Plant.

We also undertook the Storage lake cleaning project, which aims at increasing our storage capacity for poor-quality water to be used in the Processing Plant.



*The map shows the approximate position of the seepage plume around the Tailings Storage Facility.*

### Desalination

During early 2015, the social and environmental impact assessment (SEIA) for the construction and management of a desalination plant to supply the mine's water needs, was completed.

The assessment report and environmental management plan were submitted to the Ministry of Environment

and Tourism for review and a decision on whether or not we can implement the proposed desalination project from a social and environmental perspective.

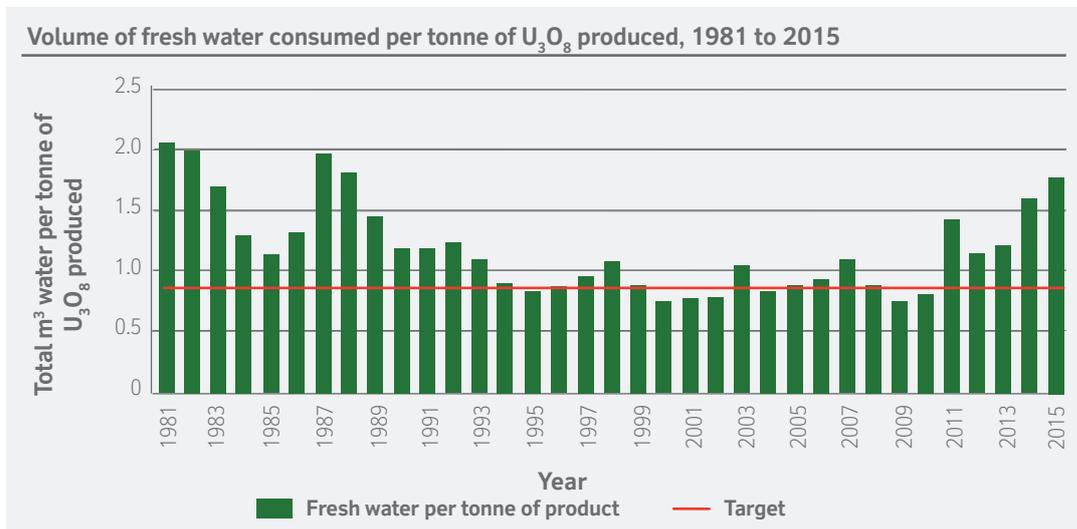
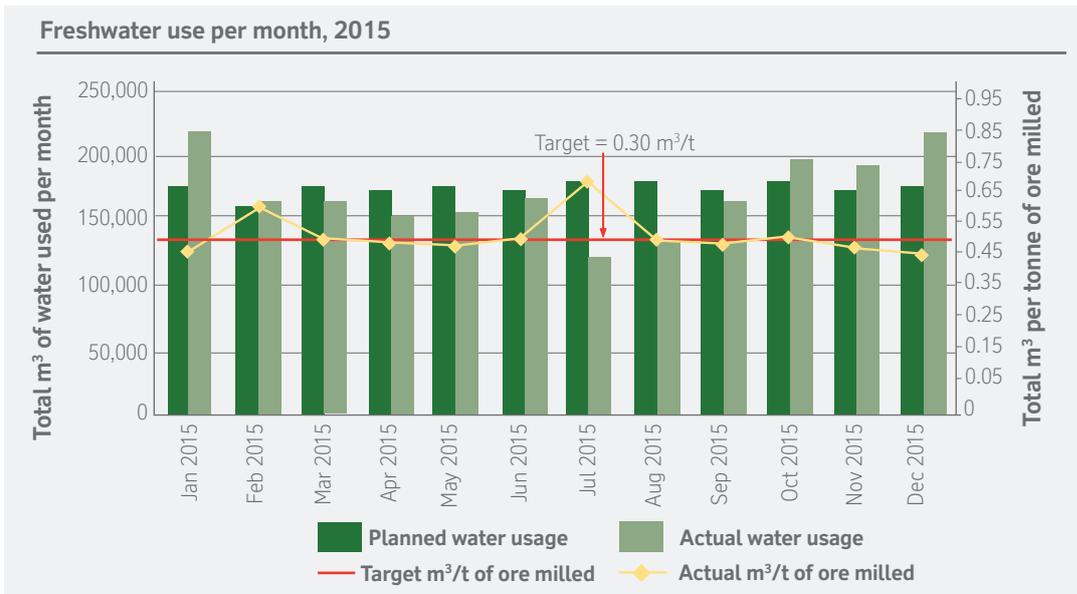
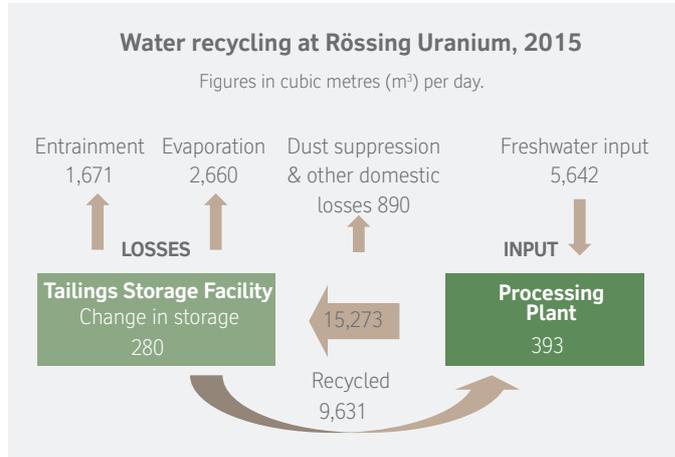
Unfortunately, an environmental clearance certificate was not issued by the Ministry. An appeal was lodged against that decision. The case was not heard by the end of 2015.

**Khan River water use**

Rössing Uranium resumed its abstraction of saline groundwater from the Khan aquifer after the good rainy season in August 2011 to suppress dust in the open pit.

Such abstraction continued until June 2014, when the permit issued by the Department of Water Affairs and Forestry expired.

A new permit valid for two years until 25 March 2017 was received in April 2015 and an average of 115 m<sup>3</sup> of saline water per day was abstracted during 2015. This is 5 per cent of the permitted abstraction and 19 per cent of the aquifer's sustainable yield.



We continue to monitor the vegetation and water levels in the Khan River to prevent over-abstraction.

In accordance with the conditions of the abstraction permit, annual reports derived from the monitoring programme are sent to the Ministry of Agriculture, Water and Forestry's Department of Water Affairs and Forestry.

### Air-quality management

Air-quality management in mining is a complex task, mainly due to the wide range of source types, the fact that most are diffused and highly variable in nature, difficult to measure, and site-specific in terms of silt and moisture contents.

Our mining and milling activities create emissions to air. Dust is generated during blasting, loading and tipping of ore and

waste, as well as during crushing and conveying of ore.

Winds at speeds above 30 km/h have the potential to erode fine particles from rock dumps and the TSF and disperse them into the wider environment.

Noise and ground vibrations are created during blasting that takes place about once a week, while the machinery deployed in the open pit and the Processing Plant generates environmental noise continuously.

In order to ensure that the controls for all the above emissions are functional, an environmental monitoring network was established around the mine site (see map on the left).

Monitoring the meteorological conditions at the same time allows drawing conclusions about the effectiveness of our controls.

### Environmental dust

Dust is measured in particulate matter (PM) ranging in diameter from 10 to 50 micrometres. Activities such as mining, crushing and driving of heavy vehicles on unpaved roads are the principal emitters of dust at the mine.

PM10 is the measure of particles in the atmosphere with a diameter of less than or equal to a nominal 10 micrometres. These particles can be inhaled without being filtered out by the body and therefore can reach the lungs.

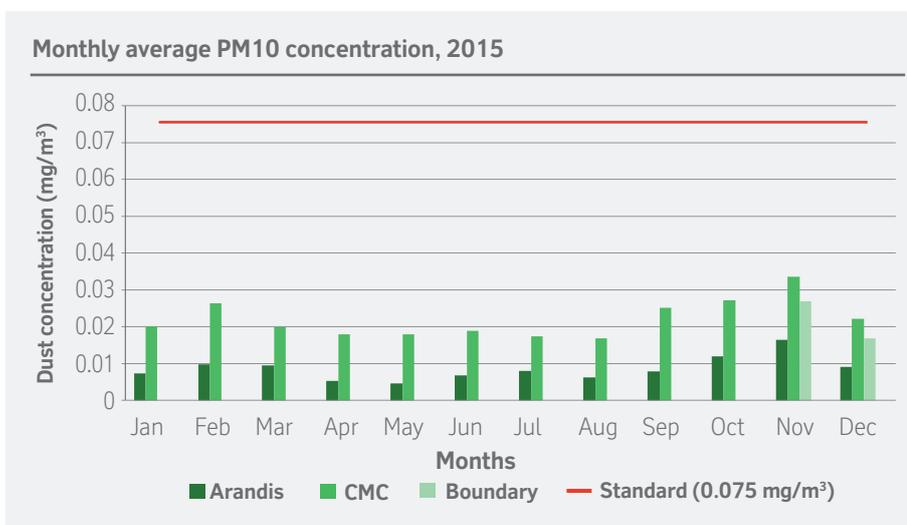
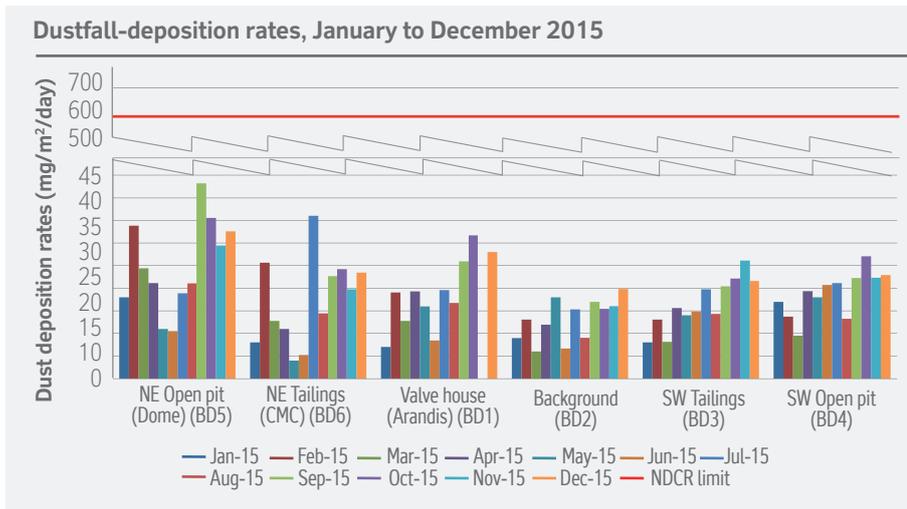
We monitor PM10 dust levels on site and at the nearby town of Arandis with continuous dust monitors (see the blue dots on the map on this page).

The levels recorded in Arandis for 2015 showed that dust concentrations were substantially lower than the World Health Organisation standard of 0.075 mg/m<sup>3</sup>, as indicated in the graph on the next page, with an average of 0.01 mg/m<sup>3</sup> for the year.

Three more continuous PM10 dust monitors are located at the mine: one at the mine boundary towards the west; and one to the east and one to the west of the TSF.



*A dust monitoring programme is underway to quantify the emission of total suspended dust from the Tailings Storage Facility during east wind events.*



It was confirmed during the year that higher dust levels are associated with higher wind speeds, independent of whether a mine-related dust source is located upwind or not.

Total dust fall-out is measured at six stations at the mine boundary (see the single red dots away from the TSF on the map).

We adopted the residential dust fall-out limit published in South Africa by the National Dust Control Regulations (NDCR) on 1 November 2013. The fall-out limit is 600 mg/m<sup>2</sup> per day with an annual average target of 300 mg/m<sup>2</sup> per day.

Values measured during 2015 at the six stations ranged between 7 and 43 mg/m<sup>2</sup> per day with an annual average of 18 mg/m<sup>2</sup> per day (see graph on this page: Dustfall-deposition rates, January-December 2015).

A dust monitoring programme is underway to quantify the emission of total suspended dust from the TSF during east wind events.

This is attempted by measuring dust movement along a section of 17 dust samplers along the western edge of the facility. In addition, a 1.3 km-long transect of dust fallout samplers determines how much of this dust is deposited downwind from the tailings area to the south west (see yellow dots on the map).

It was estimated that during 2015 a total of 26 tonnes of dust was moved across the line of the 17 dust samplers shown on the map.

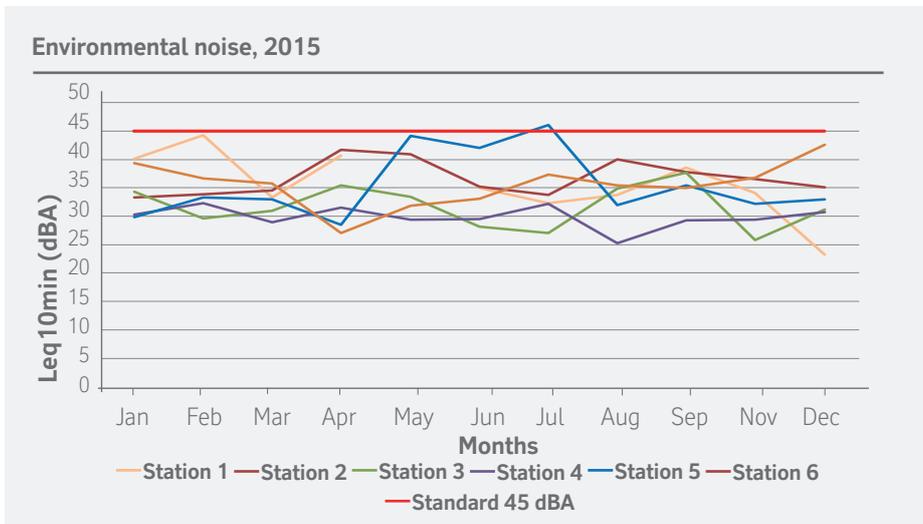
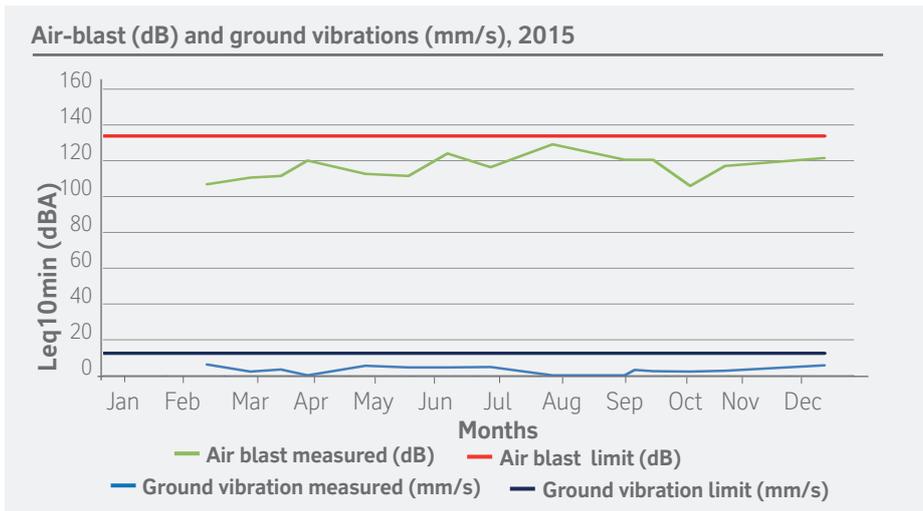
From the measuring results obtained at the 1.3 km-long transect it is estimated that only 20 per cent reached the wider environment and were deposited up to 900 m away from the TSF towards the south west (see red dots on the map).

A total of 80 per cent of the mobilised dust falls out in the first 200 m downwind of the line of the 17 dust samplers. Fall-out rates measured in the 900 m-strip were all well below the residential dust fall target of 300 mg/m<sup>2</sup>-day.

### Noise and vibration

We monitor environmental noise in order to minimise it to threshold levels and to identify events when such levels are exceeded. When we started with the development of the Phase 2 portion of the open pit a number of years ago, initially blasting took place at the surface areas.

Blasting noise was audible over greater distances from the open pit and concerns were raised by the public that blasting vibration could affect infrastructure away from the mine. In order to monitor the effect of blasting on the mine and in Arandis, vibration monitoring is being carried out continuously.



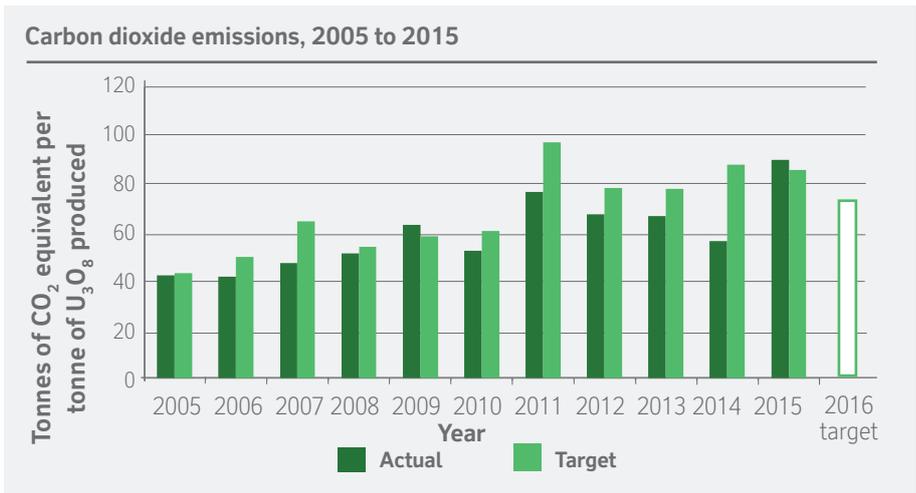
During 2015, monitoring showed that ground vibration and air-blast stayed within the limits of 12.5 mm/s and 134 dB respectively throughout the year (see graph on the next page) and no concerns were raised by the public.

Noise generated by the routine operations of the mine is compared to the 45 dB(A) daytime limit for rural districts in accordance with the South African National Standards code of practice, SANS 10103:2008. Noise levels measured stayed within the limits throughout 2015 (see graph above).

### Energy efficiency and greenhouse emissions

Rio Tinto regards efforts to stabilise global atmospheric concentrations of greenhouse gases (GHGs) at lower levels as a priority. In keeping with this, we measure and manage our emissions.

At the mine, sources of GHG emissions include electricity and fuel consumption,



the transportation of reagents and of uranium, blasting (explosives), waste management areas (Sewerage Plant and landfill site), and the extraction and processing of ore. The intensity of emissions is reported per unit of uranium oxide produced.

In 2015, the total energy consumption of the mine was 1,777,420 GJ. This converts to an annual energy consumption of 714 GJ per tonne (GJ/t) of uranium oxide produced, which is 276 GJ/t of uranium oxide produced above the target of 438 GJ/t.

Energy consumption, 2011 to 2015



Thus, due to lower grade and a lower throughput of ore, the target was exceeded in 2015.

Emissions of carbon dioxide (CO<sub>2</sub>) per unit of production in 2015 amounted to 85.87 tonnes of CO<sub>2</sub> equivalent per tonne (CO<sub>2</sub>-e/t) of uranium oxide (U<sub>3</sub>O<sub>8</sub>), which is below the projection of 90 tonnes CO<sub>2</sub>-e/t of U<sub>3</sub>O<sub>8</sub> for the year.

Substantially curtailed production since 2014 resulted in our energy consumption and GHG emissions per unit of production being higher than projected in 2008.

New projections have been set for the years 2016 to 2020, taking the new production scenarios into account.

## Waste management

### Mineral waste

During 2015 a total of 19.3 million tonnes of mineral waste were generated by the mine. This includes 12.5 million tonnes of waste rock and 6.8 million tonnes of tailings.

The reduction from 23.0 million tonnes generated in 2014 is due to the curtailment of production linked to uranium market

forces. A similar tonnage of waste generation is projected for 2016.

The total cumulative mineral waste stored on-site at the end of December 2015 amounted to 408.9 million tonnes of tailings and 923.4 million tonnes of waste rock.

Mineral waste facilities cover a total area of 1,372 ha north-west of the Khan River. This reflects no change from 2014 and the storage facilities only gained in height but not in footprint.

An erosion protection and sediment retention structure was completed in Dome Gorge, a tributary to the Khan River. This will prevent sediment from the rock dump deposited close to the Khan to reach the river.

In addition to mineral waste consisting of waste rock and tailings, domestic, industrial and hydrocarbon waste produced at the mine has to be managed as well. A contract with a recycling contractor came to an end in September 2015.

A new contract is being negotiated, extending the scope to an integrated waste management approach including waste reduction, reuse, recycle, and various disposal alternatives. The waste management operations will become fully operational in the first half of 2016.

### Non-mineral waste

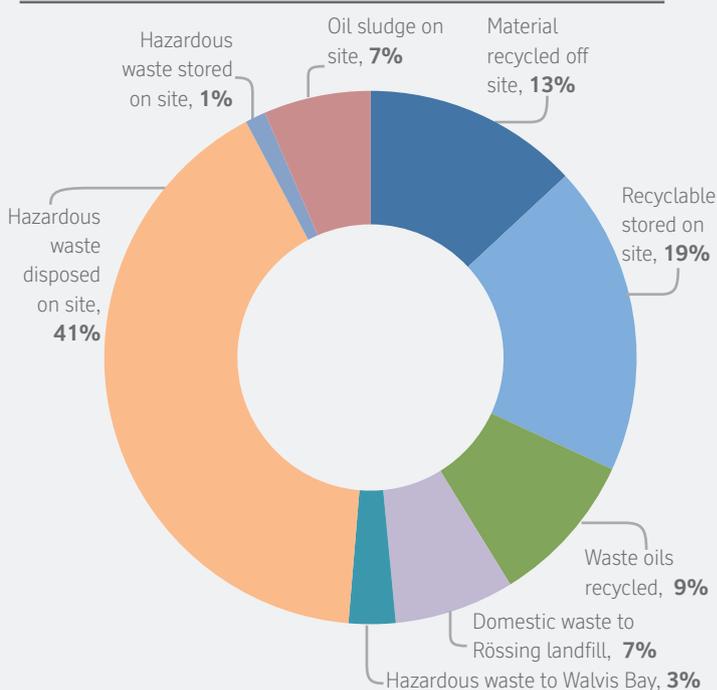
Recycling of waste generated at the mine continued during 2015. In total, 455 tonnes of recyclable waste (mainly scrap metal) were removed by the waste management contractor.

Of the recyclable materials generated during 2015, 201 tonnes are still stored on site. These materials include paper, plastic containers, batteries, redundant tyres and conveyor belts. A total of 159 tonnes of used oils were sent off site for recycling.

The mine's landfill site received 124 tonnes of domestic and light industrial waste.

Uncontaminated hazardous waste generated on the mine includes oils and greases, and other items such as fluorescent tubes and batteries. In total, 48 tonnes of hazardous waste were disposed of at the Walvis Bay hazardous waste site. We store 110 tonnes of oil sludge in the bioremediation facility on the TSF, while 21 tonnes of radioactively contaminated hydrocarbons are stored on site. We disposed of 695 tonnes of hazardous waste in the hazardous waste site on the TSF.

Breakdown of waste generated and disposed of (%), 2015





*An erosion protection and sediment retention structure was completed in Dome Gorge, a tributary to the Khan River. This will prevent sediment from the rock dump deposited close to the Khan to reach the river.*

## Land-use management

### Changes in total land use

As mining progresses, the SJ Pit gets deeper every year, while the rock dump area and TSF gain in height.

We decided to extend these mineral waste storage facilities in height rather than increasing their footprint. Although this measure results in conserving undisturbed land, it increases the visual impact that mining has on the surroundings. The TSF, for example, has become more visible from the B2 main road as its height increased in the last few years.

The total area covered by the mine's activities at the end of 2015 was 2,544 ha. By conforming to the policy of maintaining the smallest footprint possible, we achieved minimal change in total land disturbed in 2015. The footprint area increased by 0.2 ha this year compared with 2.8 ha in 2014.

### Biodiversity management

During 2015 the emphasis of biodiversity management was changed from assessing the impact of potential future developments in currently undisturbed areas to investigating ways to successfully rehabilitate areas already impacted. This is an important development, since restoration in the desert environment is a very slow process and careful monitoring needs to start early to assess its success.

Reviewing the results of monitoring invertebrates (insects without backbones) over a five year period, showed that biodiversity index values for current sampling sites display the same broad trends today as they did in 1983.

This is heartening because it suggests that, despite the permanent habitat destruction in the core mining area, in general effects seem to be limited by distance. Most of the surrounding areas do not show any catastrophic changes to invertebrate biodiversity in the past 30 years.

Going forward, invertebrate and flora biodiversity in historically active but now dormant areas will be monitored to see how the natural environment has re-established itself over longer periods.

Currently, we are studying the effect of tailings dust dispersion on the ecology to the southwest of the TSF. Initial results indicate that dispersion does not have any obvious large scale effect on invertebrates or other fauna in the area.

We expected that increased dust deposition would have negatively affected biological soil crust, by reducing the translucency of the rocks under which it forms and the sunlight it needs for photosynthesis.

However, the initial results of the assessment do not show any clear trends across the study area that can be attributed to dust deposition. *Fensteralgen* (or 'window lichen', a type of lichen that grows in parts of the Namib Desert) are common and abundant both inside and outside the study area and both near to and far from the TSF. The flora assessment is still ongoing while laboratory data are awaited.

In addition, during the reporting year, we developed rehabilitation success criteria and discussed it with stakeholders.

During 2016 work will start to rehabilitate old sand mining pits used during the construction of the mine nearly 40 years

ago. Learnings from the exercise will be incorporated into the mine's rehabilitation and closure plans.

### Closure planning

Current life-of-mine plans foresee cessation of production at the end of 2025.

Principally, we will not backfill the open pit with rock: it will remain a mining void in the future. On the other hand, we will cover the TSF with waste rock to prevent dust emissions and stormwater erosion. We will continue recovering tailings seepage, but instead of reusing it for mining processes, it will be allowed to evaporate.

We will also break down the Processing Plant and the mine's infrastructure, and decontaminate it before selling it or disposing of it safely.

To achieve these objectives and targets, we have developed implementation plans for mitigatory measures and calculated the necessary closure costs. A major technical and cost update of the plan will again take place in 2016.

The establishment of the Rössing Environmental Rehabilitation Fund, which provides for the mine's closure expenditure, complies with statutory obligations and stipulated requirements of both the Ministry of Mines and Energy and the Ministry of Environment and Tourism.

Accordingly, clause 15.2 of the Fund Agreement states that "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".

At the end of December 2015, the fund had a cash balance of N\$505 million. The total cost of closure excluding retrenchment costs is estimated at N\$1.4 billion. The mine will make additional payments to the fund each year to provide for the eventual total cost of closure by 2025.

### Tailings cover test section

During the previous reporting year, we planned to construct a cover test section of the TSF in mid-2015 in order to test the practicality of the cover's design and its effectiveness.

However, due to ore production being below plan during this reporting year, to use the crusher for a campaign to only crush waste rock was not feasible. No suitable cover material was therefore available and the test cover could not be constructed.

## CASE STUDY:

# Monitoring of Damara Terns at Mile 4 salt works

*This case study illustrates how specialist studies have influenced management decisions, changed development plans and consequently protected the environment.*

A social and environmental impact assessment was completed during 2015 which assessed the feasibility of establishing a Rössing Uranium-owned desalination plant at the Mile 4 salt works. One of the critical environmental issues identified early in the scoping phase of the project was the location of the desalination plant close to the Mile 4 oyster pond.

Although a literature search and local sources indicated that Damara Terns had been recorded and had bred regularly at this site, more detailed and updated information was required on the distribution, numbers and breeding success at this site to make a final decision on the location of the proposed desalination plant. The original layout had the desalination plant positioned centrally within this core breeding area.

Although the footprint of the plant is much smaller than the breeding site, any form of intrusive disturbance during the breeding season, when the birds are present from October to April, could result in reduced breeding success or in the Damara Terns abandoning this breeding site, probably permanently.

It was discussed early on whether the plant needed to be relocated out of the core Damara Tern breeding area. However, the exact extent of the area was not known and it was decided to observe breeding behaviour before a final decision on the location of the plant was to be taken.

Due to the potential sensitivity of the site as identified during the scoping study phase, the bird specialists initiated regular monitoring visits three times per week from 15 September 2014 onwards. The purpose was to establish when the birds arrived and the activities they engaged in, and to verify whether, when and where they would take up sites. The terns arrived on 8 to 11 October 2014 and the study was completed on 28 April 2015.

The detailed study showed that the Mile 4 breeding site and surrounding areas were used by at least 32 adult Damara Terns during the peak of the season, whereas up to 52 adults were recorded at the roost site. At least seven chicks were recorded, with nine fledglings at the roost site in March 2015. The study confirmed that the categorisation of the breeding area as 'sensitive' in terms of the environmental impact assessment was justified, given that at least 15 nest sites were occupied over the studied season.

It also showed that the area designated as a buffer area was equally important as a nursery area for rearing chicks before they fledged. These findings indicated that the area as a whole is important for around 2 per cent of the global Damara Tern population, and thus of conservation significance.

A decision was taken to shift the desalination plant away from the sensitive site and an alternative site was identified. The alternative location was taken forward in the assessment report submitted for approval by the Environmental Commissioner of the Ministry of Environment and Tourism.

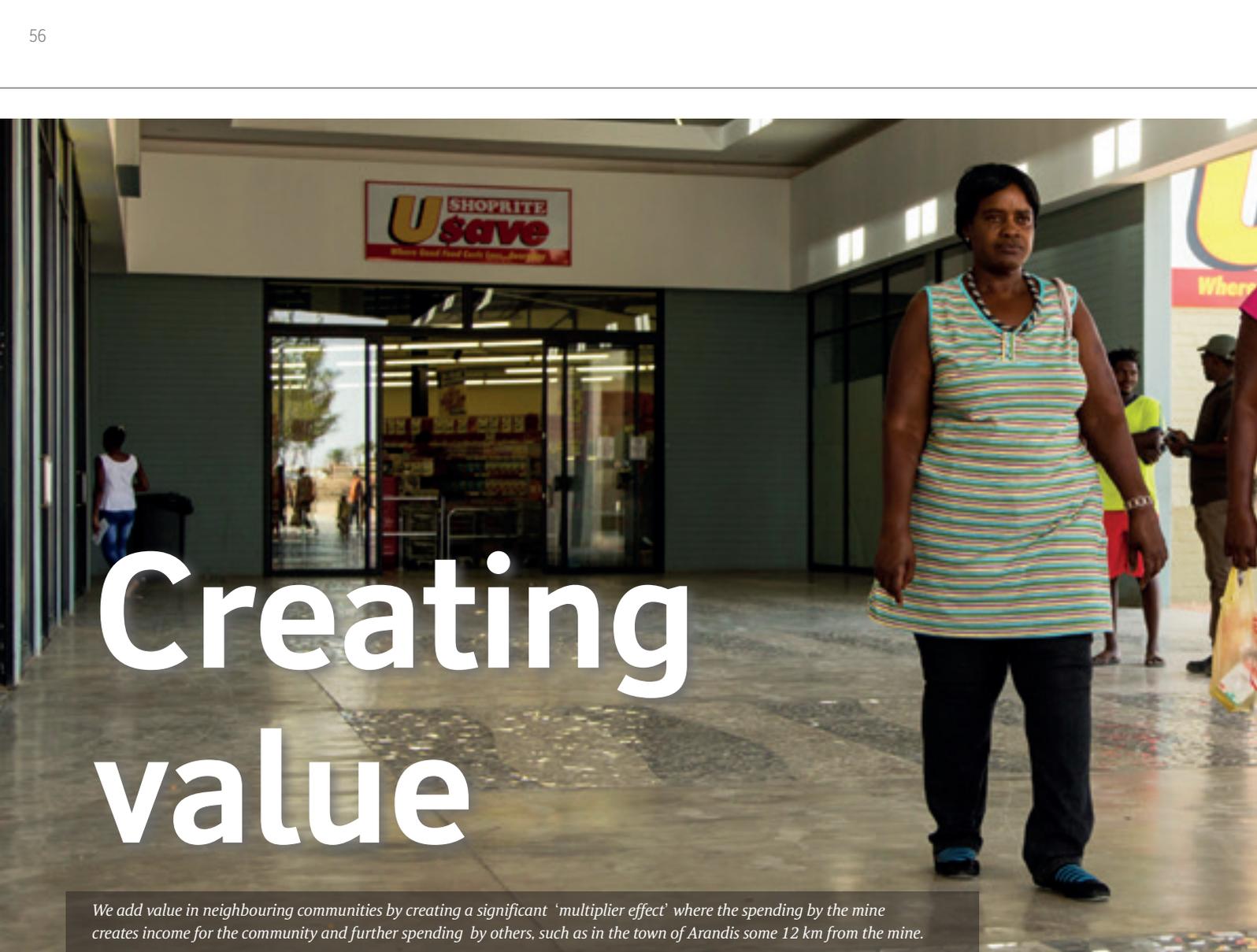
(Photographs: The two photographs of Damara Tern parent with chick, and of chick were supplied by Justine Braby; the photograph of Damara Tern in flight was supplied by Gunnar Petterson.)





Damara terns (*Sterna balaenarum*) are very small, fast-flying terns endemic to the Namib Desert coastline. This species is listed as 'Near Threatened' owing to its moderately small population.





# Creating value

*We add value in neighbouring communities by creating a significant 'multiplier effect' where the spending by the mine creates income for the community and further spending by others, such as in the town of Arandis some 12 km from the mine.*

*Our Value Added Statement (on page 59) 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 neighbouring communities.*

## **How Rössing Uranium adds value**

Sustainable development is underpinned by sustainable economies. Our continuing operations are based on our ability to secure access to land, people and capital.

We use our economic, social, environmental and technical expertise to harness these resources and create prosperity for our shareholders, employees and communities, as well as for the Namibian Government and our business partners.

As a major employer and purchaser of goods and services, we make a significant annual contribution to economic development in the Erongo Region in particular and to Namibia at large.

During the reporting year the uranium price continued to be under pressure. The significantly lower uranium price — combined with a much lower uranium oxide production of 1,245 tonnes in 2015

compared with 1,543 tonnes in 2014 — resulted in our revenue decreasing from N\$2.4 billion in 2014 to N\$1.8 billion in 2015.

For the second year, we realised a net loss from normal operations: in 2015, N\$385 million and in 2014 N\$91 million.

Despite the current financial strain under which we operate, we invested N\$18 million in our neighbouring communities during 2015, either directly or through the Rössing Foundation.

The review period also saw us continue to demonstrate our value to Namibia through contributions to the fiscal authorities. Rössing Uranium paid the Receiver of Revenue N\$54 million in royalty tax, and N\$88 million in pay-as-you-earn tax on behalf of employees. Payments to state-owned enterprises such as NamWater and NamPower amounted to N\$314 million, which includes the training levy paid to the



National Training Authority of N\$5 million. We also spent N\$453 million in net salaries and wages.

The graphs on page 58 summarise the highlights of various value additions Rössing Uranium has made since 2011. Cash flows to the various stakeholders are set out in our Value Added Statement on page 59.

### Our procurement spend

Rössing Uranium gives rise to a significant 'multiplier effect' — the phenomenon where spending by one company creates income for and further spending by others.

Given the prevailing market conditions, our primary focus was to procure goods and services as cost-effectively and efficiently as possible and to focus on maximising our contribution to the local economy.

In 2015, we spent N\$1.78 billion on goods and services for our operations. As during the previous reporting year, most

of the procurement expenditure was on Namibian-registered suppliers, amounting to N\$1.29 billion, accounting for 73 per cent of our total procurement expenditure.

N\$222 million was spent with South African suppliers, representing 12 per cent of our procurement expenditure, while we spent N\$263 million with international suppliers, representing 15 per cent of our total expenditure.

The bulk of the Namibian spend remains in the Erongo (48 per cent) and Khomas (52 per cent) regions.

We remain committed to supporting local suppliers with the main focus on developing small- and medium enterprises, equipping them with the necessary skills and knowledge to compete with international suppliers.

Our activities in Namibia lead to a long chain of value addition throughout the economy and we have a significant impact

on supporting local suppliers. Through commercial agreements with international or foreign-owned enterprises, the Procurement department aims to enforce local support through skills transfer and local employment in the coming year.

On 2016, our local spend is expected to increase, mainly due to the procuring of sulphuric acid from Dundee Precious Metals, based in Tsumeb.

### Preferential procurement and enterprise development

Namibia's socioeconomic and political environment places significant value on the advancement of persons regarded as disadvantaged by past discriminatory laws or practices.

With the aim of securing economic growth, prosperity and the human dignity of all Namibians, the Government developed the national, broad-based New Equitable Economic Empowerment Framework (NEEEF).

NEEEF targets various private sector industries in order to ensure that socioeconomic benefits created through their local operations are distributed to those regarded as previously disadvantaged.

The framework is designed to be an incentive-driven set of policies to encourage businesses to take transformation seriously.

The Namibian Government established a commission to promote and administer the NEEEF. Companies are scored by the commission according to six 'pillars of empowerment'.

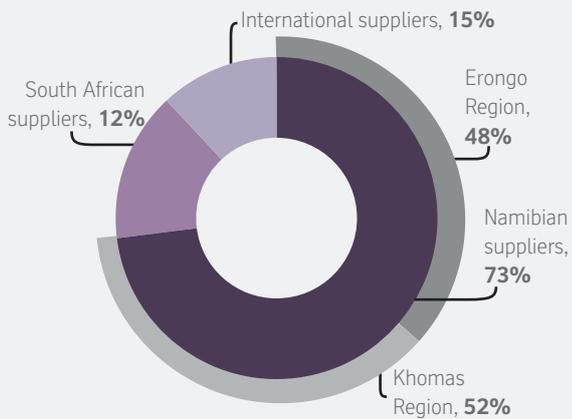
The mine's Community and Social Investment Steering Committee was established with an advisory and coordinating function to Rössing Uranium's Board of Directors and management, who are to ensure the implementation of its community and social responsibility intent in Namibia. The committee meets on a quarterly basis and provides monthly update reports and quarterly update papers to the board.

## Summary of Rössing Uranium's value addition

Our business provides a strong base for economic growth in the communities around us, in the Erongo Region, and in Namibia as a whole. Our economic contribution comprises the value we add by paying wages, employee benefits and Government taxes and royalties, as well as by making dividend and interest payments and by retaining capital to invest in the growth of the mine.

In addition, we make significant payments to our suppliers of goods and services, both locally and nationally. The graphs shown below highlight some of the key socioeconomic contributions we have made to Namibia over the past five years, ie from 2011 to 2015.

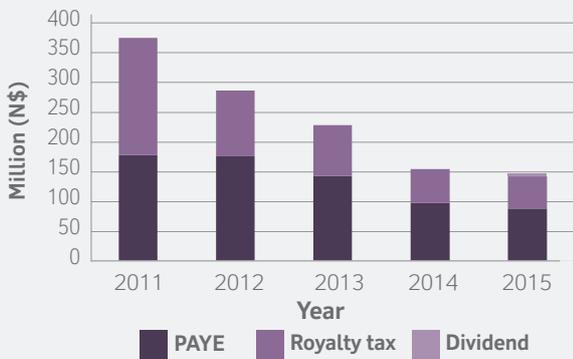
**Distribution of Rössing Uranium's procurement spend, 2015**



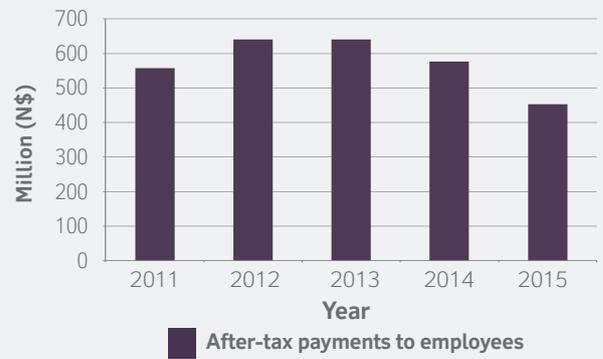
**Payments to suppliers, 2011 to 2015**



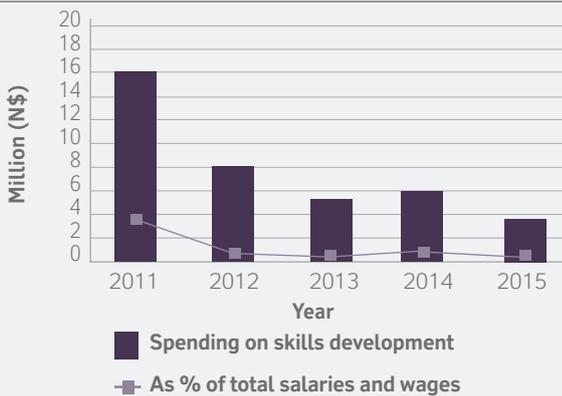
**Contribution to Government revenue, 2011 to 2015**



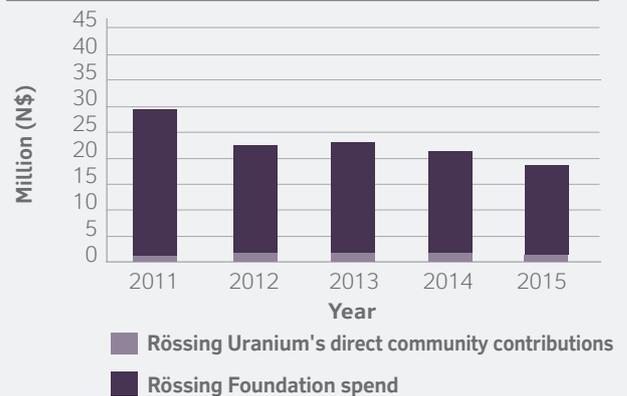
**After-tax payments to employees, 2011 to 2015**



**Contribution to skills development, 2011 to 2015**



**Contribution to neighbouring communities, 2011 to 2015**



<b>Our value addition</b>						
<b>Stakeholders' Value Added Statement <sup>1</sup></b>	<b>Notes</b>	<b>N\$'000</b>	<b>N\$'000</b>	<b>N\$'000</b>	<b>N\$'000</b>	<b>N\$'000</b>
<b>For the year ended</b>		<b>2015</b>	<b>2014</b>	<b>2013</b>	<b>2012</b>	<b>2011</b>
Turnover		1,841,012	2,405,747	2,969,440	2,880,399	3,265,170
Less: Purchased material and services from non-stakeholders		1,347,984	1,597,397	1,894,295	2,171,879	2,679,865
<b>Total value added</b>		<b>493,028</b>	<b>808,350</b>	<b>1,075,145</b>	<b>708,520</b>	<b>585,305</b>
Investment income		39,361	38,735	22,733	17,098	30,935
<b>Total wealth created</b>		<b>532,389</b>	<b>847,085</b>	<b>1,097,878</b>	<b>725,618</b>	<b>616,240</b>

Employees	1	541,761	674,138	783,332	817,032	736,316
Providers of equity capital		111,798	-	-	-	-
Providers of loan capital		-	-	-	-	6,002
Government	2	371,891	414,288	394,774	385,224	427,035
The Rössing Foundation		12,000	1,394		-	-
Reinvested in the Group	3	(505,061)	(242,735)	(80,228)	(476,638)	(553,113)
<b>Total wealth distributed</b>		<b>532,389</b>	<b>847,085</b>	<b>1,097,878</b>	<b>725,618</b>	<b>616,240</b>

<sup>1</sup> Stakeholders in this context: Shareholders, Government, lenders, employees and the Rössing Foundation

<b>Notes to the Stakeholders' Value Added Statement</b>						
<b>1. Employees</b>		541,761	674,138	783,332	817,032	736,316
- Net salaries and wages		453,379	576,379	640,039	640,842	557,655
- Pay-as-you-earn (PAYE) taxes		88,382	97,759	143,293	176,190	178,661
<b>2. Government</b>		371,891	414,288	394,774	385,224	427,035
- Dividend		3,956	-	-	-	-
- Erongo Regional Electricity Distributor		2,372	2,584	2,599	2,630	2,481
- Mining royalty tax		54,132	56,828	85,240	110,183	196,046
- NamWater		101,129	142,392	59,716	39,488	37,948
- NamPost		-	-	-	25	7
- NamPort		2,271	2,064	1,658	1,897	2,688
- NamPower		178,852	183,188	214,639	189,428	137,570
- Rates, taxes and licences		3,239	2,492	1,948	2,408	1,670
- National Training Authority		5,013	4,756	-	-	-
- Receiver of Revenue		-	-	-	-	-
- Current tax		-	-	-	-	-
- Road Fund Administration		1,349	1,229	1,084	1,123	1,204
- Telecom Namibia		2,683	3,843	4,671	5,777	7,153
- TransNamib		16,895	14,912	23,219	32,265	40,268
<b>3. Reinvested in the Group</b>		(505,061)	(242,735)	(80,228)	(476,638)	(553,113)
- Depreciation		279,842	262,876	228,627	243,860	202,669
- Retained earnings		(384,780)	(90,877)	31,586	(193,887)	(61,356)
- Deferred stripping capitalised		(227,591)	(340,564)	(355,305)	(455,603)	(645,720)
- Deferred tax		(172,532)	(74,170)	14,864	(71,008)	(48,706)



# Our corporate governance

## Rio Tinto Integrity and compliance programme

We adopt 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*, our global code of business conduct, which applies to all employees and contractors.

## The board

Our board of directors executes the mandate they have received from our shareholders to ensure that Rössing Uranium Limited is a world-class and responsible company by putting an executive team in place with certain targets to be achieved.

Furthermore, the board is responsible for ensuring that the company is run in accordance with its mandate as defined in Rössing Uranium's Articles of Association, and that the various stakeholder interests are balanced and receive the required attention.

Rössing Uranium has a unitary board. The roles of the 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 members make significant decisions.

The board is constituted with the appropriate mix of skills, experience and diversity to serve the interest of the company and its stakeholders.

The board of directors are constituted as indicated on the table on page 61, with four meetings having been held during 2015.

## Functions of the board

A board charter governs the workings of the board of directors, while the Nomination and Remuneration Committee monitors the board's performance. The board is responsible for adopting a corporate strategy, major plans of action and for monitoring operational performance. This includes identifying risks which impact on the company's sustainability as well as monitoring risk management and internal controls, compliance management, corporate governance, business plans, key performance indicators, non-financial criteria and annual budgets.



The board is also 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, namely the Rössing Foundation and the Rössing Environmental Rehabilitation Fund, which are managed independently from Rössing Uranium by their own sets of trustees. Members of Rössing Uranium's board are among these trustees.

Rössing Uranium Limited established the Rössing Foundation in 1978 through a Deed of Trust to implement and facilitate its corporate social responsibility activities within the communities of Namibia.

Directors as at 31 December 2015	Role
J Gawaxab	Chairperson, independent non-executive director
W Duvenhage	Managing director (executive director)
A S I Angula	Independent non-executive director
E H T Angula	Independent non-executive director
S C Trott	Rio Tinto plc shareholder representative; non-executive director
T J Wilcox (alternate to S C Trott)	Rio Tinto plc shareholder representative; non-executive director
F Fredericks	Independent non-executive director
J S Louw	Non-executive director
H P Louw (alternate to J S Louw)	Independent non-executive director
E I Shivolo	Government of the Republic of Namibia's shareholder representative; non-executive director
CWH Nghaamwa (alternate to E I Shivolo)	Government of the Republic of Namibia's shareholder representative; non-executive director
M L Mothoa	Rio Tinto plc shareholder representative; non-executive director
D S Kunji-Behari (alternate to M L Mothoa)	Rio Tinto plc shareholder representative; non-executive director

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

## The Corporate Governance Code for Namibia (NamCode)

Rössing Uranium has adopted the NamCode, effective from 1 January 2014, and based on international best practices and the King Code of Governance for South Africa, 2009. Deviations from the NamCode are listed in the table below.

## Financial statements

The directors are responsible for monitoring and approving the company's

financial statements to ensure that they fairly present its affairs and profits or losses 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.

Rössing Uranium's management prepares the financial statements in accordance with the International Financial Reporting Standards and in the manner which the Namibian Companies Act (Namibian Companies Act (28) of 2004, amended 2011) requires.

The company bases its statements on appropriate accounting policies that

it applied consistently and which are supported by reasonable and prudent judgements and estimates.

## Independence of external auditors

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

Deviations from the NamCode	
NamCode 16.1: The chairman should be appointed by the board every year after carefully monitoring his independence and factors that may impair his independence.	Rössing Uranium Articles of Association Art. 82: Chairman elected for a period to hold office determined by the directors. If no period determined then chairman shall hold office until otherwise determined by the directors.
NamCode 16.10: There should be a succession plan for the position of the chairman.	Nomination and Remuneration Committee: An agenda item has been added for May 2016 to consider the appointment of a deputy chairman as part of a succession plan.
NamCode 18.12: As a minimum two executive directors should be appointed to the board, being the chief executive officer (CEO) and a director responsible for the finance function (CFO). This will ensure that there is more than one point of contact between the board and management.	In line with the board decision to reduce its size. The chief financial officer is available at all the meetings to answer questions and make representations to the board.
NamCode 18.17: (see 18.16) Independent non-executive directors may serve longer than nine years if, after an independence assessment by the board, there are no relationships of circumstances likely to affect, or appearing to affect, the director's judgement. A statement to this effect should be included in the integrated report.	Rössing Uranium Board Charter: The length of service which a non-executive director may serve is to be limited to three terms of three years each and a prescribed retirement age of 70 with the directors' discretion to overrule if deemed fit.
NamCode 26: Companies should disclose the remuneration of each individual director and certain senior executives.	The remuneration of directors and senior management disclosed to shareholders. Rössing Uranium does not propose to disclose this information to the public.
NamCode 27: 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.

## Company secretary

The company secretary, 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.

## Risk report

Risk management is a fundamental part of the company's business. The company keeps risk management at the centre of its activities and has cultivated a culture in which risk management is embedded in the daily management of the business.

The board acknowledges its overall responsibility for the process of risk management as well as for reviewing its effectiveness.

Executive management accounts to the board for designing, implementing and monitoring the process of risk management as well as for integrating it with the company's day-to-day activities. To this end, the company has fully adopted and implemented the Rio Tinto Group risk policy and methodology.

## Internal audit

The company's internal audit function performs an independent appraisal activity with the full cooperation of the board and management.

It has the authority to independently determine the scope and extent of work to be performed. Its objective is to help executive management with the effective discharge of their responsibilities by examining and evaluating the company's activities, resultant business risks and systems of internal control.

The mandate of the internal audit function requires it to bring any significant control weaknesses to the attention of management and the Board Audit and Risk Committee for remedial action.

The internal audit function is outsourced to KPMG. The internal audit reports functionally to the company's Board Audit and Risk Committee and administratively to the company secretary.

## Internal control

Internal control comprises methods and procedures that management has implemented to ensure:

- compliance with policies, procedures, laws and regulations;
- authorisation, by implementing the appropriate review and approval procedures;
- reliability and accuracy of data and information: information used in the decision-making process at Rössing Uranium needs to be accurate, timely, useful, reliable and relevant;

- effectiveness and efficiency: all operations at Rössing Uranium need to be effective and efficient, with the most economical use of resources, while adding value to the economy. Rössing Uranium accomplishes this by continuously monitoring its goals and by embodying the credo that "That which is measured is controlled"; and
- safeguarding of assets: assets need to be protected from theft, misuse and use for fraudulent purposes and/or destruction.

The directors are responsible for maintaining an adequate system of internal control. It is understood that such a system reduces, but cannot always entirely eliminate, the possibility of fraud and error.

# Condensed financial statements

## CONDENSED STATEMENT OF FINANCIAL POSITION FOR THE YEAR ENDED 31 DECEMBER 2015

	Notes	Audited 2015 N\$'000	Audited 2014 N\$'000
<b>ASSETS</b>			
<b>Non-current assets</b>			
Property, plant and equipment	5	3,310,150	3,169,492
Defined benefit pension asset		57,801	78,551
Rössing Environmental Rehabilitation Fund		504,702	415,065
<b>Current assets</b>			
Inventories	7	616,090	564,825
Trade and other receivables		252,454	163,252
Rio Tinto Finance Ltd		3,198,205	2,374,509
Cash and cash equivalents		239,270	775,026
Restricted cash		74,517	57,576
Assets held for sale	6	4,496	4,496
<b>Total assets</b>		<b>8,257,685</b>	<b>7,602,792</b>
<b>EQUITY AND LIABILITIES</b>			
<b>Equity</b>			
Share capital		223,020	223,020
Retained earnings		5,837,949	5,506,152
<b>Non-current liabilities</b>			
Interest-bearing borrowings	8	10,784	11,809
Deferred tax liabilities		115,461	287,993
Provision for closure and restoration costs		1,064,949	1,014,081
Post-employment obligation		13,419	14,440
<b>Current liabilities</b>			
Bank overdraft		830	-
Trade and other payables		990,248	544,367
Current portion of interest-bearing borrowings	8	1,025	930
<b>Total equity and liabilities</b>		<b>8,257,685</b>	<b>7,602,792</b>

## CONDENSED STATEMENT OF CHANGES IN EQUITY FOR THE YEAR ENDED 31 DECEMBER 2015

	Share capital N\$'000	Retained Earnings N\$'000	Total N\$'000
<b>Balance at 1 January 2015</b>	223,020	5,506,152	5,729,172
Total comprehensive income and expenses	-	447,551	447,551
Dividends paid	-	(115,754)	(115,754)
<b>Balance at 31 December 2015</b>	<b>223,020</b>	<b>5,837,949</b>	<b>6,060,969</b>
<b>Balance at 1 January 2014</b>	223,020	5,321,621	5,544,641
Total comprehensive income and expenses	-	184,531	184,531
<b>Balance at 31 December 2014</b>	<b>223,020</b>	<b>5,506,152</b>	<b>5,729,172</b>

*Condensed financial statements (continued)***CONDENSED STATEMENT OF COMPREHENSIVE INCOME AND EXPENSES FOR THE YEAR ENDED 31 DECEMBER 2015**

	Notes	Audited 2015 N\$'000	Audited 2014 N\$'000
<b>Continuing operations</b>			
Revenue		1,841,012	2,405,747
Other income		223,087	13,024
		<b>2,064,099</b>	2,418,771
Operating costs		(2,320,576)	(2,287,373)
Depreciation, amortisation and impairment charges		(279,842)	(262,876)
Other net gains		886,756	285,457
Royalties-mining		(54,132)	(56,828)
<b>Operating profit</b>		<b>296,305</b>	97,151
Finance income		39,361	38,735
Finance costs		(69,282)	(65,552)
<b>Profit before income tax</b>		<b>266,384</b>	70,334
Income tax	4	172,532	74,170
<b>Other comprehensive income for the year</b>			
Actuarial gains on defined benefit pension asset		8,635	40,027
<b>Total comprehensive income for the year attributable to equity holders of company</b>		<b>447,551</b>	184,531

**Reconciliation of total comprehensive income for the year to net (loss)/profit after tax from normal operations**

<b>Total comprehensive income for the year as above</b>		447,551	184,531
- Actuarial gains on defined benefit asset		(8,635)	(40,027)
- Forex gain on Kalahari and Extract funds		(823,696)	(235,381)
<b>Net (loss)/profit after tax from normal operations</b>		<b>(384,780)</b>	(90,877)

**CONDENSED STATEMENT OF CASH FLOWS FOR THE YEAR ENDED 31 DECEMBER 2015**

	Notes	Audited 2015 N\$'000	Audited 2014 N\$'000
<b>Cash flows from operating activities</b>			
Cash (utilised) / generated by operations		(276,423)	427,624
Interest received		39,361	38,735
Interest paid		(4,605)	(2,291)
<b>Net cash (utilised) / generated by operating activities</b>		<b>(241,667)</b>	464,068
<b>Cash flows from investing activities</b>			
Purchases of property, plant and equipment	5	(207,420)	(79,356)
Proceeds from sale of fixed assets		54,002	21,697
Contributions made to Rössing Environmental Rehabilitation Fund		(60,000)	(57,900)
<b>Net cash utilised by investing activities</b>		<b>(213,418)</b>	(115,559)
<b>Cash flows from financing activities</b>			
Dividends paid		(115,754)	-
Decrease in interest-bearing borrowings		(930)	(844)
<b>Net cash utilised by financing activities</b>		<b>(116,684)</b>	(844)
<b>(Decrease)/Increase in cash and cash equivalents</b>		<b>(571,769)</b>	347,665
Cash and cash equivalents at beginning of year		832,602	460,428
Effects of exchange rate changes on cash and cash equivalents		52,124	24,509
<b>Cash and cash equivalents at end of year</b>		<b>312,957</b>	832,602

## Condensed financial statements (continued)

### NOTES TO THE CONDENSED ANNUAL FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2015

#### 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 2015. The audited annual financial statements of the company as at and for the year ended 31 December 2015 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 IAS 34, Interim Financial Reporting and the requirements of the Company's Act of Namibia. 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 2015.

#### 3. Significant accounting policies

The accounting policies applied by the company in these condensed annual financial statements are the same as those applied by the company in its annual financial statements as at and for the year ended 31 December 2015. The accounting policies and methods of computation applied in the preparation of the condensed consolidated financial report are consistent with those applied for the period ended 31 December 2014.

	2015 N\$'000	2014 N\$'000
<b>4. Taxation</b>		
Namibia - current taxation	-	-
Namibia - deferred taxation	(172,532)	(74,170)
	<u>(172,532)</u>	<u>(74,170)</u>
<b>5. Property, plant and equipment</b>		
Net book value at beginning of the year	3,169,492	3,038,705
Additions	207,420	79,356
Deferred stripping capitalised	227,591	340,564
Disposals	(702)	(3,832)
Depreciation and impairment	(279,842)	(262,876)
Decrease in closure provision	(13,809)	(22,425)
Net book value at end of the year	<u>3,310,150</u>	<u>3,169,492</u>
<b>6. Assets held for sale</b>		
Net book value at beginning of the year	4,496	13,226
Disposals	-	(8,730)
Net book value at end of the year	<u>4,496</u>	<u>4,496</u>

During 2013 the company decided to develop and service a block of residential erven situated in Oceanview, Swakopmund, with the intention to sell the properties in the open market. After completion of the civil works to service the erven, all plots were made available for sale to the public. At year-end 12 of the remaining 24 erven (2014: 24 of the 54 erven) has been sold at values higher than cost. Another seven erven are in the process of being transferred. It is expected that the five remaining erven will be sold during the 2016 financial year. No material liabilities associated with the assets held for sale existed at the financial year-end.

*Condensed financial statements (continued)***NOTES TO THE CONDENSED ANNUAL FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2015 (continued)**

	2015 N\$'000	2014 N\$'000
<b>7. Inventory</b>		
Inventory is stated after		
- Providing for obsolescence		
- raw materials	28,742	28,169
<b>8. Interest bearing-borrowings</b>		
Non-current liabilities		
Capitalised finance lease agreements	10,784	11,809
Current liabilities		
Capitalised finance lease agreements	1,025	930
	<u>11,809</u>	<u>12,739</u>
<b>9. Capital commitments</b>		
Capital expenditure contracted but not yet incurred as at 31 December 2015	<u>41,908</u>	<u>17,042</u>

**10. Unconditional purchase obligations**

The company has entered into minimum off-take agreements with the suppliers of sulphuric acid for the next five years. The total undiscounted amount at the year-end amounted to N\$1,348,748,728 (2014: N\$1,272,098,164). The company also entered into a new desalinated water off-take agreement with Namwater, which includes the commitment to off-take certain quantities of water for the next ten months. The total undiscounted amount at the year-end amounted to N\$143,444,000 (2014: N\$61,079,876).

**11. Guarantees**

During the year the company entered into a new desalinated water off-take agreement with Namwater. The agreement includes the provision of a bank guarantee of N\$12,975,138 (2014: N\$12,975,138). The updated off-take agreement is valid until 15 October 2016.

**12. Related parties**

The company is controlled by Skeleton Coast Diamonds Limited which owns 68.6 per cent of the company's issued shares. The remaining 31.4 per cent of the shares are widely held. The ultimate holding company is Rio Tinto plc, a company registered in the United Kingdom.

**Summary of related party transactions**

Sales to Related Parties	1,716,934	1,247,305
Purchase of Product and Services	436,051	278,996
Receivables from Related Parties	7,601	8,426
Payables to Related Parties	215,501	65,951

**13. Fair Value of Financial Instruments**

At 31 December 2015, the carrying amounts of cash and short-term deposits, trade accounts receivable, trade accounts payable, accrued expenses and current interest-bearing borrowings approximated fair values due to the short-term maturities of these assets and liabilities. The carrying value of non-current interest-bearing borrowings approximates fair value due to the fact that the underlying interest rate is linked to the prevailing market interest rates. All financial instruments are categorised as level 3. Settlement costs are expected to be immaterial.

## Condensed financial statements (continued)

### NOTES TO THE CONDENSED ANNUAL FINANCIAL STATEMENTS FOR THE YEAR ENDED 31 DECEMBER 2015 (continued)

#### COMPANY OPERATIONAL AND FINANCIAL REVIEW

##### Financial performance

Revenue decreased by 23 per cent compared to the previous year due to lower sales volumes due to the curtailed operational plan, which led to a net loss after tax of N\$385 million (2014: net loss after tax of N\$91 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 1,245 metric tonnes compared with 1,543 metric tonnes in 2014. A total of 19,271,341 metric tonnes (2014: 23,265,359 metric tonnes) were mined from the open pit and 6,875,719 metric tonnes (2014: 7,040,278 metric tonnes) of ore were milled. During 2015, the current Life of Mine Plan was re-assessed and extended by one year. The mine is currently operating on an approved Life of Mine Plan to 2025 (2014: 2024). There are current drilling initiatives and existing mineral resources, which could expand mining beyond this period into the next decade.

After the fire in the Final Product Recovery area in mid-February, the structure was refurbished and returned to full production in July. This event had a significant impact on the timing of cash flows and the company had to utilise its overdraft facilities to ensure liquidity during this period. During 2015 a board decision was made to return to continuous operations.

##### Dividend declaration

A dividend of 69.9 cents per share was approved on 25 February 2015 to the value of N\$115,754,400 (2014: N\$ NIL) and paid out during March 2015.

##### Subsequent events

On 14 December 2015, the Ministry of Finance issued a demand on the company for penalties and interest and under-declared import VAT, totalling N\$91,763,935. This relates to the revised audit conducted in 2015 by the Directorate of Customs and Excise on imports during June 2009 to June 2013. The company lodged an objection to this amount. Subsequent to year end, on 22 January 2016, the Ministry of Finance formally advised that an amount of N\$56,074,372 relating to penalties has been waived in full. The interest and under-declared VAT amount is still under advisement.

On 16 January 2016 the International Atomic Energy Authority (IAEA) confirmed that Iran has carried out its commitments set out under the JCPOA in relation to the limitation of its nuclear programme and renders effective the relevant EU Regulations terminating Iranian nuclear-related sanctions measures and US waivers of certain statutory sanctions provisions applicable to non-US persons. Included in the Cash and Cash Equivalents is an amount of N\$74,517,340 of restricted cash relating to historic dividends and interest accumulated thereon that are payable to the Iran Foreign Investment Company shareholder which was previously restricted in terms of UN Security Council Resolution 1929.

A dividend of 547.0 cents per share was approved at the March 2016 board meeting to the value of N\$905,832,000.

##### Auditors opinion

The condensed results for the year ended 31 December 2015 have been audited by PricewaterhouseCoopers. The auditor's unqualified opinion is available for inspection at the company's registered office.

##### Directors

J Gawaxab (Chairman), W Duvenhage\* (Managing), A S I Angula, S C Trott\*\* (alternate T J Wilcox\*\*\*), F Fredericks, M L Mothoa\* (alternate D S Kunji Behari\*), E I Shivolo (alternate C W H Nghaamwa).

\*South African \*\*Australian \*\*\* British

##### 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 Uranium guidelines on leading business practices, such as *The way we work*, Rio Tinto's global code of business conduct.

Much of our work is subjected to various external assurance and verification processes throughout the year. For example, external auditors audit our financial statements, while an external environmental auditing company audits our environmental figures each year. The following auditing companies, Government bodies and other institutions reviewed the company's practices in 2015:

- PricewaterhouseCoopers (Rio Tinto Corporate Annual Report data assurance, designed to provide limited assurance over selected items; in Rössing Uranium's case, AIFR data);
- KPMG (internal audits);
- Rio Tinto Corporate Assurance (internal audits);
- Det Norske Veritas (ISO 14001:2004 certification and Rio Tinto HSEQ 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) Act, 1998 (No. 29 of 1998) (compliance verification in respect of labour-related Acts);
- 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 finance-related Acts).

## List of references

*The way we work*: Rio Tinto's global 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*

*Performance Standards – Safety*

*Performance Standards – Occupational health*

*Performance Standards – Environment*

*Corporate Standards – Communities*

*Corporate Standards – Closure*

These reference documents are all available electronically at [www.riotinto.com](http://www.riotinto.com), or in hard copy by writing to Rio Tinto, 6 St James's Square, London, SW1Y 4AD, United Kingdom, Tel. +44 20 7781 2000.



## List of reports available on our website

The following reports are available on our website, [www.rossing.com](http://www.rossing.com) (under heading Reports & Research):

### Health

#### Radiation Safety

- Implementation of Radiation Management Plan – Annual Report 2014
- Radiation Management Plan 2016
- Annual Report to Radiation Protection Authority 2013

#### Publications

- Guide to Radiation in Namibia's Uranium Exploration & Mining Sectors
- Questions answered about Uranium & Radiation
- Radiation Fact Sheets
  - o 01 What is ALPHA RADIATION?
  - o 02 What is BETA RADIATION?
  - o 03 What is GAMMA RADIATION?
  - o 04 When is there a RADIATION EXPOSURE RISK?
  - o 05 What are RADIATION EXPOSURE PATHWAYS?
  - o 06 How do we measure EXTERNAL RADIATION EXPOSURE?
  - o 07 How do we measure INTERNAL RADIATION?
  - o 08 What is BACKGROUND RADIATION?
  - o 09 What special measures are taken with FEMALE WORKERS at Rössing Uranium?
  - o 10 How are RADIATION WORKERS monitored?
- Position papers
  - o Risk Assessment on the Rössing Uranium Car Park area
  - o Risk Assessment on the Rössing Uranium Waste Rock Dump Site bordering the Khan River
  - o Baseline and Mining-related Radon Concentrations in the Rössing Mining Area
  - o Rössing Uranium mine's tailings dust - What is the risk
  - o Using Alpha Recoil as a Tool for Contamination Control in the Khan River Aquifer
  - o Drinking-water in the Erongo Region
  - o Risk assessment on Rössing Uranium mine's tailings dust
  - o Water quality monitoring at Rössing Uranium mine using isotope techniques



## Environment

### Biodiversity management

- 2011 National conservation assessment and management of two Namibian succulents with specific reference to the Rössing Uranium Mine

### Environmental Management

- Environmental Annual Report 2013
- Environmental Product Declaration - Uranium Oxide ( $U_3O_8$ )

### Social and Environmental Impact Assessment Reports

- SEIA: Rössing's proposed desalination plant - Final SEIA report (5 December 2014)
- SEIA: Proposed mining of the Z20 uranium deposit (19 November 2012)
- SEIA Phase 2b: Proposed Expansion of Rössing Uranium Mine - SEIA report (13 October 2011)
- Strategic Environmental Assessment for the central Namib Uranium Rush – Final report (January 2011)
- SEIA Phase 2b: Public meetings and roadshows (14 - 21 August 2010)
- SEIA Phase 2a: Proposed mine expansion – Sulphur handling facility in the Port of Walvis Bay (6 November 2009)
- SEIA Phase 2: Proposed mine expansion - Final scoping report (9 May 2008)
- SEIA Phase 1: Proposed mine expansion - Social and Environmental Assessment Report (15 February 2008)
- SEIA Phase 1: Proposed mine expansion - Public notices (2007 - 2008)
- SEIA Phase 1: Proposed mine expansion - Scoping report (15 November 2007)
- Environmental Impact Assessment of the Proposed Khan Aquifer Recharge Scheme (May 1997)
- An Environmental Impact Statement for the Rössing Uranium Mine (February 1991)

## Performance data table

	2015	2014	2013	2012	2011
<b>Employees</b>					
Number of employees	948	850	1,141	1,528	1,637
<b>Production</b>					
Uranium oxide produced (tonnes)	1,245	1,543	2,409	2,699	2,148
Ore processed ('000 tonnes)	6,876	7,040	10,076	12,127	10,729
Waste rock removed ('000 tonnes)	12,471	16,225	24,448	31,737	39,913
Ratio of ore processed to waste rock removed	0.55	0.43	0.41	0.38	0.27
<b>Health, safety and environment</b>					
New cases of pneumoconiosis	0	0	0	0	0
New cases of dermatitis	0	1	2	3	0
New cases of hearing loss	0	1	0	0	0
New cases of chronic bronchitis	0	0	0	0	0
All-injury Frequency Rate (AIFR)	0.74	0.81	0.96	0.49	0.81
Number of lost-day injuries	7	8	13	4	11
Source dust levels at Fine Crushing Plant (mg/m <sup>3</sup> )	1.25	2.03	2.95	2.35	2.55
Freshwater consumption ('000 m <sup>3</sup> )	2,103	2,436	2,914	3,103	3,060
Fresh water used per tonne of ore processed (m <sup>3</sup> /t)	0.30	0.35	0.29	0.26	0.29
Ratio of fresh water:total water	0.36	0.43	0.41	0.38	0.39
Seepage water collected ('000 m <sup>3</sup> )	2,206	1,848	2,060	2,387	2,349
Energy use on site (GJ x 1,000)	1,777	1,108	1,007	1,852	1,897
Energy use per tonne of ore processed (MJ/t)	129.25	148.88	174.79	153.03	182.90
CO <sub>2</sub> total emission (kt CO <sub>2</sub> equivalent)	106.87	118.31	187.82	211.6	208.08
CO <sub>2</sub> equivalent emission per tonne of production (e/t uranium oxide)	85.87	82.00	78.04	78.41	97.37
<b>Product and customers</b>					
Uranium spot market price (US\$/lb) (average)	36.55	33.17	38.17	48.70	56.75

# Rössing Uranium'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 ( $U_3O_8$ ). 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.

Rössing Uranium's operations



**1. Drilling and blasting**  
Through drilling, blasting, loading and hauling, the uranium ore at Rössing Uranium 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 trucks 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 4.3 m 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**  
The product of leaching is a pulp containing suspended sand and slime. Cyclones separate these components and, after washing in roto scoops to remove traces of uranium-bearing solution, the sand is transported via a sand conveyor to a tailings storage facility.



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



**7. Continuous ion exchange (CIX)**  
The clear 'pregnant' solution now comes into contact with beads of specially formulated resin. Uranium ions are adsorbed onto the resin and are preferentially extracted from the solution. Beads are removed periodically to elution columns. There the acid wash removes the uranium from the beads. The resulting eluate is a purified and more concentrated uranium solution.



**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.



**9. Precipitation**  
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.



**10. Filtration**  
The ammonium diuranate is recovered on rotating drum filters as yellow paste, known as 'yellow cake'.



**11. Drying and roasting**  
Final roasting drives off the ammonia, leaving uranium oxide. The final product is then deposited in metal drums. Neither ammonium diuranate nor uranium oxide are explosive substances.



**12. Loading and dispatch**  
The drums of uranium oxide are dispatched and exported to overseas converters for further processing. At full capacity, the Processing Plant can produce 4,500 tonnes of uranium oxide each year. **This step completes the Rössing Uranium production process.**

Our customers' operations



**13. Conversion**  
The uranium oxide is converted to uranium hexafluoride crystals. Conversion plants operate commercially in Canada, China, France, the UK, and the US. \*



**14. Enrichment**  
This step increases the concentration of the isotope uranium-235 ( $^{235}U$ ) from its naturally occurring level of 0.7 per cent to higher levels required for nuclear reactors — about 3 per cent. \*



**15. Fabrication**  
Enriched uranium is converted into uranium dioxide, formed into solid cylindrical pellets, sealed in metal fuel rods, and bundled into fuel assemblies. \*



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



Many faces of Rössing Uranium around the mine and in the community.

Please contact us for any feedback, comments, concerns or suggestions about this report. You can either send us a text message to +264 81 143 3627, e-mail to [RUL.communications@riotinto.com](mailto:RUL.communications@riotinto.com) or fax to +264 64 520 1506.

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