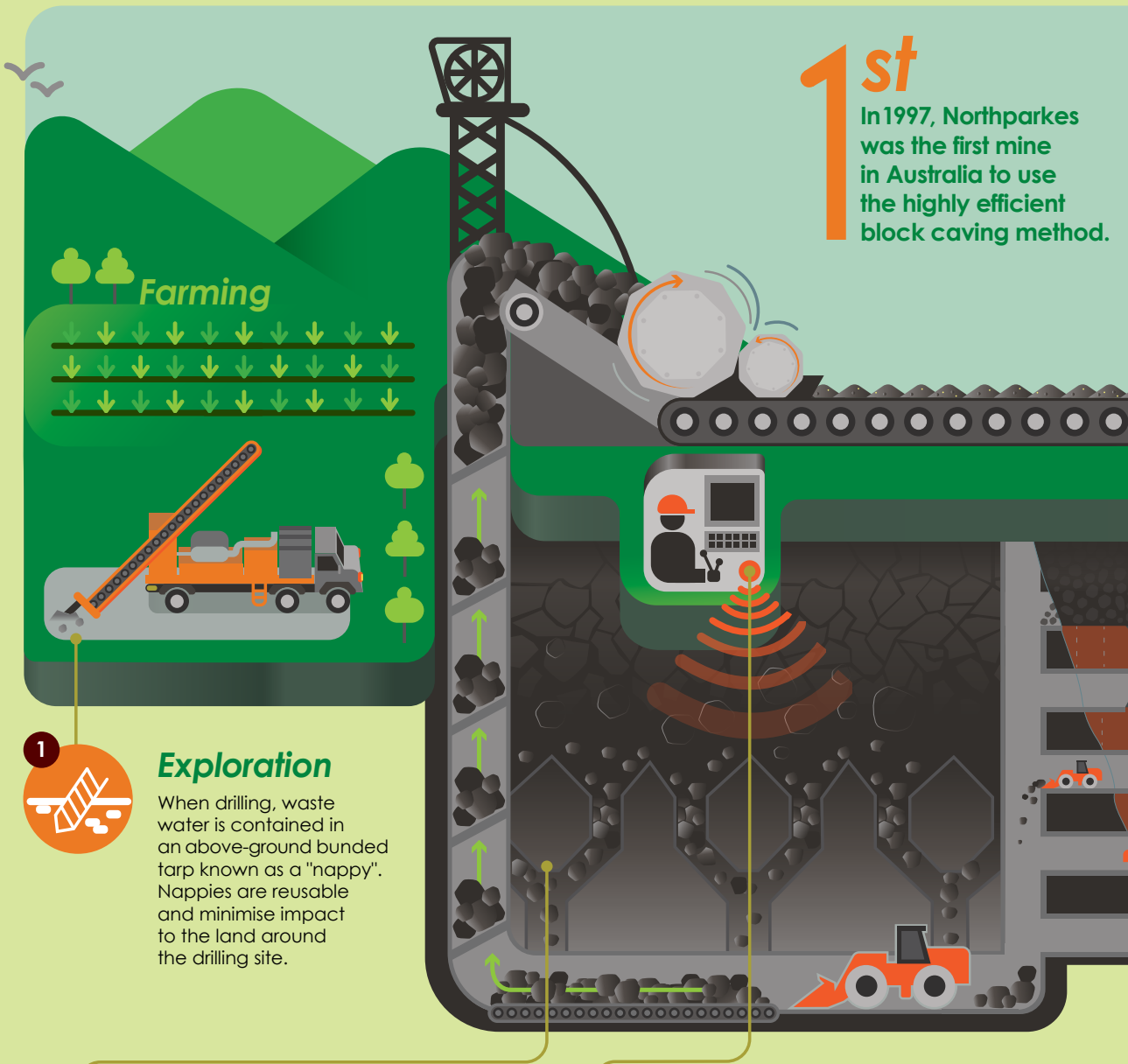


Northparkes Mines  
A century of mining together



# The Northparkes Report 2016

# Value Northparkes



**1<sup>st</sup>**  
In 1997, Northparkes was the first mine in Australia to use the highly efficient block caving method.

**1**  
**Exploration**  
When drilling, waste water is contained in an above-ground banded tarp known as a "happy". Nappies are reusable and minimise impact to the land around the drilling site.

**2**  
**Block caving**  
Block caving relies on gravity and natural rock stresses to fragment and recover the ore, using minimal explosives.

**3**  
**100% automated mining**  
In 2015 our E48 Lift 1 block cave mine became the world's most automated underground mine with 100% automated loaders. The driver-less loaders run themselves – moving and dumping the ore.

# arkes Chain

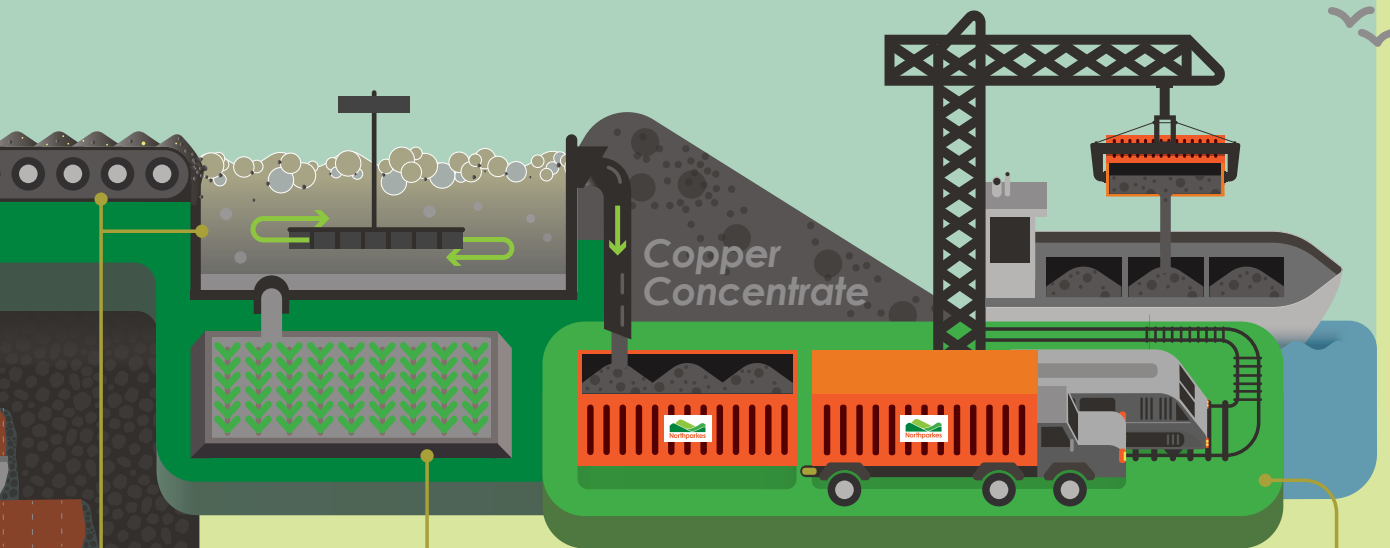
In 2016 we produced

**6.17 million tonnes**

of ore from our underground mines – a new all-time record for Northparkes.



Our 2016 metal recovery results were 88 per cent copper and 75 per cent gold.



5



## Ore processing

In order to recover copper and gold from the ore, it is processed through several stages including grinding, flotation, concentrate thickening and finally filtration.

6



## Tailings management

Moisture from waste materials is extracted and recycled in our ore processing plant. Tailings are then transferred to our Tailings Storage Facilities, creating a dry surface. To reduce dust, we are growing crops on the surface of the facilities.

4



## Sub Level Cave

We began production from our E26 Sub Level Cave in 2016. Sub Level Caving is a mining method during which slim blocks of ore are released by successively blasting and undermining small panels.

7



## Transport and logistics

The concentrate is transported to port by road and rail in shipping containers. These containers are then tipped directly into the ship using a specially designed crane attachment called a rotainer. The concentrate is not removed from the containers until it is loaded into the ship ready for its final journey to our customers.

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## Aboutus

Northparkes is owned and operated by China Molybdenum Co., Ltd (CMOC) in a Joint Venture comprising CMOC (80%), Sumitomo Metal Mining Oceania Pty. Ltd (13%) and Sumitomo Corporation (6.7%).

All photo captions in this report are left to right.

Northparkes Mines  
A century of mining together

# Our purpose

We produce the vital components of our modern quality of life: the miracle of copper, gold and grains. They are the metal building blocks of electronics and infection-fighting surfaces, and the foundation of our food chain.



# Our story

**Since 1993 Northparkes has been celebrated for our high-quality copper deposits, low cost operations and loyal, committed people.**

Working at Northparkes is enjoyable: inspirational leadership matters and diversity is celebrated. We are proud to be a miner and a farmer, a good Parkes neighbour and valued contributor to NSW's Central West.

Zero Harm Operations describes our approach.

We are innovative and resilient, we embrace technology and new ways of working. We have decades of excellent mineral deposits and an entire mineral field to continue to explore.

We will discover the copper and gold deposits to take us even further into the future. We are setting up future generations of Northparkes miners for a century of mining together.

# Our values

## Zero harm

Zero Harm is our approach to every aspect of our operations. We care for our people, our environment and the community in which we live and work.

## Oneteam

We proudly work together towards our shared purpose.

## Lifebalance

We realise the potential in everyone, support their wellbeing and enjoy what we do.

## Improvement

We will be better tomorrow than we are today.



# From our CEO

**Kalidas Madhavpeddi**  
CMOC International CEO



**In Northparkes' third year under China Molybdenum Co. Ltd's (CMOC) ownership, I am pleased that the business continued to thrive as an innovative and cost competitive mining operation.**

CMOC-Northparkes Mines (Northparkes) was the first acquisition in CMOC's international portfolio. It is therefore pleasing to see the team achieve new Zero Harm and underground production records in 2016, as well as becoming the first mine in Australia to achieve White Ribbon accreditation.

In addition, Northparkes bought two major capital projects to fruition in 2016: the Rosedale Tailings Project, which furthers long-term mining, and the E26 Sub Level Cave, which substantially contributes towards copper production.

We are proud of everyone at Northparkes for achieving these important initiatives. Their efforts have helped progress the vision of 'A century of mining together' and position Northparkes as a low-cost, long-term producer of copper and gold. We

face a number of future challenges in maintaining this position and I believe the team at Northparkes is ready and willing to take us forward.

2016 was a year of strong growth for CMOC as we significantly expanded our global footprint with two key acquisitions.

On September 30, 2016, CMOC acquired Anglo American's Brazilian phosphates and niobium businesses: NioBras and CopeBras. NioBras is the world's second largest supplier of niobium, which is used as a strengthening agent in the steel industry. CopeBras is Brazil's second largest supplier of phosphates, critical to Brazil's soybean and corn production.

In November, CMOC acquired Freeport-McMoRan's indirect interest in the Tenke Fungurume (TFM) mining and processing assets. TFM is a world-class and large scale copper-cobalt mine in the Democratic Republic of the Congo.

These acquisitions diversify CMOC's portfolio of metals as well as its geographic presence and increases our team of people, outside of China, to approximately 15,000.

I am pleased to note that Jim Fowler was appointed as Managing Director of Northparkes in March 2017, and will lead Northparkes' continued journey. All Northparkes employees will no doubt join me in thanking Stefanie Loader for her five years of contributions and leadership at Northparkes, particularly in respect to Zero Harm Operations.

It is an exciting time for our business as we expand our global operations and grow considerably in size. Northparkes is an important part of CMOC and we look forward to its continued success.

**"Northparkes remains a cornerstone of CMOC's International portfolio and a benchmark for mining operations globally. I am pleased to see Northparkes go from strength to strength, achieving new Zero Harm and underground production records in 2016."**





# From our Managing Director

**Jim Fowler**  
Northparkes Mines  
Managing Director



## Welcome to our annual update on Northparkes' activities and accomplishments.

As the incoming Managing Director of Northparkes, I am pleased to have spent some time last year with all the employees at site and assisting the leadership team with some of the long-term planning. All of the team is exceptionally proud of Northparkes' leading achievement for 2016; reaching a new all-time record of 200 days recordable injury free, one week longer than last year's record of 193 days. Congratulations to everyone at

Northparkes, as well as the hundreds of contractors who work here each year, on this remarkable achievement. We will strive to improve upon this record again in 2017.

A theme for 2016 was maintaining stable operations; meeting our production targets and eliminating unplanned equipment breakdowns. We have had no major equipment breakdowns since January 2016.

In 2016 the team set a new underground annual production record of 6.17 million tonnes. This comes after the first year of one hundred percent full automation

of our E48 Block Cave mine, and the commissioning of our new E26 Sub Level Cave. Twenty-one new employees joined the Northparkes team to work in the Sub Level Cave, which commenced production in August.

Everyone was delighted to be recognised externally for our approach to Zero Harm Operations via a number of awards and accolades. Northparkes became Australia's first White Ribbon accredited mining operation after a rigorous 18 month accreditation process. Additionally, Northparkes won the NSW Mining Health Excellence Award at the NSW Mining Industry and Suppliers Conference.

At the nationally-recognised Victorian Mine Rescue Competition, the Northparkes Emergency Response Team took out first place across four categories – rope rescue, theory, fire-fighting, and, most importantly, team safety. Information about these successes and more can be found throughout this report.

In recognition of the team's achievements in 2016, Northparkes was a finalist in the Operation of the Year award at the NSW Mining Industry and Suppliers Awards.

2017 promises to be a year with its own opportunities and challenges as we work to make our business even more efficient and innovative, while maintaining a relentless focus on Zero Harm Operations.

Thank you for your interest in Northparkes. I look forward to leading the Northparkes team for the next chapter and having the opportunity to share our future stories and achievements with you.





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## Production

**Thanks to a dedicated one team approach from everyone at Northparkes, we celebrated a new record. In 2016 we produced 6.17 million tonnes of ore from our underground mines.**

Rob Cunningham, Manager – Mining Operations said, “Since implementing 100 per cent automated loaders in our E48 underground mine in 2015 we have gone from strength to strength. I am exceptionally proud of the team.”

Another contributor to our underground production record was the addition of the E26 Sub Level Cave to our mining operations (see page 30).

Our ore processing plant (also known as a concentrator) is where we aim to extract copper and gold from the ore. As the composition of our ore is variable, the Ore Processing department works throughout the year to ensure we are using the most effective processing methods possible.

Roslyn Dalton, Manager – Ore Processing said, “Two 200m<sup>3</sup> flotation cells were commissioned, adding an extra stage to our flotation circuit which helps us to extract additional copper and gold. We also increased automated monitoring throughout the plant which allows us to respond more rapidly to changes in the composition of the ore.”

Caring for our equipment is an important aspect of our Zero Harm Operations philosophy. This is driven by our Asset Management department and supported by everyone at Northparkes.

We stop production on a regular basis to perform planned repairs, upgrades and maintenance to our infrastructure and equipment. These “shutdowns” ensure our mine and mill continue to operate safely and efficiently for many years to come.

In July, we held major shutdowns both underground and in our ore processing plant, which saw over 1000 additional people at Northparkes contribute 14,940 effort hours to complete the works.

“This event was one of the biggest ever shutdowns held at Northparkes, and was completed without any injuries or incidents,” said Hubert Lehman, Manager – Asset Management.

One highlight was the installation of a new girth gear, a large ring fitted to the outside of the mill to provide its primary rotational drive. Each half of the girth gear weighed 34 tonnes – equivalent to around 17 cars.

Jacques Labuschagne – Finance Director said, “Our value chain must be stable right through to logistics, whereby our copper and gold concentrate is transported by rail and sea to our customers. We were pleased to deliver 137,445 tonnes of concentrate to customers in Japan and China during the year.”





**Northparkes Mines**  
*A century of mining together*

## **The Rosedale Tailings project**

The Rosedale Tailings Storage Facility (TSF) was commissioned in July. This project facilitates our vision of 'A century of mining together' by enabling operations until 2032. Tailings are the waste materials left over after copper and gold is obtained from the ore.

As per our other TSFs, Rosedale has been engineered to safely contain tailings from our operations. The sturdy embankments surrounding Rosedale comprise 400,000m<sup>3</sup> of clay. A network of pumps and drains remove most of the moisture, which is recycled into our ore processing plant. During stage one, the facility will hold 5.6 million tonnes of tailings.



# Developing our people

## We support the learning and development of our people.

We launched a new Leadership Development Program in 2016, which aims to grow the skills of current and future leaders across Northparkes. The program has a focus on emotional intelligence, task leadership and people management.

Northparkes also invests in formal and informal training to enhance the skills of our workforce; in 2016 Northparkes employees received around 3,390 hours of training.

We know leading teams are diverse in gender, age and cultural background. As such, we have formal targets which aim to attract 20 per cent female and 10 per cent indigenous applicants to entry-level roles at Northparkes. In 2016, we achieved our goal: 23 per cent of applicants for entry-level roles were female and 11 per cent were indigenous.



Department	2016 Gender Diversity %	
	Male	Female
Site Management	57	43
Financial Management	68	32
People, Safety & Environment	50	50
Ore Processing	86	14
Mining Operations	92	8
Asset Management	95	5
Life of Mine Studies & Exploration	50	50
<b>TOTAL</b>	<b>84</b>	<b>16</b>





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**Above**

The Hon. Anthony Roberts MP, Justine Fisher, Hitoshi Ito (SMMO), Mayor Ken Keith OAM, Esther Bruce, Elysha Loiferton, Cr Phyllis Miller OAM, Dahui Zhang (CMOC) and Stacie Martin.

**Left**

Esther Bruce – winner, Outstanding NSW Tradeswoman and Stacie Martin – runner-up, Exceptional Young Woman.

# NSW Mining Industry and Suppliers Awards

In May we attended the NSW Mining Industry and Supplier Awards and Conference at NSW Parliament House, Sydney. We co-sponsored the event with Evolution Mining, giving the Central West a big presence. Guests sharing our table included the Mayors of Parkes and Forbes, our Joint Venture partners, and representatives from Cadia Valley Operations in Orange.

We had finalists in three award categories: Northparkes Mines – Mining Operation of the Year, Esther Bruce – Outstanding NSW Tradeswoman and Stacie Martin – Exceptional Young Woman. Esther won her category and Stacie was named runner up. We are incredibly proud of their achievements.

# Celebrating 20 years of service

**We are fortunate to have so many highly experienced people in our team. In 2016, 17 of our colleagues celebrated 20 years of service at Northparkes; we look forward to working with them for many years to come!**

The class of 2016 provides us with a broad range of knowledge and skills, which we rely upon as we strive to achieve our vision of 'A century of mining together'.

Andrew Hubbard, Project Engineer said, "Northparkes has provided me with the opportunity to develop a vast range of skills by working in a number of different roles throughout my career."

Class of 2016 facts:

- Combined, our class of 2016 has recorded 320 years at Northparkes
- Each employee has been employed in at least two different roles
- Over half have worked with each other throughout their career

A common feeling shared among our employees celebrating 20 years of service, is the amount of opportunities they have been offered throughout their careers at Northparkes.

**"Northparkes has provided me with the opportunity to develop a vast range of skills by working in a number of different roles throughout my career."**

**Andrew Hubbard**, Project Specialist



**Top:**

Steve Moon and Robert Boschetti.

**Above:**

Doug Marks, Ray Taylor, Luke Jones and Craig Mann.



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*A century of mining together*

**Below**

Scott Rauchle, Sue McGrath, Andrew Hubbard, Mike Wood, Marcus Morrison, Matt Hancock and Noel Huggett.

**Right**

Shane Noakes, Grahame Dunn, Brian Melhuish and Brendan Cavallaro.



# Future generations

**We offer a range of ways for people to engage with Northparkes and the mining industry. Pathways include our entry-level roles, scholarships and industry work placement programs, all of which are critical to achieving our vision of 'A century of mining together'.**

In 2016 our entry-level roles included 12 apprentices, 17 scholarship holders, two trainees and 16 industry work placement students. We welcomed a new cohort of five graduates who will commence in 2017.

Three apprentices have graduated from their programs with Northparkes – Alec Edwards (Electrical Apprentice), Andrew McInnes (Electrical Apprentice) and Karl Oliver (Mechanical Apprentice). Trainee Administrator Ella Miller has graduated from her program. Stuart Taylor, a Graduate Mechanical Engineer, has graduated from his program. We're proud of their contributions to Northparkes, and wish them well for a successful future.

Northparkes Indigenous Scholarship holder Adelaide-Rose (Rose) Wakefield graduated from Charles Sturt University with a Bachelor of Education (Primary) in 2016. Rose received two Dean's awards for academic achievement in her final year, and is our second Indigenous Scholarship holder to graduate. Rose has already secured two part-time teaching jobs in Port Macquarie.

Our annual industry work placement program runs for eight weeks over the summer university holidays. In 2016 we hosted 16 engineering, chemistry and

geology students from several different universities around Australia.

The students spent time with the department most relevant to their studies, working on projects designed to develop their leadership skills and technical background.

Stacey Kelly, Manager – People, Safety and Environment said, "For many of the students, their time at Northparkes represented the mandatory industry training required to complete their degree. We were pleased to be able to offer this benefit to the students, while simultaneously gaining a fresh perspective and unique contributions to our business."

While at Northparkes, the students contributed to a major local community event – the Parkes Elvis Festival. They constructed the Northparkes float which led the festival's street parade. 16,000 people lined Parkes' main street to watch the Northparkes-sponsored parade.



**Graduates:** Xiaoqian Wang (Mechanical Engineer), Wendy Nguyen (Chemical Engineer), Jack Mowen (Mining Engineer), Travis Carte (Mechanical Engineer) and Rhys Woods (Legal Advisor).





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**Below**

The industry work placement students embraced the 25th Parkes Elvis Festival with enthusiasm.



**Lester Plummer**  
**Apprentice**  
**of the Year**

A new award has been created in honour of our friend and colleague Lester Plummer, who passed away in 2015. Lester always took a keen interest in our apprentices.

The inaugural Lester Plummer Apprentice of the Year Award winner was Alec Edwards, who has graduated from his Electrical Apprenticeship program and accepted a permanent full-time role with Northparkes.

## Scholarship programs

### Sumitomo Metal Mining Oceania (SMMO) Scholarships

SMMO, a Joint Venture partner of Northparkes, established its school-based scholarship program in 2014. The program aims to encourage careers in mining, and is an investment above and beyond Northparkes' existing commitments.

Local students Mihran Sarkissian, Peter Lindsay and Eloise Clayton were each awarded a 2016 SMMO Scholarship.

Eloise attended Trundle Central School in the Parkes Shire and is now studying a Bachelor of Science – Chemistry at Western Sydney University. Eloise spent her summer holidays completing the Northparkes industry work placement program.

Mihran and Peter are both Year 11 Students at Red Bend Catholic College. Mihran said, "My dream is to study electrical engineering, and I hope to participate in the Honeywell

Engineering Summer School via the University of NSW. The support from SMMO will help me achieve this."

Peter said, "I appreciate the ongoing support from SMMO, and the opportunity for work experience through Northparkes Mines." Peter aims to become a mechanical or electrical engineer. Eloise, Peter and Mihran join a cohort of three existing SMMO scholarship holders.

The two Year 11 students will receive \$500 for successful completion of Year 11 and \$1,000 for successful completion of Year 12. \$2,000 is also granted to those scholarship students who enter and successfully complete their first year at university in a mining related course.

#### Below

SMMO Scholarship holders Eloise Clayton, Mihran Sarkissian and Peter Lindsay with their families and representatives of SMMO.



### Northparkes Indigenous Scholarships

Kerrod Griffiths of Condobolin is in his first year of a Bachelor of Health Science (Indigenous) at the University of Wollongong.

As part of his Scholarship, Kerrod attends work placements at Northparkes with our Health team. "I have the opportunity to perform medicals under the supervision of a registered nurse; this experience will be invaluable in finding work when I complete my degree."

"Down the road I see myself moving back to the country and working in public health, helping Indigenous people," he said.

Gabrielle Ebsworth (Gabby) is from Narromine, and is also in her first year of university studying Sociology at the University of Melbourne. Gabby plans to pursue a career in Indigenous affairs or Aboriginal community development.

"I'm passionate about giving back to my community. I want to help Aboriginal kids get through high school and into uni or a trade and ultimately

"Down the road I see myself moving back to the country and working in public health, helping Indigenous people."

**Kerrod Griffiths**, Indigenous Scholarship holder



## Northparkes Mines

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put skills and jobs back into the community," she said.

"Over the summer I had a work placement at Parkes Neighbourhood Central (PNC). Every couple of days I worked with a different department. I helped out with a mother's group, assisted with aged care and disability transport and outings."

"I really enjoyed seeing all the great things PNC do for the Aboriginal community in Parkes and Peak Hill. My experience will help me in my future career; I had the opportunity to see how organisations like PNC work and what's expected of the people they employ."

### Jason's Scholarship experience

Jason O'Neil was one of Northparkes' first Indigenous Scholarship recipients. Jason is now in his fifth and final year of a combined Bachelor of Science and Law at the University of NSW, and plans to complete an honours year in Indigenous Studies in 2018.

"Thanks to my scholarship from Northparkes Mines and work placements during university breaks I've been able to enjoy financial security throughout my degree and be exposed to some really interesting areas of law," said Jason.

"I was employed by Gilbert + Tobin, a top-tier law firm, in late 2015 – partly thanks to the skills I developed throughout my Northparkes-supported work placements. I am now working in their Pro Bono team where I am able to assist with important cases that have a major impact on our client's lives."

#### Below

Kerrod Griffiths performed health checks under the supervision of a registered nurse during his work placement at Northparkes.





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# ero **harm**

# Our approach

**We have a Zero Harm approach to every aspect of our operations. We care for our people, our equipment, our environment and the community in which we live and work.**

#### **Our Zero Harm performance**

For the second year in a row, we set an all-time Zero Harm record at Northparkes. For 200 days, nobody was injured. This is seven days longer than last year's record, and was achieved during the same period in which we had over 1,000 additional people onsite to complete our major shutdowns.

Outside the 200 day period there were four recordable injuries, one fewer than 2015. The injuries were medically treated and each person has returned to normal duties at work.

We work to achieve Zero Harm Operations by looking out for each other during every task each day. We know Zero Harm is achievable; it is an essential part of our culture.

We believe innovation and leadership in Zero Harm should be rewarded.

On a quarterly basis we recognise people who have been nominated by their peers for their Zero Harm achievements.

#### **Zero Harm leadership award winners:**

Luke Jones and underground D Crew, Muhammad Akmal, Nigel McKeown and the Workshop team.

#### **Zero Harm innovation award winners:**

Terry Kite and Mick Mills, Adam Ryan, Craig Finnegan (SANDVIK), Brad Mill, Brian Melhuish, Mick Carty and Matt Flynn.

#### **2016 injuries:**

Knee	1
Finger	1
Hand	2





# Managing critical risks

A critical risk is an event which may threaten someone's life or cause severe damage to our operations. In 2016 we had a particular focus on formalising the ways we manage these risks; we have identified 20 critical risks at Northparkes, with the top two relating to vehicle interactions.

We hosted several external assessments of our processes, including a Targeted Assessment Program (TAP) audit by the NSW Resources Regulator regarding ground or strata failure. During the feedback session, the Chief Mines Inspector commented that Northparkes has an industry-leading approach to critical risk management.



# Our community and our environment

## Our environment and the community in which we live and work are critical to our Zero Harm approach.

In previous reports, we shared our industry-first dust mitigation strategy of planting barley and tall wheatgrass directly on our Tailings Storage Facilities (TSFs). In 2016, this project came to fruition – the crops have thrived and successfully reduced dust lift-off (see page 32). We recorded zero depositional dust events associated with our TSFs. We were proud to receive zero community complaints in 2016.

We identified that our biodiversity offset property, Kokoda, provided ideal habitat for the Superb Parrot, a threatened native bird species. We partnered with the Parkes Men's Shed to construct 75 custom-made nest boxes.

These nest boxes were on display at the Parkes agricultural show, where children had the opportunity to decorate the boxes with painted handprints. The boxes will now be installed in ideal locations for the Superb Parrot to nest ahead of the next mating season.

Environmental monitoring plays a critical role in determining any potential impact Northparkes has on the surrounding environment. Real-time

monitoring allows us to identify and understand our environmental impacts pertaining to dust and noise.

### Air Quality

We regularly sample air quality at key locations on and adjacent to our mine site. The program is designed to determine the effectiveness of control measures and ensure we are compliant with consent and licence conditions. The program comprises a combination of real-time BAMs (Beta Attenuation Monitoring for PM10), high volume air samplers (TSP), directional and depositional dust gauges.

There were 15 dust exceedances recorded during the year. All incidents were investigated and attributed to localised farming activities near the dust monitors such as shearing, cropping, stock movement and grading.

### Noise

Noise monitoring is conducted quarterly by an external specialist who monitors and analyses noise data at four of our closest neighbouring properties. Noise levels must comply with the requirements set out in our Project Approval, and associated standards and policies. Noise monitoring comprises a combination of real-time (unattended) monitoring and attended noise surveys. There were no noise exceedances in 2016.

### Water

64 per cent of the water used onsite was recycled in 2016. Its main use was to process crushed ore into copper concentrate.

We manage our water use through an internal infrastructure system aiming to:

- Ensure a reliable and sustainable long-term supply of water to site
- Minimise fresh water use by recycling water from mining and processing activities
- Monitor surface and groundwater resources to assess the impact of our operations.

### Environmental Incidents

During the year there were three environmental incidents reportable to government agencies.

#### 8 July 2016

A tap in a designated hydrocarbon storage area was left open, resulting in discharge of water mixed with hydrocarbons (crude oil) outside the bunded area. Northparkes submitted a report to the Environmental Protection Authority (EPA) pollution hotline. The area was cleaned up and drainage mechanisms altered to prevent fluid leaving the bunded area in future.

#### 3 September 2016

During a significant rain event, rainfall exceeding 72mm in a 24-hour period was recorded on parts of the mining lease. Northparkes reported that a designated sediment pond overflowed into a waterway.

#### 30 December 2016

A Total Suspended Particles (TSP) monitor at the neighbouring property 'Hillview' was damaged by an electrical surge and did not operate during December 2016. The incident was reported to the EPA, as the monitor is required as part of Northparkes' Project Approval. The monitor's motherboard has since been replaced.

We identified that our biodiversity offset property, Kokoda, provided ideal habitat for the Superb Parrot, a threatened native bird species. We partnered with the Parkes Men's Shed to construct 75 custom-made nest boxes.



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# Our farming operations

**We are proud to be a farmer and a miner. For over 20 years we have been working on techniques to improve farming which are sustainable and appropriate to both our operations and those of our neighbours.**

In 2016 we sowed 3,640 ha of crops, comprising canola, wheat, barley, and field peas. Like many other farmers in the region, record-breaking winter rainfall resulted in our crops suffering significant waterlogging damage.

While this resulted in below average yields, we were still able to harvest some quality produce.

Grains from our 2015 harvest were recognised at several local agricultural shows, with our canola named "Grain of show" at the Parkes show.

One of the great joys of being a farmer and a miner is the opportunity to share what we learn from our farming operations with others. We held several field days and grower workshops on our farming operations in 2016, including the "More Profit from Crop Nutrition" workshop at our

Beechmore farm. This event, hosted by the Grains Research and Development Corporation and the Queensland Government, was attended by over 60 growers and advisors.

Over the 2016/2017 summer period, we grew our first ever large-scale summer crop on our Forbes farming operations. The maize crop, which becomes silage (cattle feed), is the result of a partnership with Moxey Farms – the largest dairy farm in the Southern Hemisphere.





## Northparkes Mines

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#### Online

[www.northparkes.com](http://www.northparkes.com)

[www.facebook.com/northparkes](https://www.facebook.com/northparkes)

[www.linkedin.com/cmoc-northparkes](https://www.linkedin.com/cmoc-northparkes)

## Consultation

In addition to supporting community initiatives, we have several approaches to formally engage, monitor and report to our community stakeholders:

#### Community Consultative Committee (CCC)

The committee meets twice a year to update members on business operations and receive community feedback. The committee is made up of mine management and community representatives from Parkes and Forbes. The two meetings were held in May and December.



#### Wiradjuri Executive Committee (WEC)

The WEC meets quarterly to identify opportunities and develop projects which support Wiradjuri people in the community. The WEC is made up of two members from the Wiradjuri Council of Elders, two from Peak Hill Local Aboriginal Land Council and two senior Northparkes employees. The committee made good progress on targeted work plans. For example, we procured our promotional products from an Indigenous supplier for the first time.

#### Neighbours meetings

Northparkes hosts formal onsite meetings open to neighbours twice a year, and meets with many neighbours individually throughout the year. At a meeting in September we invited our closest neighbours to view the barley crop growing on our Tailings Storage Facilities (see page 32).

#### Source community newsletter

Published twice a year and distributed online and via local newspapers.



# Welcoming our guests



**We welcome the opportunity to showcase our operations to external stakeholders. During 2016 we invited departmental and government officials, industry groups and school students to Northparkes.**

In April we hosted Rob Stokes MP, then NSW Minister for Planning, and Sarah Mitchell MLC, then Parliamentary Secretary for Western NSW and member of the Legislative Council.

Our visitors toured our underground operations and the mill, and commented positively on our operations, the way we work with our community and the diversity of our team. We were also joined by the Mayors of Parkes and Forbes for lunch.

The International Copper Association of Australia (ICA) held its board meeting in Parkes in April. ICA's mission

is to defend and grow markets for copper, based on its superior technical performance and its contribution to a higher quality of life worldwide.

Northparkes was the first mine to host the ICA's meeting outside of Sydney. The group toured our underground operations and walked up the mill tower.

In May we welcomed Lee Shearer, Executive Director, Compliance and Enforcement and Tony Forster from the Division of Resources and Energy (DRE) to site. They were accompanied by the Hon. Carl Scully, Chair of the Mining Safety Advisory Council (MSAC) and Greg Sullivan, Policy Director of the NSW Minerals Council.

We were delighted to take the group on a tour of our underground operations and to view the barley crop growing on our Tailings Storage Facilities.



**Top**

The ICA walking up the mill tower.

**Above**

Rob Cunningham, the Hon. Rob Stokes MP, then NSW Minister for Planning, Sarah Mitchell MLC, then Parliamentary Secretary for Western NSW and member of the Legislative Council, Roslyn Dalton and Justine Fisher.



## Northparkes Mines

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### Australia's first White Ribbon accredited mine

On 25 November 2016, White Ribbon Day, we were announced as the first mine in Australia to achieve White Ribbon workplace accreditation.

Our journey towards Zero Harm Operations is a relentless focus across our entire sphere of operation, and our approach to domestic violence is an important part of this philosophy.

Northparkes is now officially recognised by White Ribbon Australia as a pioneer in contributing to national cultural change to prevent and respond to violence against women. Accreditation lasts for three years, evidencing an ongoing, sustainable commitment.

Around 70 employees marched and volunteered at White Ribbon community events in Parkes and Forbes to celebrate this achievement, and draw attention to domestic violence prevention initiatives in our community.



Friday 19 August 2016 marked the 20<sup>th</sup> anniversary of the death of our friend and colleague Stephen Shorrocks. Stephen was part of the Northparkes team as a shift boss for Brandrill who were contracted to develop the E26 Underground Mine. Stephen died as a result of a rock-fall while working on the E26 Lift 1 Block Cave development.

At the 2016 memorial, we were joined by Stephen's family and

former colleagues from Brandrill. Several Northparkes team members spoke at the memorial; flowers were then placed on the memorial rock onsite, and later at a memorial plaque in Parkes.

We also stopped on 24 November, as we do each year, to honour our colleagues who lost their lives in the tragic air blast in 1999 – Ross Bodkin, Michael House, Colin Lloyd Jones and Stuart Osman. We continue to remember these men each year.



# Improve





# e<sup>ment</sup>

## Improvement

# Improving our business

**2016 marked our first full calendar year with 100 per cent automation in our E48 block cave mine. Automation has seen continued benefits in injury reduction and production increases in our underground operations.**

Across the business, people shared their improvements made throughout the year via meetings and newsletters. By sharing improvements, no matter how small, with each other, we have the opportunity to apply them in

other work areas or to other tasks which may benefit.

In 2016 we shared over 70 improvements amongst our employees.

For example, Paul Brown, who works in our Light Vehicle workshop, designed and fabricated ergonomic Light Vehicle tyre handling crates. The crates eliminate the need to lift heavy tyres which can weigh up to 40kg. This is just one of many small, but significant, changes which improve the way we work.

### Our Sub Level Cave

Our E26 Sub Level Cave mine, which began production in 2016, represented a \$70 million investment in our business. This project provides access to three million tonnes of high grade ore and has brought 21 new employees to Northparkes.

Sub level caving is a mining method in which slim blocks of ore are caused to cave by successively undermining small panels. This method allows us to access a remnant wedge of ore which was not available when we developed the E26 block cave mine.



### Stable operations

	2013	2014	2015	2016
Recordable injuries	11	9	5	4
Reportable environmental incidents	9	9	5	7
Total tonnes milled (Mt)	6.0	6.1	6.0	6.1
Copper Head Grade (%)	1.05	1.05	0.97	0.89
Copper Recovery (%)	88	88	88	88
Gold Head Grade (ppm)	0.46	0.40	0.32	0.26
Gold Recovery (%)	75	76	75	75



**Top left:** Paul Brown's design for ergonomic tyre handling crates.

**Top right and above:** The E26 Sub Level Cave began production in 2016.

## Life of mine studies and exploration

Exploring the mineral field surrounding our current mining lease is critical to extending our mine life beyond its current approval until 2032.

Wet weather impacted our drilling program in 2016, so the Life of Mine Studies and Exploration team focused on planning, analysis and reviewing our existing core backlog. Over seven kilometres of core was processed in the second half of 2016, eliminating the backlog and ensuring all data was available for analysis.

Angus Wyllie, Manager – Life of Mine Studies and Exploration said, "By reviewing core samples obtained many years ago, we can apply new analytical techniques and gain insight into the geological composition across our tenements of the land. This ultimately will help find our next orebody."





## Improvement

# Environmental excellence

**Tailings or waste materials from our mining operations are stored in Tailings Storage Facilities. As we extract moisture from the tailings prior to deposition, a dry, smooth crust forms on the surface of the facilities. Hot and windy weather can result in dust lift-off, which we recognised was an environmental and community concern.**

We had access to an existing successful commercial farming operation, equipment and in-house knowledge of farming practices – and so we used these resources to find a solution to address dust lift-off. In 2015 we trialled growing small crops of barley directly on our TSFs, without topsoil.

Typically, TSFs are covered with a substantial layer of soil and rock during rehabilitation prior to attempting to grow vegetation. This strategy cannot be used on an active TSF, which must be accessible for future tailings deposition.

The trial seeds germinated, giving us the confidence to undertake a larger scale crop. In April 2016 we sowed approximately 130 hectares

of barley, using a recycled compost product called Nitrohumus to provide additional nutrients to the crop.

The crop was a resounding success, with the barley thriving and green shoots appearing immediately.

The crops provide a non-permanent dust mitigation solution, with the additional benefit of adding carbon material to the tailings; this will eventually aid in rehabilitation.

We did not record any environmental incidents or community complaints associated with dust from our TSFs in 2016.

This initiative was recognised as a finalist for the Environmental Excellence Award at the NSW Mining Health, Safety, Environment and Community conference. We were also invited to speak at several different industry conferences to share our results with the broader mining industry.

We have commenced plot trials of other crops including clover and saltbush to determine the best crop for the soil environment available on our TSFs. We are delighted to have been able to use our farming knowledge to solve a mining problem.

**We had access to an existing successful commercial farming operation, equipment and in-house knowledge of farming practices; we used these resources to find a solution to address dust lift-off.**



**Northparkes Mines**  
*A century of mining together*







*Life*





# *balance*

# We enjoy what we do

**We recognise that our employees have passions and responsibilities within and outside Northparkes. We encourage each other to maintain a life balance which supports our wellbeing.**

We aim to support our people to pursue their interests outside Northparkes and later return to work. This may include family, sporting or study commitments.

Ben Ryan took a career break playing rugby in the UK. "I had always wanted to travel and experience work and sports in a different part of the world," he said.

"We [Ben and his partner] were able to do something we always wanted to do and know that after it we had our careers to return to in Parkes. It was not something you hear of very often, so this was special for us."

Ben and his partner travelled across Europe including England, Ireland, France, Monte Carlo, Italy, The Vatican City, Austria, Germany, the Netherlands and Belgium.

When they returned to Parkes they surprised their family and friends by not providing exact dates. "We were excited to catch up with our friends and families and share stories of our time away. Now I'm getting back to my career at Northparkes and looking forward to what the next few years will bring."

In addition to career breaks, Northparkes also offers work-based programs and activities which encourage life balance. Our wellness program, 'Am I Fit for Work?' addresses a holistic

range of issues which may impact a person's fitness for work, including:

- Mental health
- Physical fitness
- Illness
- Drugs and alcohol
- Fatigue

We also encourage employees to involve their families with Northparkes wherever possible. At our first 'Mums, dads and bubs day' in October, we welcomed Northparkes parents, their partners and young children to site for a morning of socialisation and kid-friendly activities. The children loved seeing where their parents work. We hope events such as this will help create a network of young families in the Central West.

"We were able to do something we always wanted to do and know that after it we had our careers to return to in Parkes. It was not something you hear of very often, so this was special for us."

**Ben Ryan, Electrical Specialist**



## Northparkes Mines

### A century of mining together

**Below:** We offer health checks as part of our wellness program, 'Am I Fit for Work?'



### Working with CMOC International

Stacey Kelly, Manager – People, Safety and Environment, spent six months working with CMOC International on their acquisitions in Brazil and Democratic Republic of the Congo.

"It was great to see how other international operations and mining companies operate. The people I worked with were extremely professional and knowledgeable; it was a very agile and fast-paced environment, which I enjoyed," she said. Stacey has now returned to her role at Northparkes with the benefit of newfound knowledge and experience.





# Our healthy hearts won

**Our 2015 wellness program, Heart at Work, was designed to combat the modifiable risk factors for cardiovascular disease.**

We were thrilled when Heart at Work won the Health Excellence award at the 2016 NSW Mining Health, Safety, Environment and Community Conference.

"Our Zero Harm approach, including our commitment to health and wellbeing, was acknowledged with this award. In the mining industry, our health reflects that of the general health of the population," said Stacie Martin, Health Specialist.

"We recognised that our workforce had a cardiovascular disease risk profile that mirrored the community at large. This disease kills thousands of Australians per year," she said.

The program focused on modifiable risk factors such as poor diet and increased cholesterol levels, reduced physical activity, obesity, excessive alcohol consumption, smoking and increased stress.

"The Heart at Work program would not have been successful without the enthusiastic participation of our employees. They embraced every challenge, from cooking up a storm in crib rooms to committing to improve their personal health and fitness."

**Stacey Kelly**, Manager – People, Safety and Environment



**Right:**

NSW Mining CEO Steve Galilee,  
Rachael Whiting and Stacie Martin.

# Workers who love to give

**We designed our Volunteer Leave Program in 2013 with the principle that the best contribution to the community could be made by its people. Now in its fourth year, the program is stronger than ever – Northparkes contributed 1,220 hours of volunteering in 2016.**

Justine Fisher, Specialist Community and External Relations said "Northparkes employees have taken ownership of the program; it's great to see people proactively organising their own volunteer projects and giving back to the community in which we live and work."

"Each volunteer opportunity is also a team-building event for our employees, so the program benefits both Northparkes and the wider community," she said.

Donna Shaw, who coordinated a clean-up of the Parkes showground said, "There are a lot of not-for-profit organisations that need help, whether it be to bake a cake, clean out drains, sweep pavilions or build pathways. It makes me feel proud to know I have helped out in some way."

In 2016 our employees volunteered their time towards 22 community projects across the Central West, including:

- Building a playground at Ronald McDonald house in Orange
- Rejuvenating landscaping at Memorial Hill in Parkes
- Preparing the Bedgerabong Race Course for its annual Picnic Races



- Building repairs at Parkes East Public School
- Marshalling at the Parkes Little Athletics carnival
- Helping Forbes Pre-School move to a new building
- Cooking the BBQ at the Parkes Charity Golf Day
- Planting vegetation at PAC park
- Operating the tasting site at Trundle Bush Tucker Day
- Collecting rubbish from the roadside in Parkes
- Preparing the Parkes Showgrounds for the annual show
- Preparing the Forbes Showgrounds for the annual show
- Cooking for the Legacy Bake Sale
- Constructing gardens and playgrounds at Middleton Primary School
- Setting up for the White Ribbon community marches in Parkes and Forbes.

Our volunteers enjoy the opportunity to give back to their local communities. Coordinator of the Trundle Bush Tucker

Day volunteering project, Cathy O'Grady said, "I especially like volunteering at Trundle as this is the community that I grew up in; I feel I am giving back to this wonderful little town."

## **In-kind**

- 1,220 hours of volunteer service to the Central West
- Audio-visual equipment valued at \$150,000 to the University of NSW for visual research projects
- 120m of used conveyor belt valued at around \$1000
- Equipment pool – Northparkes has a range of equipment available for public use, including 3 x 3 marquees, a blow up big screen TV and eskies used by schools, community and sporting groups.

For more information or to request assistance, please contact the Community and External Relations team on (02) 6861 3621.

# Our contribution

In 2016 Northparkes contributed \$77.1 million to the Central West through salaries, sponsorships, government dues and payments to local businesses. As at year end, we employed 342 people; during the year we paid salaries of \$32.8 million to Parkes residents and \$4 million to employees in Forbes.

Employees by town of residence	2016
Parkes	271
Forbes	35
Orange	8
Dubbo	7
Tichborne	5
Trundle	5
Bogan Gate	3
Other	8
<b>TOTAL</b>	<b>342</b>

Our contribution to Central West NSW	\$M
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Salaries and wages paid per town of residence	
Parkes	32.8
Forbes	4.0
Orange	1.0
Dubbo	0.6
Trundle	0.7
Other	3.6

Suppliers of goods and services	
Central West	31.3
<b>Sponsorship and donations</b>	<b>0.4</b>
Local government payments	
Parkes and Forbes	2.7
<b>TOTAL</b>	<b>77.1</b>



# Zeroharm

Our journey towards Zero Harm Operations is a relentless focus across our entire sphere of operation: our people, our community, our environment and our equipment. We believe this approach is why we have been successful for over two decades, and sets us up for further decades to come. Our vision for our business is for *A century of mining together.*

Thank you for your interest in Northparkes Mines.

**Northparkes Mines**  
A century of mining together

**CMOC-Northparkes Mines**

PO Box 995 Parkes NSW 2870 Australia  
Phone: +61 2 6861 3000  
Fax: +61 2 6861 3111

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