



**bhpbilliton**  
resourcing the future



**HSEC  
Awards  
2013**

## Health

---



### Darren Reid

*Copper, Cannington, Australia*

**Project: Carbon Reduction – improving the health of Cannington mine’s underground personnel.**

Cannington’s carbon reduction program is changing the mining industry and improving the health of underground personnel. For the first time, an engineering control has been developed, in conjunction with equipment manufacturers, to actively reduce Diesel Particulate Matter, or DPM, at their source, vehicle exhausts. In addition to reduced DPM, the benefits include increased fuel efficiency, reduction in exhaust and engine noise, better environmental outcomes, a reduction in component heat, and an increase in the awareness of the workforce on how to abate occupational exposure. The project demonstrates Cannington’s overriding commitment to health and safety in their pursuit of innovative and effective solutions which address material risks. The solution also offers industry-wide access to the technology as a result of manufacturer and dealer support.

### Ivan Pupo

*Aluminium, Manganese and Nickel, Cerro Matoso, Colombia*

**Project: Reduction in potential exposure to nickel in ore classification.**

Cerro Matoso’s project to reduce the exposure of workers to insoluble nickel has reduced the risk to below 10 per cent of the Occupational Exposure Limit, or OEL. Ore classification is part of the process to dry, store and transport ore to the calcining furnaces. The ore undergoes separation by means of a vibratory sieve, concentrating the contents of each of its chemical elements. Previously, exposure to the carcinogenic insoluble nickel risk agent had been recorded above 200 per cent of OEL. To address this risk, an analysis was undertaken to identify opportunities to reduce exposure. Solutions were implemented over a two-year period and included a decrease in the speed of the belt feeding the vibratory sieve; the development of a durable material for sealing the vibratory sieve; and installation of cleaning brushes on the conveyor belt return.

## **Robert Seeley**

*Coal, Illawarra Coal, Australia*

### ***Project: Underground drill rig site noise reduction.***

Illawarra Coal's project to eliminate noise of an underground drill rig site at the source has achieved excellent results for operators. In 2009, a comprehensive occupational hygiene risk assessment was undertaken at West Cliff mine. The assessment identified that operators were working in an environment where the noise was well above the limits of Work Health and Safety regulations, particularly around the primary sources of the drill rig power packs and compressed air venturi blowers. A number of controls were subsequently implemented, including an improvement on the noise attenuating curtains that separate operators from the power pack; relocating water pump exhausts away from the drill rig site and operators; and installing water mufflers. Eliminating noise at the source is always the best option and this project has demonstrated that excellent results can be achieved. The combination of noise controls has now generated significant interest from across the business.

## **Tokkie Roets**

*Coal, BECSA, South Africa*

### ***Project: Confined space – electronic remote monitoring.***

An electronic remote monitoring device designed specifically for confined space work has reduced the risks for workers at BECSA and Klipspruit colliery. Confined space work is conducted on a near daily basis and has inherent risks including oxygen deficiencies and the accumulation of carbon monoxide and other flammable gases. Work is conducted in isolation and in very small compartments, and communication via two-way radios is often not possible. The team at BECSA developed a remote monitoring device that is now enabling audio and visual communication. Real-time gas measuring sensors are also integrated into the system, with gas concentrations displayed within the confined space and remotely in the control room. The remote console also includes a wide angle motion detect camera, intercom system, call button and gas measuring sensors that can be configured to measure oxygen, toxic and flammable gases. Components are housed in an industrial grade enclosure and attached via heavy duty magnets to any metal surface.

# Safety

---



## Juan Larenas

*Copper, Pampa Norte, Chile*

**Project: Elimination of exposure of people to the risks of ground failure and contact with hazardous substances.**

The team at Pampa Norte has eliminated risks for operators of the Spence leach pads with the implementation of a remote monitoring system. As part of the ground inspection and in situ maintenance tasks of the leach pads, operators must access and patrol the entire area. Their role is to control the permeability of the ore being irrigated and check for any failures in the irrigation system that may impact production and expose operators to a number of risks, including ground failure due to a landslide of ore in the heap, contact with hazardous substances or levels of extremely high UV radiation. By applying the control hierarchy, the team developed a monitoring system to inspect and maintain the leach pads remotely. This has eliminated the risks while allowing corrective action to be undertaken. The system also provides night-time control, which has never been achieved in the industry. Using radio-metric and day/night vision cameras, operators can detect and correct operational failures in heap irrigation. Today, operators can execute repairs and maintenance activities with total knowledge of the area and in a controlled environment.

## Belinda Kervin

*Aluminium, Manganese and Nickel, Nickel West, Australia*

**Project: Confined space ventilation design tool.**

A tool that calculates ventilation requirements in confined spaces is now ensuring the safety of workers at Nickel West. The tool was developed to address a lack of knowledge about ventilation requirements which was highlighted during a significant event learning review in 2012. The review identified that ventilation in a confined space was often not adequate for the work being undertaken. Previously, ventilation plans consisted of a drawing of the vessel identifying extraction points, with little or no consideration given to the type or amount of gas input into the system or the type of work being conducted. The new ventilation tool has enabled teams to assess the adequacy of ventilation and make informed decisions about safe work within the confined space. As a result, ventilation plans now contain significantly more detail on how to maintain a safe atmosphere within a confined space and include details on volume turnover inside the space; type and volume of gas input; nature of the work; fume extraction; and forced ventilation. This has led to a significant reduction in the likelihood of an unsafe atmosphere occurring.

## **Kathy Weeden**

*Coal, BMC, Australia*

### **Project: Simplicity in Action.**

An intense focus on simplification has seen BMC fundamentally change its safety system and reduce induction training times. BMC's Simplicity in Action project had two goals: rewrite all their safety documents onto one page and specifically for the end-user; and reduce induction training times from three days to two hours, improving effectiveness and ensuring accessibility. As a result of this project, BMC have reduced their Standard Operating Procedures from 270 pages to 35 one-page documents with no loss of detail; streamlined the risk register from 451 to 56 pages; developed an effective generic induction which can be undertaken online in 1.5 hours; reduced the Safety Health Management System to one page; and ensured the ODP is working as intended. The effectiveness of the project is demonstrated through the time saving for employees and contractors; cost savings for the business; benchmarking by other businesses; and the enhancement of BMC's reputation.

## **Brian Molver**

*Marketing, Aluminium South Africa*

### **Project: Richards Bay container project, including double tier packing containers.**

A sustainable solution to eliminate risk in the supply chain has been implemented by the Aluminium Marketing team in South Africa. With no container handling capability at the Port of Richards Bay, all containerised exports had previously been shipped through the Port of Durban container terminal facility. The process required empty containers to be sourced from Durban and trucked to Richards Bay for packing; containers were then trucked back to Durban for shipment. With limited control over the high-risk Durban road transport leg, Aluminium Marketing worked with key shipping lines to implement a solution where empty containers could be discharged and released at the Port of Richards Bay. To achieve this, container storage areas and handling equipment at the Port of Richards Bay had to be upgraded, improved and enhanced. The project also addressed traffic management issues on the quayside and implemented additional safety controls. Aluminium Marketing also identified an opportunity to increase the aluminium payload per container, in order to reduce overall container requirements and truck movements. The successful implementation of the project is expected to reduce truck moves and kilometres on the highway by approximately 50 per cent in the short to medium term, and up to 100 per cent in the long term. This will result in a much lighter footprint on public roads and a reduction in safety risks and CO<sub>2</sub> emissions.

### Steven Hambrecht

*Copper, Cannington, Australia*

#### **Project: Enhancing Cannington's emergency response capability.**

A review of Cannington's emergency response capability has resulted in a strategy for improving the skills of the Emergency Response Team and enhancing their capability and effectiveness. Coordinated by Cannington's first full-time emergency response role, the review quantified Cannington's capability by assessing the likely emergency response scenarios and analysing current skill levels and skill gaps. A two-year plan was developed setting objectives and a goal to transition from skills-based training to an all-encompassing approach. Cannington concentrated on improving membership stability, changing culture with regard to the perception and value of the Emergency Response Team, upskilling team members, and embracing the transition to experiential-based training. Cannington is now confident it has the right people with the right skill set to respond effectively and professionally to emergency situations both on and off the mine site.

### Oscar Zepeda

*Copper, Escondida, Chile*

#### **Project: Risk management under the sea.**

A program at Escondida to review and improve diving standards and reduce the associated risks has optimised marine monitoring and improved safety. As part of the ongoing sampling process at Coloso Port, professional divers undertake marine monitoring to obtain underwater samples and record data. With the implementation of Escondida's risk management program, a number of tools have been developed to obtain the sediment samples without the use of divers. The tools include gravity core and dragging, and utilising a submarine robot to record benthic fauna. As a result, all diving activities have now been eliminated. The new methodology was implemented in 2012. An analysis of the results show no difference between samples obtained under the new method when compared with those previously obtained by divers. Eliminating diving activities in the marine environment has also had the additional benefit of reducing the total cost of the contract.



## Environment

---



### Silver Naumoska

*Aluminium, Manganese and Nickel,  
Worsley Alumina, Australia*

#### **Project: Noise sentinel.**

A real-time noise monitoring system developed for Worsley Alumina's Boddington mine is supporting the local community and driving productivity. In response to community concerns regarding Boddington's expanded mining footprint and proximity to residential areas and farms, the project developed a custom-designed real-time noise monitoring network and proactive noise modelling system. The noise sentinel is the first of its kind in the world and was developed by Worsley's environmental and operational teams in conjunction with external noise management companies and equipment providers from Western Australia, New South Wales, Victoria and Denmark. The system consists of 14 fixed noise monitors, five mobile directional noise monitors (Barnowls) and Predictor noise software. The monitors are strategically placed in the local community to collect real-time directional noise. The Predictor software is run each morning prior to the start of each mining shift, allowing the team to predict potential noise emissions and alter operations accordingly. Now, noise is managed on a real-time reactive basis and has resulted in fewer concerns from the community and increased productivity.

### Richard Walsh

*Coal, Illawarra Coal, Australia*

#### **Project: Protecting Sandy Creek Waterfall.**

The implementation of a plan to protect Sandy Creek Waterfall has delivered positive results for Illawarra Coal. With mining increasingly becoming a public issue in the pristine water catchment areas around Sydney, Illawarra Coal made commitments prior to mining in the area to protect the Sandy Creek Waterfall, accepting approval conditions from the government to ensure the local impact was negligible. The Sandy Creek Waterfall Management Plan was applied during the extraction of *Dendrobium longwalls* 6, 7 and 8 during FY2011–13. As part of the management plan, Illawarra Coal established monitoring to provide data as a basis for making decisions about the acceptable proximity of mining near the waterfall, rather than accept a conservative offset. The Management Plan has delivered on all commitments and ensured Sandy Creek Waterfall was not damaged during mining.

## Sara James

*Coal, BMA, Australia*

### **Project: Marine plants restoration project.**

A project to restore a nationally recognised and listed endangered regional ecosystem is the first marine offset project for BMA. Hay Point Coal Terminal overlies the boundary of the Great Barrier Reef World Heritage Area. The Marine Plant Restoration Project was developed and implemented as a marine fish habitat offset measure to compensate for impacts on mangrove and inter-tidal habitat areas. The project also ensures no net loss to the ecological, aesthetic and water quality values of the area from construction activities. In addition to enabling the recovery of the ecosystem, the project has aided habitat recovery for threatened fauna and flora species, including the mangrove mouse, and provided critical nursery grounds for crustaceans and fish species within Sandringham Bay Conservation Park. This has ensured local mangrove protection and restoration will match mangrove loss from the project in the World Heritage area, as well as providing benefits across a range of social and ecological parameters. The final measurement of the results determined there was no impact on the mangrove mouse population or its habitat, the restoration of hydrology was successful, and that significant natural recruitment of saltmarsh vegetation was occurring.

## Lina Báez

*Coal, Cerrejón, Colombia.*

### **Project: Preservation of endangered sea turtles through successful local community engagement.**

A Cerrejón project to protect endangered sea turtles in Colombia is benefiting local communities and improving living conditions. In 2007, Cerrejón began exploring the area of the Upper Guajira near Puerto Bolívar, its coal exporting port. The region is known as the habitat of several endangered species of sea turtles. It is also the home of the Wayúu Indigenous communities, who inhabit the arid desert of the Colombian Alta Guajira and are among the poorest people in the country. Cerrejón implemented this project with two primary objectives: promote the preservation, protection and community management of five species of sea turtles; and improve the living conditions of the local people by strengthening sustainable practices. Initially, the project focused on the biological and social monitoring of the area, working directly with the local community. Commitments were generated, leading to a preservation agreement for protecting turtles, nests and resources, improving fishing practices and enhancing community capabilities. Currently, 98 local families are participating in workshops and training.



### Jesus Sanchez

*Aluminium, Manganese and Nickel,  
Cerro Matoso, Colombia*

**Project: Off-gas system (OGS) –  
CMSA clean technology reconversion.**

To comply with a Colombian Government environmental regulation to monitor and control atmospheric emissions in stationary sources, or stacks, CMSA has implemented a new off-gas system. CMSA uses typical hardware, such as cooling towers and bag houses, with different software to control flames, dust and fumes in the stacks, while operating at high power. The new off-gas system has been highly effective in controlling the emission of particulate matter to the environment. Since implementation, there has been an increase in system availability from 45 to 90 per cent, an improvement in air quality due to lower air emissions, a decrease in water consumption, and a reduction in energy consumption and greenhouse gas emissions. In addition, the project has resulted in improved control of the material risk of liquids entering the furnace (that is, water leaks) and a reduction in the risk of explosions in the off-gas system as carbon monoxide is eliminated at the source.

### Ronald Marroquín

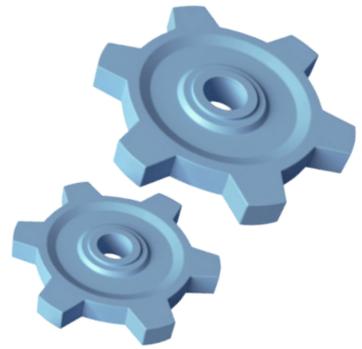
*Copper, Escondida, Chile*

**Project: Change of mine  
concentrate duct route.**

A Minera Escondida project has changed the mine concentrate duct route in the coastal area of Antofagasta to protect the local environment. The decision to change the route was based on the risk of defects occurring in the concentrate duct route in areas of high biodiversity and community importance. The project has shifted the transport of concentrates away from the coastal zone by moving the duct lines route by approximately five kilometres. This has eliminated the possibility of an impact on the environment and the Coloso community in the case of a rupture of a concentrate line. The result is the creation of the Coloso tunnel, which is now being replicated in the design of other projects to be executed in the Coloso industrial area. Already, the Escondida Water Supply and Escondida Water Pipeline projects have traced their water transport lines away from the coastal zone using the Coloso tunnel. Future projects will involve similar designs which use exclusive transport routes and do not risk community relationships or impact environmentally sensitive zones.

## Community

---



### Ana Pérez

*Aluminium, Manganese and Nickel,  
Cerro Matoso, Colombia*

***Project: Shaping dreams – from  
community wishes to government action.***

A project to increase community engagement is contributing to the formation of a strong civic culture and public awareness in the communities around Cerro Matoso. With governments and communities involved in the planning, management and decision-making processes related to the issues impacting welfare and quality of life, the project is ensuring municipalities prepare development plans with the rigour of the law while remaining responsive to local needs and priorities. Realistic development plans are of great importance as new legislation is allowing royalties to be allocated based on the presentation of projects identified in municipal development plans. By facilitating a more transparent engagement environment, Cerro Matoso is identifying communication channels and supporting a stronger relationship with local stakeholders. This is contributing to an enhanced quality of life and is boosting development in the Alto San Jorge territory.

### Brodie Vansleve

*Coal, BMA, Australia*

***Project: BMA local buying program.***

Through the targeted procurement of local goods and services, BMA is demonstrating its support and contribution towards regional economic growth and diversification. The fluid nature of the resourcing industry landscape has identified a need for a commercially robust local procurement program able to withstand various economic climates, while remaining aligned to key business drivers. The BMA local buying program is a mechanism allowing the Asset and small local businesses to establish long-term mutually beneficial relationships and build a sustainable region. The program has two key elements: a day-to-day transactional tool for sourcing quotes and engaging businesses; and the business development arm which is governed and deployed through a local buying community foundation that supports regional sustainability. With the demonstrated early success of the program, BMA Supply is now continuing to transition to a sustainable business as usual model.

### **Liliana Pineda**

*Aluminium, Manganese and Nickel,  
Cerro Matoso, Colombia*

**Project: Educational support program –  
'Education: the best way to fulfil  
children's dreams'.**

An educational support program, or ESP, in Cerro Matoso is improving education outcomes for disadvantaged children and young people. The program began in 2000 as an initiative of a group of Cerro Matoso employees and Cerro Matoso's San Isidro Foundation. The group began by financially supporting disadvantaged children and young people who demonstrated academic aptitude. Given the excellent results that were being achieved, the Company joined the project matching financial contributions. The Foundation also expanded its area of focus to provide secondary students with better access to technical education and university. The program now has two components: support for primary and secondary school education; and support for technical and university education. This model is an excellent platform for companies operating in challenging environments and provides an opportunity for employees, contractors and other stakeholders to unite with a common purpose. In 13 years of operation, the program has supported over 500 families, successfully fostering a learning environment for students and their families, increasing school attendance and resulting in above average performances.

### **Tumi Seboko**

*Aluminium, Manganese and Nickel,  
Manganese South Africa*

**Project: Developing self-sustaining  
communities through the Ba-Gaphadima  
Sand Mine Project.**

The Ba-Gaphadima Sand Mine Project has aligned with the Manganese Asset's community development focus areas to help alleviate poverty in the local area. In 2008, the local community approached Hotazel Manganese Mines to support the establishment of a sand mining enterprise. Six million rand was made available for the project, to be executed over five years. Support from the Company included commissioning a business plan to explore viability and market options; providing expert skills to assist with defining the project; operational planning; providing scoping equipment required for the loading and hauling of material, mine health and safety, and environmental compliance. In addition, the project has provided business training, coaching and mentorship; assistance with setting up financial management systems and purchasing the operation's vehicles. Since operation began, 11 permanent jobs have been created with an additional 44 temporary jobs created during peak times. The project is currently self-sustainable, profitable and has launched its own community development program. This is a community bursary scheme aimed at assisting local youth and the mine's employees to undertake further studies.

## Daniel Bruckner

*Iron Ore, Western Australia Iron Ore*

***Project: Watura Jurnti – uncovering and preserving Australia’s ancient history for future generations.***

Western Australia Iron Ore’s significant program of archaeological excavations and field surveys is uncovering and preserving Australia’s ancient history. The Watura Jurnti project documents the physical remains of Aboriginal camps, ceremonial sites where art and initiations took place, hunting sites and many natural features in the landscape associated with the Aboriginal Dreamtime. The project marks an investment in the heritage of Traditional Owners who have generously and trustingly provided the Company with their knowledge for so long. Over 5,000 artefacts have now been found, recorded and preserved. In addition, cultural stories and Traditional Owner stories have been recorded and shared with the Department of Indigenous Affairs; extensive 3D mapping has been shared with recognised research institutions; and a supporting video which explains Watura Jurnti, has been developed and made available to the Museum of Western Australia and the University of Western Australia. The study was designed to provide long-term relevant data and a benchmark approach for future projects, the industry as a whole, and the wider management of heritage in the Pilbara.

## Sandra Martins

*Iron Ore, Samarco, Brazil*

***Project: Farm productivity enhancement program.***

Samarco’s farm productivity enhancement program in Brazil is helping hundreds of rural producers from the Caparaó region rediscover coffee growing as a sustainable option for generating income and improving quality of life. The program is a partnership between Samarco and Caparaó Junior, offering courses and technical consulting which is enabling farmers to improve their social, economic and environmental standards. The Caparaó region is crossed by Samarco’s pipelines which run between Minas Gerais and Espírito Santo, and the municipality of Muniz Freire, where the Company operates a hydropower plant. As family farming is one of the most important activities in the region, Samarco identified a need to promote social investments in professional skills training and organise the producers in community networks. The program is now empowering local producers and stimulating their participation in trade organisations. This is resulting in increased productivity and improved product quality; the preservation of natural resources according to environmental laws; and an assurance of decent working and living conditions in the rural environment.

# The Award Prizes

---

## EXCELLENCE

---

Excellence Award recipients will receive a specially designed trophy, certificates for key team members and US\$20,000 to donate to their nominated not-for-profit organisation.

---

## HIGHLY COMMENDED

---

Highly Commended Award recipients will receive a specially designed trophy, certificates for key team members and US\$10,000 to donate to their nominated not-for-profit organisation.

---

## MERIT

---

Merit Award recipients will receive a framed certificate, certificates for key team members and US\$5,000 to donate to their nominated not-for-profit organisation.

---



## Preliminary Judging Panel 2013

<b>Health</b>		
Gerard Tiernan (Chair)	Senior Manager Health and Hygiene	Group HSEC
Todd Lee	Production Unit Manager	Petroleum and Potash
Jorge Franco	Head of HSEC ASA	Aluminium, Manganese and Nickel
Ian Sawyer	Manager Health Improvement	Iron Ore
Barry Formosa	Vice President HSEC	Coal
Dino Moll	Head of HSEC MEL	Copper
<b>Safety</b>		
Cameron Ross (Chair)	Senior Manager Aviation	Group HSEC
Jeff Parker	Head of HSEC West Africa	Iron Ore
Shawn Classen	General Manager Metalloys	Aluminium, Manganese and Nickel
Gary Eyres	General Manager BBM	Aluminium, Manganese and Nickel
Ewan Alexander	Vice President HSE	Petroleum and Potash
<b>Environment</b>		
Stuart Price (Chair)	Senior Manager Environment	Group HSEC
Sergio Petro	Superintendent Environmental Management	Aluminium, Manganese and Nickel
Jorge Briceno	Lead Environmental Specialist	Petroleum and Potash
Muna Forbang	Manager Improvement Environment	Coal
Damien Brown	Senior Manager Health, Safety and Environment Improvement	Coal
Melinda Macleod	Manager Environment Improvement	Iron Ore
<b>Community</b>		
Melinda Buckland (Chair)	Senior Manager Community	Group HSEC
Belinda Truman	Manager Community Improvement	Iron Ore
Suellen Jerrard	Superintendent Community Relations	Aluminium, Manganese and Nickel
Nomfundo Mqadi	Manager Community Investments	Aluminium, Manganese and Nickel
Anibal Chamorro	Superintendent Community Execution	Copper
Kristen Everett	Manager Aboriginal Engagement	Petroleum and Potash

## Final Judging Panel 2013

---

<b>Health</b>		
Rob McDonald (Chair)	Vice President Health and Hygiene	BHP Billiton
Teri Lillington	Regional Manager Shell Health, Europe, Russia, CIS	Shell Australia
Professor Fritz Eloff	Associate Professor	North West University
Jimmy Perkins	Professor of Environmental Health Science	UTHSC Houston School of Public Health
<b>Safety</b>		
Andrew Lewin (Chair)	Vice President Safety and Security	BHP Billiton
Professor Patrick Hudson	Professor of the Human Factor in Safety	Delft University of Technology
Paul Cutrone	Partner	Sparke Helmore Lawyers
Professor May Hermanus	Executive Director: Natural Resources and the Environment	Centre for Sustainability in Mining and Industry
<b>Environment</b>		
Fiona Wild (Chair)	Vice President Environment	BHP Billiton
Damian Barrett	Stream Leader – Water in the Resource Sector	CSIRO
Niven Winchester	Environmental Energy Economist	MIT
Professor Yaa Ntiamao-Baidu	Pro-Vice Chancellor	University of Ghana
<b>Community</b>		
Ian Wood (Chair)	Vice President Community	BHP Billiton
Professor Mick Dodson	Director	National Centre for Indigenous Studies (ANU)
Margie Keeton	Consultant	Tshikululu Social Investments
Maria Emilia Correa	Partner	Sistema B, Alisos, TriCiclos