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ANGLO AMERICAN METALLURICAL COAL SAFETY UPDATE

May – March 2021

Real Mining. Real People. Real Difference.

SAFETY RESPONSE

- Since May 2020, we have looked at every aspect of the management of risk in our underground mines, and commenced a range of work to accelerate technology solutions, particularly automation and remote operation.

- As the largest underground metallurgical coal miner in Australia, we will continue to leverage our scale to find new ways of addressing safety risks, drawing on international best practice and technology development, to ensure our systems and processes extend beyond current industry best-practice.

- Technological solutions offer the best opportunity to deliver a step-change improvement in safety in underground mining and we are investing in a number of areas. Key focus areas include:

  – Fast-tracking remote operation and automation to remove our people from higher risk areas

  – Enhancing our controls

  – Investment in new data and strata capabilities

  – Gas management.

ADVANCING STRATA MANAGEMENT IN UNDERGROUND MINING

- As we have encountered geotechnical challenges in our underground mines over the past 12 months, we have put in place a range of measures to improve our understanding and operational practices. This includes:

  – The creation and launch of our Met Coal Analytics Centre (MAC)

  – Investment in additional surface infrastructure

  – External expertise and additional support for sites through our Geosciences and Geotech functions

- We are seeking to play a leading role in industry to develop these solutions, and remain committed to working with industry to ensure Queensland's mining industry is safe, sustainable and productive.

- We are continuing to cooperate fully and transparently with the Board of Inquiry.
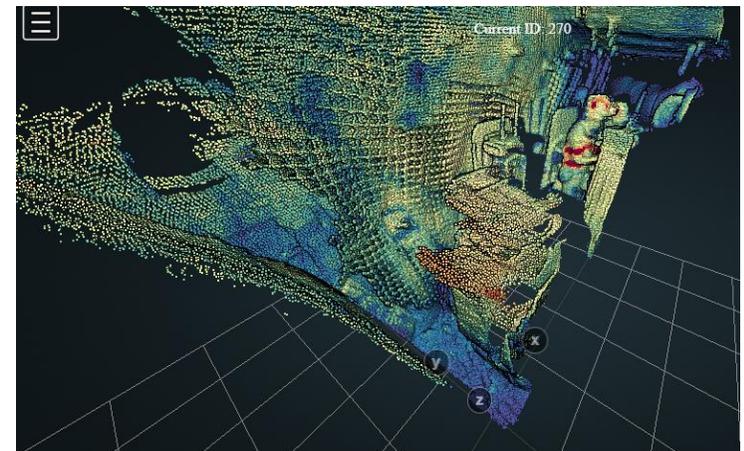
KEY FOCUS AREA:
REMOVING OUR PEOPLE FROM HIGHER RISK AREAS

- Removing our people from higher risk areas, such as the longwall face, is the best way to keep them safe. Our **plans to fast-track automation and remote operation across our underground mines** are progressing well.

  - At Grosvenor, this work includes the purchase of new remote capable longwall equipment. Powered roof supports have arrived in Mackay and are undergoing equipment testing.

  - Moranbah North has established a new Remote Operations Centre and is now fully remote capable and. New automation hardware is being commissioned for the longwall face

  - Remote shears from surface successfully completed at Grasstree Mine in December 2020

  - New Aquila longwall will be operated remotely from commencement of production in early 2022

- World-first trial to support **automation in development process**

  - We are partnering with Australia's national science agency, CSIRO, to undertake a world-first trial of technology to support automation in the roadway development phase of underground coal mining.

Moranbah North Mine's new Remote Operations Centre

Initial scans and data from continuous miner

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KEY FOCUS AREA:
ENHANCING OUR CONTROLS

- **Pressure sensor pilot** to remove power from longwall face when an overpressure event occurs

  - Initial laboratory testing has been successfully completed and we are confident that the sensors could be used to immediately cut power to the longwall as an additional control for an overpressure event

  - Hardware partially installed at Moranbah North Mine ahead of the full pilot commencing soon

  - Pilot results will be incorporated into our plan to re-start at Grosvenor and shared with industry

- We have introduced a **further layer of quality control** for the supply of Intrinsically Safe underground mining equipment.

  - We are putting in place a further layer of independent testing with our suppliers of mining equipment across our underground mines to ensure quality control.

- Continued delivery of Anglo American Elimination of Fatalities program

Laboratory testing of pressure sensors

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KEY FOCUS AREA:
NEW DATA & STRATA CAPABILITIES

- Met Coal Analytics Centre (MAC) is now fully operational, with a team of data scientists, technologists and mining specialists in place at our Brisbane office to look at major challenges and opportunities for the future of our mines

- The MAC's first priority for 2021 is to operationalise gas and strata management analytics to predictive capabilities, including:

  - Methane causation analysis to offer predictive capabilities

  - Predictive gas and ventilation short interval controls

  - Longwall cavity prediction and production forecasting

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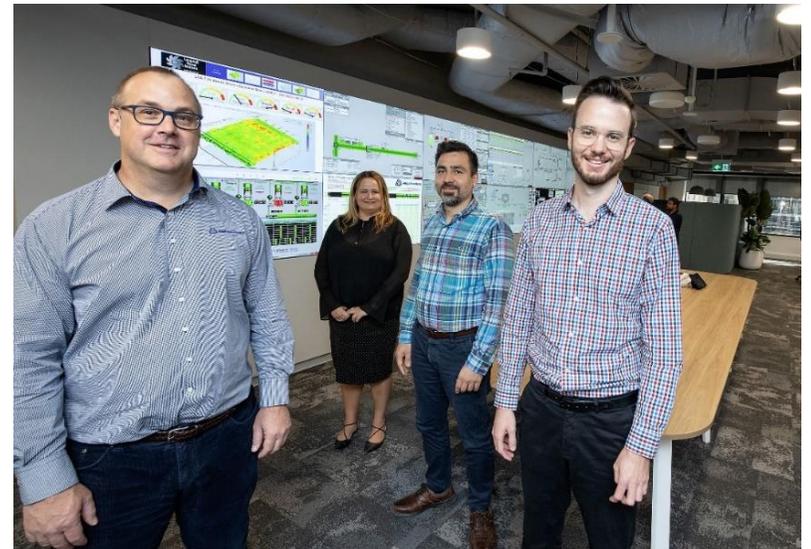
KEY FOCUS AREA:
GAS MANAGEMENT

Prior to 6 May 2020, a number of measures were taken to improve gas management, including:

- Setting up a Grosvenor Incident Management Team (IMT) to manage the specific conditions at the mine.

- Commencing work in late 2019 on the **'Project 17,000'**, which was designed to increase gas drainage capacity at Grosvenor from 9,000 to 17,000 litres per second. At the beginning of May 2020, a capacity increase of around 25% had been achieved, with the project fully delivered in Q4 2020.

- Holding in-depth gas management-specific workshops with industry-leading external and internal experts for both Grosvenor Mine and all our underground mines (March and October 2019), to increase the knowledge, effectiveness and predictability of gas management and then operationalising the resulting recommendations.

- Launching a business-wide transformation program in 2019, which identified gas management as a strategic priority task with in-depth analysis to assess the processes and organisation surrounding gas management.

From May 2020, we have continued to make further improvements to our gas management program, including:

- Allocating **$1.5B for gas management** at our underground mines over five years.

- Commencing an industry-first **pressure sensor pilot** to trial removing power from the longwall face if an overpressure event occurs.

- Establishing a **Met Coal Analytics Centre (MAC)** to operationalise gas and strata management analytics to predictive capabilities.

- Commencing work on **seven key initiatives to enhance gas management capabilities**, including some which are new and not used in the coal industry, such as proactive foam injection into the goaf to optimise the goaf management system, and use of underground in seam (UIS) horizonal floor holes in the gas draining drilling strategy.

- Sourcing industry-leading external experts in ventilation and gas management to bolster internal expertise in developing an **integrated gas management plan** for Grosvenor Mine.

- Introducing enhanced reporting of gas management across the business.

RESPONDING TO THE BOARD OF INQUIRY

- Part 1 of the Board of Inquiry's Report was published in December 2020, including recommendations for companies, industry and the regulator.

- Since May 2020, we have continued to respond to learnings as information became available, and are engaging with industry, through the QRC and Mine Safety Commissioner, to address broader recommendations.

Recommendation	Action taken
Chapter 2: Methane in coal mines	
1. Mine operators and parent companies regard, and action, a reportable methane exceedance as having a potential consequence of level 4 or 5 under corporate incident classification criteria.	✓ Completed
2. Mine operators and parent companies escalate the treatment of repeat high potential incidents of a similar nature and ensure a more rigorous investigation than for a single high potential incident. Reporting and investigation standards and procedures formally reflect this requirement.	✓ Enhanced LFI process
Chapter 4: High Potential Incidents (HPIs)	
7. Mine operators and parent companies classify all methane exceedances at or above 2.5% concentration in the general body as HPIs for internal incident reporting purposes.	✓ Methane exceedances of >2.5% are now Anglo American HPIs
8. Mine operators and parent companies treat such methane exceedances as indicating that a critical control may have failed, and undertake an investigation into the performance of the relevant critical control to determine if that is so.	✓ In process

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RESPONDING TO THE BOARD OF INQUIRY

Recommendation	Action taken
Chapter 4: High Potential Incidents (HPIs) – *continued*	
9. Mine operators and parent companies ensure that such methane exceedances are formally notified as soon as possible to senior executives of the parent company.	✓ In place
10. Mine operators and parent companies ensure adequate spare capacity in goaf drainage systems, above the predicted maximum methane emissions.	✓ Underway
Chapter 6: Corporate governance	
18. The industry adopts strategies and performance measures to address process safety and personal safety separately.	✓ EOF body of work underway
23. The industry gives lead safety indicators greater weight than lag safety indicators when measuring safety performance.	✓ We are engaging an external party to manage the engagement process for our bonus structure review, commencing in Q2
24. The industry gives lead safety indicators greater weight than lag safety indicators in the determination of executive bonuses.	

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