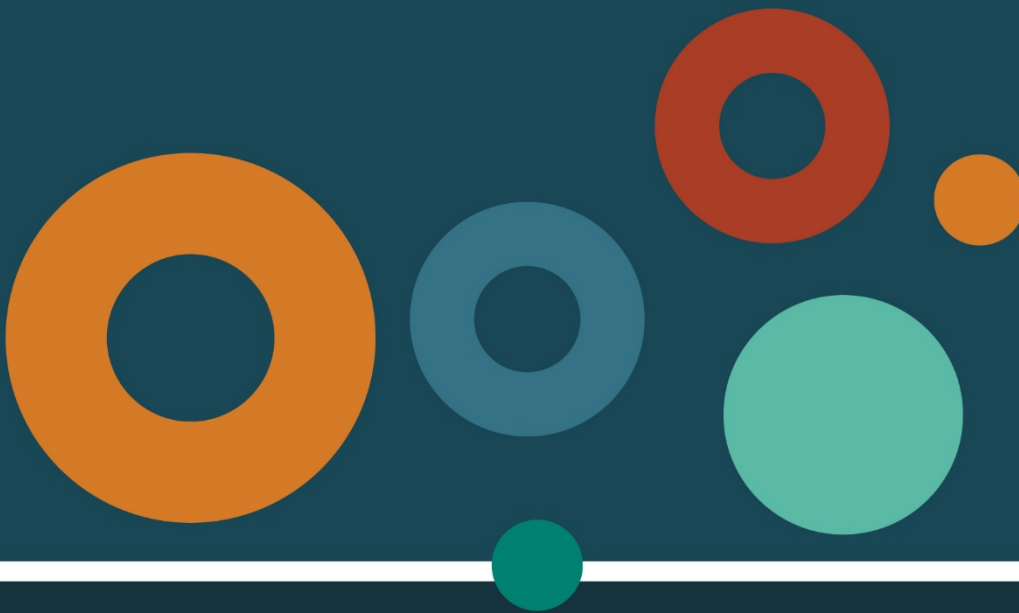


Level 1 Mine Emergency Exercise
Grosvenor coal mine
13 July 2018



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Abbreviations and glossary

Afterdamp	Old terminology for gases found in underground coal mines post explosion normally nitrogen, carbon dioxide, carbon monoxide and low percentages of oxygen
AIIMS (2017)	The Australasian Inter-service Incident Management System (AIIMS 2017).
Approved standard	A standard made for safety and health under the repealed Coal Mining Safety and Health Act 1925 stating ways to achieve an acceptable level of risk to persons arising out of coal mining operations
Bord and pillar	Another name for room and pillar where roadways are driven to a pattern and pillars of coal are left to support the roof
CABA	Compressed air breathing apparatus
CPR	Cardio pulmonary resuscitation
CH ₄	Methane
CITECT	Brand name of SCADA system
CO	Carbon monoxide
CO ₂	Carbon dioxide
CHPP	Coal handling and preparation plant is a facility that washes coal of soil and rock; crushes it into graded sized chunks (sorting); stockpiles grades preparing it for transport to market; and (more often than not) loads coal into rail cars, barges, or ships. They can also be referred to as a coal preparation plant, prep plant, and tippler or wash plant.
Clean skin worker	Worker new to industry with no mining experience
CMW	Coal mine worker
CoB	Change over bay
Continuous miner (CM)	Coal cutting machine used to develop new roadways in a mine
Crib room	Location where mineworkers eat and a meeting station for the ERZ controllers
CRO	Control room operator
CSE	Brand name of a self-contained self-rescuer
Cut-through (c/t)	A passage cut through the coal, connecting two parallel headings
DAC	Underground intercom system also referred to as the tannoy
Deputy	Safety supervisor who makes statutory inspections not referred to as an ERZ controller in Queensland regulation
DNRM	Department of Natural Resources and Mines
DNRME	Department of Natural Resources, Mines and Energy

Driftrunner	Brand name for a flameproof diesel powered man-riding vehicle carrying up to 12 personnel
Eimco	Brand name of a flameproof diesel powered mechanical loader
EMP	Emergency management plan (interchangeable with ERP)
EMQnet	Brand name for a business resilience communication solution which has been adopted by some mines for everyday management as well as communications and information handing during an emergency response
ERP	Emergency response plan (interchangeable with EMP)
ERZ	Explosion risk zone
ERZ controller	Mine worker responsible for safety inspections traditionally referred to as a Deputy
Face	The exposed surface of a coal deposit in the working place where mining is proceeding
Fresh air base (FAB)	A continuously monitored station for dispatch or return of rescue teams in close proximity to irrespirable zones
FREEK	First response emergency evacuation kits—these are the containers that hold the CABA and associated equipment
Gas chromatograph.	A laboratory instrument used to analyse the composition of gas samples
“Go line”	An assembly area on the surface where mobile plant is left after servicing and when available for use
HMP	Hazard management plan
IAP	Incident action plan—developed by the IMT and signed off so that each of the teams, logistics, operations and planning have clear direction
ICS	Incident control system
ICT	Incident control team
IMT	Incident Management Team (term is interchangeable with ICT)
Inbye	Mining term for going into the underground mine (away from the surface) from the point of reference
Industry Safety & Health Representative (ISHR)	A person who is appointed under section 109(1)5 of the Coal Mining Safety and Health Act 1999 to represent coal mine workers on safety and health matters and who performs the functions and exercises the powers of an industry safety and health representative mentioned in part 8, division 2
Level 1 mine emergency exercise	State level mine emergency exercise recommended in the Moura inquiry, designed to test the mine’s emergency response system; test the ability of external services to administer assistance; and provide a focal point for emergency preparedness in the state

Longwall	A method of mining flat-bedded deposits, in which the working face is advanced over a considerable width at one time
MG	Maingate access roadway to the longwall face where the coal conveyor is normally situated. In most cases this is the clean air roadway to the longwall
Mines Inspector	Official employed to make examinations of, and to report upon, mines and surface plants for compliance with mining laws, rules and regulations, safety methods
Mines Inspectorate	The organisation which controls the mines inspectors
MEMS	Mine Emergency Management System
MRAS	Mine Re-entry Assessment System
MSHA	Mine Safety Health Administration, United States of America - Department of Labour
Mole	Name used to refer to the mine site representative on the organising committee for the level 1 mine emergency exercise
Non-verbal communication	Method of communicating using beeps on a telephone or DAC similar to Morse code
O ₂	Oxygen
Outburst	An ejection of gas and coal from the solid face, where the gas is a mixture of methane and carbon dioxide
Outbye	Mining term for out of the underground mine (towards the surface) from the point of reference
Panel	The working of coal seams in separate panels or districts, e.g. single unit panel—a longwall face is sometimes referred to as a panel
Personal emergency device (PED)	Ultra-low frequency through-the-earth communication system used for paging—originally developed to provide a fast and reliable method of informing underground miners of emergency situations
PJB	Brand name for a flameproof diesel powered man-riding vehicle carrying up to 12 personnel
Portal	The surface entrance to an underground mine
ppm	Parts per million
QMRS	Queensland Mines Rescue Service
Recognised standard	A standard made for safety and health under the Coal Mining Safety and Health Act 1999 stating ways to achieve an acceptable level of risk to persons arising out of coal mining operations
Rib	The solid coal on the side of a gallery or longwall face; a pillar or barrier of coal left for support

RS8	Recognised Standard 8 Conduct of Mine Emergency Exercise
Safegas	Brand name of a mine gas monitoring system (developed by Simtars)
SCADA	Supervisory Control and Data Acquisition—software for monitoring and/or controlling plant and equipment
Self-contained self-rescuer (SCSR)	A respiratory device used by miners for the purpose of escape during mine fires and explosions—it provides the wearer a closed-circuit supply of oxygen for periods of time usually less than 1 hour
Simtars	Safety in Mines Testing and Research Station
SMV	Brand name for a flameproof diesel powered man-riding vehicle carrying up to 12 personnel
Stopping	A ventilation control device which stops ventilation flow through a roadway
Tag board	Peg board where underground personnel place a token to indicate their presence in a section of the mine
TG	Tail gate, sometimes called timber gate, this is the access roadway to the longwall where the air contaminated with dust and gas leaves the longwall
Undermanager	Mineworker who is in charge of the mine on a shift basis (i.e. shift supervisor)
Ventsim	Ventilation modelling software
VCD	Ventilation control device—an air door, stopping, seal or brattice
VO	Ventilation Officer—person responsible for coordination of all ventilation related activities at the mine including running a computer base ventilation modelling system

Preface

This report has been compiled by the 2018 Level 1 Mine Emergency Exercise Organising Committee (the Committee) with input provided by each of the assessors involved in the exercise. Assessors have provided an account of their part of the exercise for this report.

The Committee would like to thank all assessors for their input and acknowledge the co-operation and assistance of all those involved in the 2018 Level 1 Mine Emergency Exercise. In addition, the Committee would also like to thank Grosvenor mine for participating in the exercise and providing self-contained self-rescuers (SCSR) and compressed air breathing apparatus (CABA) for use during the exercise, adding to the reality of the experience for evacuating coal mine workers.



Duty cards

Executive summary

This report relates to the 2018 Level 1 Mine Emergency Exercise (level 1 exercise) held at Grosvenor mine between 11 am and 5 pm on Friday 13 July 2018. Grosvenor underground mine is an underground longwall mine approximately five kilometres north of the town of Moranbah in Central Queensland.

The Queensland Mining Warden's inquiry into the explosion at the Moura No. 2 mine in August 1994 recommended, "emergency procedures should be exercised at each mine on a systematic basis, the minimum requirement being on an annual basis for each mine". (Windridge et al.1996)

In December 1996, the *Approved Standard for the Conduct of Emergency Procedures Exercises* was published. This approved standard was updated and issued as *Recognised Standard 8 Conduct of Mine Emergency Exercises (RS8)* in June 2009. It provides guidelines for conducting mine site emergency exercises, including the requirement to test statewide emergency responses by holding an annual exercise.

It is 24 years since the Moura No 2 disaster, and eight years since the Pike River disaster. The Pike River Royal Commission led New Zealand to adopt similar legislation regarding emergency exercises. Since 1998, 21 Level 1 Mine Emergency Exercises have been held in Queensland.

In all, 33 assessors took part in the exercise, with representatives from Grosvenor mine, Simtars, Queensland Mines Inspectorate, Queensland and New South Wales mines rescue services, an industry safety and health representative (ISHR) from the Construction, Forestry, Mining and Energy Union (CFMEU), Minerals Industry Safety and Health Centre (MISHC), Department of Natural Resources, Mines and Energy (DNRME), Office of the Commissioner for Mine Safety and Health and mine staff from Kestrel, Oaky North, Ensham, Cook and Broadmeadow mines. This report contains a number of writing styles each input has been reviewed and edited to provide a consistent theme.

Objectives

The objectives were set by using the requirements of *Recognised Standard 8 Conduct of Mine Emergency Exercise (RS8)* and by reviewing previous exercise reports, the objectives were to test:

- the ability for coal mine workers' (CMW) to self-escape and wear SCSR and CABA
- the duration the team on the longwall can wear SCSR
- Queensland Mines Rescue Service (QMRS) deployment time
- formation of an incident management team (IMT) on a Friday
- interface with Queensland Police Service relating to multiple fatalities
- Simtars/Queensland Mines Inspectorate/industry safety and health representative (ISHR) response
- electronic information system
- social media response
- the recovery of personnel/bodies by QMRS
- mine fatality protocols.

Scenario

The scenario for the exercise was based on the Upper Big Branch (UBB) explosion in 2010 in the United States of America where the shearer ignited a pocket of gas in the tailgate (TG) and the resulting coal dust explosion went through the mine killing 29 CMWs. In this scenario only the ventilation infrastructure around the TG outbye was deemed to be destroyed.

This scenario included five fatalities at the TG. However, personnel at the maingate (MG) were deemed to have survived but were incapacitated. The disruption to ventilation meant it took some time for a re-ventilation of the longwall face line.

The scenario required the following issues to be addressed:

- CMWs had to effect an escape wearing SCSRs and one team had to undertake a changeover to CABA
- there would be injured CMWs on the longwall
- formation of an IMT
- callout and communication systems (QMRS, Mines Inspectorate, ISHR and Simtars)
- QMRS attendance and deployment
- mine to establish IMT response
- interface with the Queensland Police Service.

Unfortunately the Moranbah police were unavailable to attend due to staffing issues so this interface was not tested during the exercise.

Major conclusions

The following major conclusions were made by the 33 assessors observing the response:

- The CMWs at Grosvenor mine were well trained in the donning of SCSR and the changeover to CABA. They showed enthusiasm for establishing how long the SCSRs would last and several CMWs wore their SCSR for extended periods to experience the effects of one that was at the end of its duration. One CMW managed 3 hours 18 minutes from a CSE 100 at rest.
- Non-verbal communications were used at several locations. There were stickers for standardised answers at most locations. Useful information was provided to the control room by this method. While a list of standard questions had been prepared the list was lacking on some occasions.
- The surface marshalling did not operate smoothly with some CMWs missing the debrief room and going straight to the training room where they mixed with CMWs who were not directly involved in the exercise.
- The Grosvenor emergency response system had just been updated and, while individual groups had practiced, the whole system had not been tested in unison.

- A common concern for all assessors was the number of duty cards that were issued and how this could be sustained over a 24 hour period, particularly if the incident had occurred on a weekend as a number of key staff operate on a fly in, fly out (FIFO) roster from Brisbane.
- The control room became a mini IMT with information being discussed and analysed there. In three of the last four exercises this has been the case and key information (intelligence) was not made available in IMT. This could be an ideal location for the intelligence gathering with a dedicated person to ensure that all data is recorded and forwarded to the required group.
- CMWs do not understand the deployment requirements for QMRS in emergency situations. There is a belief that once sufficient teams are present they can be deployed. (This could be driven by the fact that RS8 requires a deployment of QMRS). Mines rescue deployment is undertaken following a risk based methodology. There have been numerous cases where mines rescue teams have been deployed underground and killed in a subsequent explosion
- Non-verbal communications was used by used CMWs on the longwall to relay important information to the surface. It was identified that an additional catalogue of questions need to be prepared that can be used on an as-needed basis.

A full list of conclusions for both underground and surface are included at the end of each section of this report.

Recommendations

All mine sites and other agencies involved in mine emergency incident response should review the recommendations and use them in the gap analysis and periodic review of their emergency response systems, as well as audit tool prompts and checklists.

The following recommendations arose from the exercise for the emergency response:

- The mine to continue with the level/duration of training in SCSR donning and changeover to CABA. The assessors clearly identified that the CMWs involved in the exercise were proficient in this process.
- Develop an emergency management standard to ensure that all mines have the same
 - a) coloured escape way droppers
 - b) lifeline protocols for cones and installation
 - c) non-verbal communications
 - d) communications between evacuating CMWs in their group and when they meet other groups
 - e) CABA spacing
 - f) CABA location ancillaries: telephones/DACs, mine plans, white boards etc.
 - g) hat colours depicting CMWS experience/role.
- The mine to review its mine emergency response system to streamline the process as a result of the areas for improvement identified in this report, in particular the number of duty cards.

- Adopt an industry-wide data management system for operational management and emergency response and standardised access for external agencies such as QMRS, Mines Inspectorate, ISHR and Simtars as applicable.

In response to the conclusions and recommendations included in this report, and previous level 1 reports, the following initiatives have been developed.

The requirement for an emergency management standard has been identified over the past couple of years and is a particular issue for contractor mine workers moving from mine to mine. A working group has been established to prepare the emergency management standard. The draft standard is being prepared and will be submitted to the recognised standards committee in November 2018.

The exercise committee will continue to draw assessors from other operations to participate in the level 1 exercises, in particular CMWs who are studying for statutory certificates. Previous assessors have stated how they have benefited from participating in the level 1 exercise. This will benefit them as individuals and the operation from which they come.

A review will be conducted regarding whether to implement the level 1 exercise in two parts:

1. Run the normal level 1 exercise to evaluate the capability of the CMWs to self-escape and respond to the scenario they face, the mine to form an IMT and conduct data analysis to see if a mines rescue re-entry to the mine is acceptable. This would involve the inspectorate, ISHR, mine corporate and QMRS operations managers and can be conducted over a full shift.
2. To have people underground ready for the exercise as assessors and casualties to test QMRS emergency response capabilities as the second part of the exercise. In this case, an incident action plan and re-entry assessment would already be prepared and will facilitate the deployment of mines rescue teams once sufficient numbers are present on site. This will have minimum impact on the mine management or production.

In the future, the level 1 exercise window will not be announced. The mine will know the day on which the assessors will attend the mine for their induction and the exercise will be conducted on any night or day shift after that induction. No-go dates supplied by the mine will be avoided where possible.

The 2019 Level 1 Emergency Exercise will be held at Cook Colliery near Blackwater.

Russell Albury

Chief Inspector of Mines (Coal)



Figure 1 Location of Grosvenor Mine

Introduction

This report relates to the 2018 Level 1 Mine Emergency Exercise held at Grosvenor mine between 11.00 am and 5.00 pm on Friday 13 July 2018. Grosvenor underground mine is an underground longwall mine approximately five kilometres north of the town of Moranbah in Central Queensland.

All Queensland underground coal mines are required to test their emergency preparedness by running simulated emergency exercises annually. This requirement was a recommendation of the Queensland Mining Warden's inquiry into the explosion at Moura No. 2 underground mine on 7 August 1994 in which 11 miners died. One mine each year is selected to be the focal point of the state's emergency preparedness and is the host for the level 1 exercise.

The requirements for conducting mine emergency exercises are set out in *Recognised Standard 8 Conduct of Mine Emergency Exercise (RS8)* which, along with reports of recent exercises, is available on the Queensland Government website at www.business.qld.gov.au.

Objectives

The objectives of the exercise were set using the requirements of the recognised standard and reviewing previous exercise reports. The objectives were to test:

- the ability for coal mine workers' (CMW) to self-escape and wear SCSR and CABA
- the duration the team on the longwall can wear SCSR
- Queensland Mines Rescue Service (QMRS) deployment time
- formation of an incident management team (IMT) on a Friday
- interface with Queensland Police Service relating to multiple fatalities
- Simtars/Queensland Mines Inspectorate/industry safety and health representative (ISHR) response
- electronic information system
- social media response
- the recovery of personnel/bodies by QMRS
- mine fatality protocols.

The exercise is the focal point for emergency preparedness in the state.

Grosvenor underground coal mine

Grosvenor mine is a longwall coal mine owned and operated by AngloAmerican which produces metallurgical coal from the Goonyella middle seam. Roadway development is by continuous miner with the main production coming from the conventional longwall. The mine staff and explosion risk controllers (deputy) ERZC are all employed by AngloAmerican. The majority of the workforce is supplied by One Key Resources with specialist contractor teams being supplied on an as-needed basis by companies with the relevant experience. Figure 2 shows the longwall layouts at Grosvenor mine

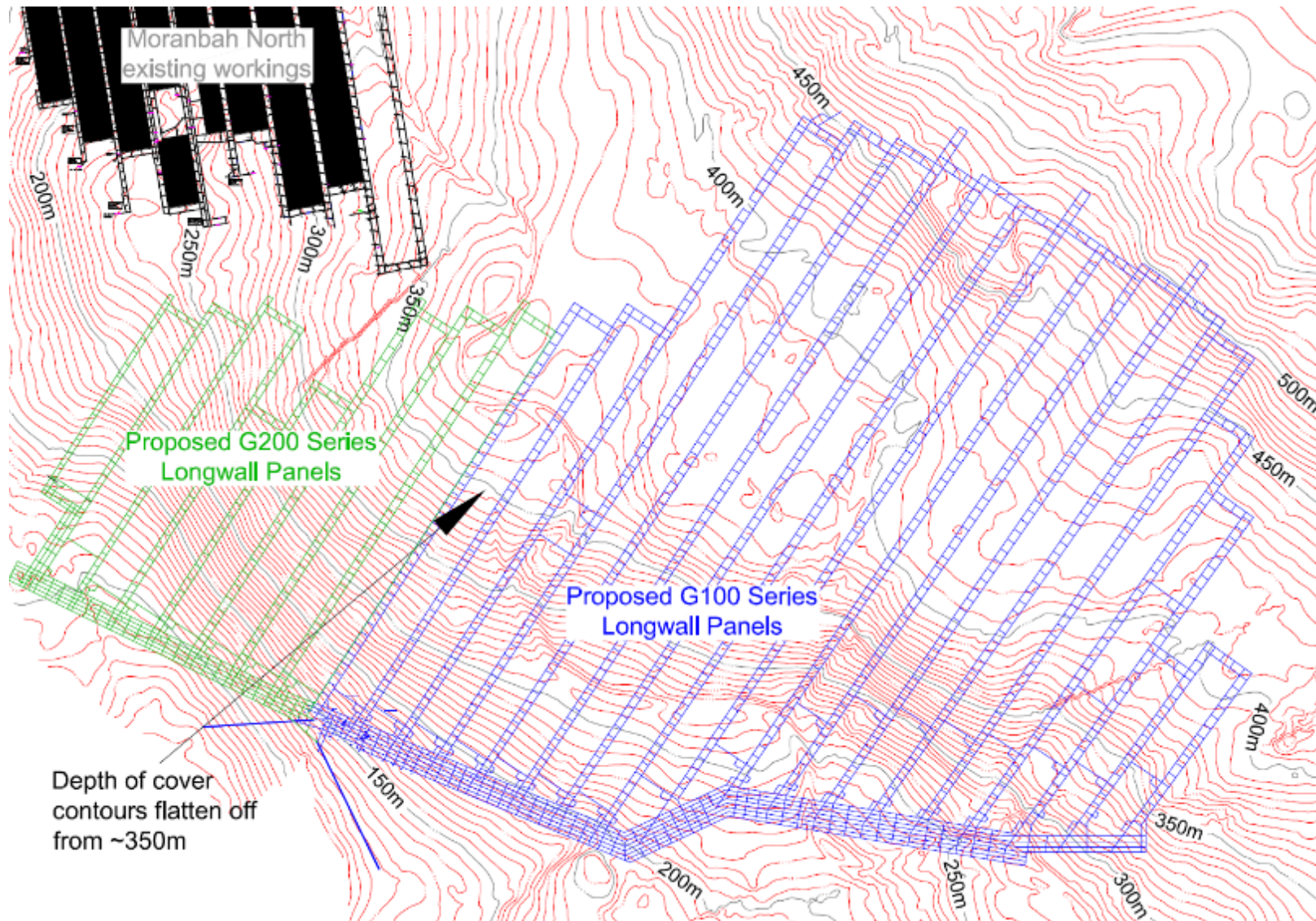


Figure 2 Longwall layout Grosvenor Mine

Scenario

The scenario for the exercise was based on the Upper Big Branch (UBB) explosion in 2010 in the United States of America where the shearer ignited a pocket of gas in the tailgate (TG) and the resultant coal dust explosion went through the mine killing 29 CMWs. In this scenario only the ventilation infrastructure around the TG outbye was deemed to be destroyed.

Control of methane gas levels in the coal mine roadways has become an issue at several Queensland and New South Wales (NSW) mines over the past few years, with one mine reporting over 3.5% methane in the general body, (the lower explosive limit for methane is 5%). This scenario is a timely reminder of the possible consequences of failure to control what is a principal hazard.

The exercise scenario led to five fatalities at the TG. However, personnel at the maingate (MG) were deemed to have survived. The disruption to ventilation meant that it took some time for a re-ventilation of the longwall face line. CMWs at the MG were injured and could not evacuate but could use their SCSR and communicate via non-verbal communication protocols to the surface control room operator (CRO).

This scenario presented the following issues to be addressed:

- CMWs had to effect an escape wearing SCSRs and one team undertake a changeover to CABA
- there would be injured CMWs on the longwall
- formation of an IMT
- callout and communication systems (QMRS, Mines Inspectorate ISHR and Simtars)
- QMRS attendance and deployment
- mine to establish IMT response
- interface with Queensland Police Service.

The scenario deemed that ventilation control devices (VCDs) were damaged by the coal dust explosion, with a cloud of gases and dust having travelled through the mine. For the purposes of the scenario, the time it took for this to occur depended upon the velocity predicted by the mines ventilation simulation in Ventsim. Plans were prepared for the underground assessors which indicated the contaminated air locations and the approximate predicted arrival time for the pollutants (Figure 3). The red dots show the approximate location of the dust and gas clouds after 2, 5, 10 and 20 minutes after the simulated explosion.

These clouds of dust and gas would impair the evacuation of the CMWs and cause any diesel vehicle to stop. The atmosphere was deemed to have passed by within two minutes and then the vehicle would re-start if tried by the CMWs.

The production shifts run from 9.30 am to 9.30 pm. The outbye crews or bullgang crews work from 6 am to 6 pm. The underground assessors were tasked with ensuring that everyone from the 6 am to 6 pm shift evacuated from the mine to enable QMRS to be able to spend any required time evacuating the longwall crew.

This shift pattern raised the issue of fatigue for attending QMRS brigadesmen as they could quite possibly have commenced work earlier in the day.

A timeline of key events and activities was recorded by all assessors and a combined exercise timeline is presented at Appendix A.

A summary of activities at each location assessed is presented in the next section of this report. Recommendations for improvement have been made in each section for industry to consider; where they are specific to Grosvenor they are listed as *Mine*.

Appendix C contains reference material from the assessors on recommendations to assist in the running of level 1 exercises.

In all, 33 assessors took part in the exercise, with representatives from:

- Grosvenor mine
- Simtars
- Queensland Mines Inspectorate
- Queensland and New South Wales mines rescue services
- an industry safety and health representative (ISHR) from the Construction, Forestry Mining and Energy Union (CFMEU)
- Minerals Industry Safety and Health Centre (MISHC)
- Department of Natural Resources, Mines and Energy (DNRME)
- Office of the Commissioner for Mine Safety and Health.

and mine staff from Kestrel, Oaky North, Ensham, Cook and Broadmeadow mines. Mine staff representatives were mainly personnel studying for statutory certificates who wished to broaden their experience in emergency response.

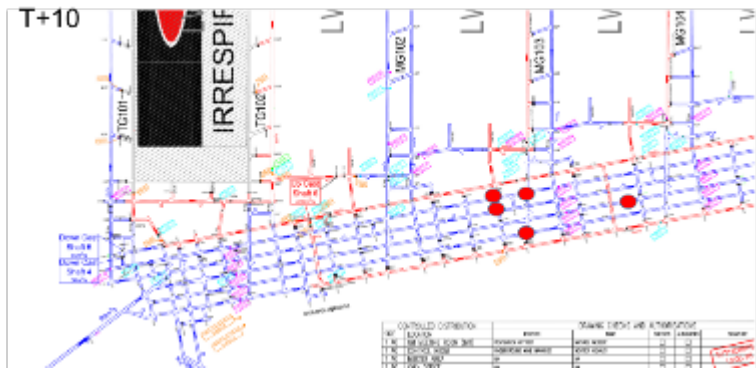


Figure 3 Smoke spread 2, 5, 10 and 20 minutes after the explosion

Underground assessments

102 Longwall face

Assessors: Mark Sanim, Mathew Pratt and Calum Gates (AV)

The longwall assessor's team were deployed to MG 102 longwall crib room to prepare for the exercise and wait for the longwall production crew to arrive. The longwall bullgang were at the crib room as the longwall had suffered a roof fall overnight and Minova (ground consolidation contractor) had set up in 10 c/t, last open cut through (LOC) to pump carbofill into the cavity and personnel exclusion zones were in place.

When the longwall crew arrived, they were separated into individual crews as the longwall production crew which commenced work at 9.30 am was to be the focus of the exercise for recovery by QMRS. There were only seven CMWs on the longwall crew due to the ground consolidation being undertaken on the longwall face and these other personnel were quarantined from the exercise.

The seven CMWs were placed along monorail in belt road so they had access to longwall DACs at 8-9c/t C heading (hdg). This was done so as not to impede longwall recovery operations and to test the operational time that a SCSR could provide at rest.

At 10.55 am, one of the assessors rang the control room operator (CRO) and said, *"for the purposes of the level 1 exercise the longwall is cutting into the TG in a normal cutting sequence"*. This was repeated and it was explained that the CITEC screen for the longwall would still be showing that the shearer was stopped and not in the TG but for the purpose of the exercise the shearer is cutting into the TG.

At 11.00 am, the assessors briefed the longwall crew on the expectations of the exercise and the safety aspects required during the shift. It was explained to the crew that they were cutting into the TG in normal cutting sequence and there was an explosion. The five men on the face were in the TG with the shearer at the time and are dead in the TG. The other two men, consisting of the crew electrician and the MG operator, were at the MG and were unconscious. The crew understood the scenario and the reason for being located in the belt road until the carbofill pumping had finished.

The longwall crew was asked if they would participate in testing the donning of live SCSR and timing their duration at rest. The crew were very happy to participate and the test SCSRs were handed out along with vision limiting goggles. The crew donned the goggles and SCSR in six minutes. They were very fluent at the process, assisting each other once their own SCSR was on and checking each other that fitting was correct. It was explained to the crew to keep the SCSR unit off their chest to limit the heat and to allow air flow around the unit. One of the crew placed one of the end caps under the unit to keep it off his chest, which was a great idea and the rest of the team did the same. The crew were sitting on stone dust bags and were very comfortable during the test of the SCSRs. See Figure 4.

The CRO send several PED's trying to make contact with the Longwall team but as per the scenario the Longwall team was unable to make contact at this time.



Figure 4 CMWs at rest wearing SCSR

At 12.30 pm, two injured CMWs on the longwall face began non-verbal communications with the CRO from the DAC at 8-9c/t. The crew beeped on the DAC five times and the CRO initiated non-verbal communication. The CRO asked a series of questions:

- Are you using nonverbal communication? 3 beeps yes
- Are you on the longwall face? 3 beeps yes
- How many in your group? 2 beeps indicating 2 people (difficult question to answer)
- Are you self-escaping? 2 beeps no
- Are you injured? 3 beeps yes
- Are you trapped? 2 beeps no
- Are you not escaping due to low visibility? 2 beeps no
- Are you using SCSRs? 3 beeps yes
- Are you safe? 3 beeps yes
- Is there a fire? 2 beeps no
- Do you need an ambulance? 3 beeps yes.

This continued for some time until the two injured CMWs made their way onto the longwall face when ground consolidation had been completed. The other five (no signs of life CMWs went to the TG of longwall face). Awaiting QMRS to be deployed.

The CRO contacted the two men who were supposed to be at the MG, in line with the scenario, and tried to confirm the number of people in their group and the location of the rest of the longwall crew. This communication was difficult because the questions that the CRO asked were hard to answer with *yes* or *no*.

At 1.12 pm, the first CMW stopped wearing the SCSR. This was the same CMW that was walking to the DAC, communicating with the CRO. The CRO then contacted the two men and identified them by confirming their names as they read out the longwall crew's names. The CRO confirmed that they were at the MG and reassured them that QMRS was mobilising.

At 1:15 pm, two more CMW stopped using SCSR. One was the other CMW that was walking to the DAC and communicating with the CRO. The CRO contacted the longwall face asking if the two CMWs could read any gas sensors on the longwall. They could not read the gas sensors. The CRO then ran through the names of the rest of the crew confirming that they were inbye them on the longwall face. The two CMWs were asked if they could get to compressed air to use as a small refuge chamber. They could as compressed air is located in the pan line on the face at the MG.

At 2.00 pm, the Minova team had finished pumping Carbofill on the face and the exclusion zones were removed. At the same time, two more CMWs stopped using SCSR. The longwall crew then made their way down the belt road to the face. One CMW was still wearing a SCSR. The team walked from 9ct B hdg to 10.5ct B hdg and as soon as the CMW reached the longwall DCB he stopped wearing the SCSR some **3 hours and 18 minutes** after donning.

The two CMW now not under SCSR contacted the CRO to ask if QMRS had been deployed. Not enough questions were asked about their injuries and they missed the opportunity for a paramedic to triage them over the DAC to gain more information to give to QMRS.

QMRS located the two injured CMWs on the longwall face, immediately providing a new SCSR for both. The QMRS team was very professional and the captain and team members reassured both casualties and made them feel very safe. The team members:

- inspected the work area first to ensure their own safety
- applied water from a hose to burns
- began casualty triage, taking patient medical history, immobilising broken legs
- asked the whereabouts of other CMW missing on the longwall
- prepared CMWs for transport (1 x CMW was able to walk, the injured CMW was put onto a stretcher, not carried out due to face creep; there was little clearance in the MG due to the infrastructure moving into the roadway (creep)).

QMRS arrived at the TG under BG4 and assessed the area and looked for signs of life on the longwall crew. They then recorded the lamp and rescuer numbers to identify personnel. A map of the area was drawn and red glow sticks placed on each member of the longwall crew. The rescue team then contacted the fresh air base (FAB) and confirmed the identity and status of the longwall crew. The mine rescue team then left the area without barricading or taping off the area to quarantine the site.

What worked well?

The assessors noted that the following elements of the exercise worked well:

- the donning of the SCSR and the team work displayed
- CMW skill and confidence in using SCSR (good idea using tin lid of SCSR to keep rescuer off body)
- time trial of SCSR on CMW at rest (longest duration was 3 hours and 18 minutes)
- non-verbal communications with CRO were clear, nothing was rushed and the questions were not long winded
- QMRS response to two injured CMW on longwall was very professional.

Areas for improvement

The assessors noted the following areas for improvement:

- More non-verbal questions to establish information from the two injured CMWs. There was a standard set of questions, but more probing questions should be developed in response to the answers given.
- The CRO/IMT could have used more probing questions once they had verbal communications to find out more information from the two injured CMWs on the longwall to assist in QMRS in their response. For example, exact location, nature of their own injuries, possibly more environmental conditions, and series of event leading up to ignition at TG. This could have saved some time.
- The use of the paramedic to assist in triage for the patients underground. The paramedic could have assisted in questioning and providing advice via the DAC before the underground deployment of rescue teams.

102 Maintenance crew

Assessors Stephen Woods, Trent Anderson and Reid Marshall (AV)

The assessors deployed to 7 c/t MG 102 panel and gathered the bullgang or dayshift crew together. The longwall crew were separated from this crew.

A total of eight CMWs were at this location. They were briefed on the purposes of the exercise. Briefing notes prepared for the assessors are available at Appendix D. The CMWs were issued with vision limiting goggles and SCSRs as per the plan. The team then travelled to the next cut through inbye (8c/t). At this location another CMW was walking past the cut through and he was included in the group for the exercise. This made a total of nine CMWs and three assessors.

There was no ERZC within the group and the CMWs took ownership of the evacuation process and made decisions based on their training.

Unfortunately, the extra CMW was not issued with a SCSR at this location as it was close to time of the event. He was issued with vision limiting goggles. After being briefed, the level 1 exercise commenced at 11 am. The team were advised they could feel a percussion that popped their ears and knocked them over and there was smoke and an acrid smell in the air. The team were instructed

to wear the vision limiting goggles. They decided to don the SCSRs immediately. The team assisted one CMW to don the rescuer. The team did not have access to a personal gas detector (PGD).

The team walked to the phone at 8c/t and made non-verbal communications to the surface. The team travelled in single file along the right hand rib to 7 c/t to the cribroom location and started to changeover to the CABA units. During the walk from 8 to 7 cut through, the second gas cloud came across the group and they were informed of reduced ventilation. They were still under SCSR at this stage. The crew all changed over to CABA units with one suit (Set 1261) malfunctioning (this was not part of the exercise). The bypass button would not turn off. However, the CMW kept the facemask on and the team prepared another suit and changeover to the new suit was completed without hesitation. The CMW who was not issued with a SCSR donned the CABA unit at this location.

Verbal communications were made to the control room from the crib room in 7 c/t. A second attempt to inform the surface that they were about to evacuate using the two PJBs in the c/t was unsuccessful.

The team accessed the vehicles available and travelled from the panel to the surface of the mine. Tags were collected from the panel board. Evacuation was completed to the surface in 45 minutes.

Video footage was taken of this evacuation and will be made available to clarify this content. The video was taken using a GoPro camera and a lume cube lighting system. See Figure 5.



Figure 5 GoPro and Lume cube equipment

What worked well?

The assessors noted that the following elements of the exercise worked well:

- The CMWs took the initiative as there was no ERZC evacuating with them and they looked out for each other.

- The donning of the SCSR was managed professionally and quickly. The team appeared to be very proficient in this process.
- When some of the SCSRs proved difficult to open, the CMWs gently tapped them to release the top cap.
- In the absence of a PGD, they made the decision based on their training which was the correct decision.
- Changeover to the CABA units was also very proficient and they assisted when a suit malfunctioned without panic or hesitation.
- The evacuation was completed in a very short period of time and the pace was comfortable for all involved.

Areas for improvement

The assessors noted the following areas for improvement:

- Upon reaching the surface, the team was channelled to the training room and instructed to go there without debrief. All underground personnel evacuated from underground should be debriefed for information.
- Communication was poor from the surface to UG (not responding/wrong person reached using DAC). All communications made from UG to surface during an emergency should be answered and dealt with by a competent person.

102 Ventilation Crew

Assessors: Neil Randolph and Craig Tayler

The ventilation crew were located at 30c/t some 20 cut-throughs inbye of the longwall.

Shortly after the ERZC arrived and was informed of the level 1 exercise by the assessors. The ERZC informed the assessors that several other ERZCs were either sick or on leave (three in total) and that he was responsible for eight workers in the area during the shift.

The assessors had three SCSRs and four vision limiting goggles. The decision was made to issue the SCSR and goggles to one experienced, one moderately experienced and one *clean skin* worker. The fourth set of goggles were given to the ERZC. As the location of the workers was significantly further than the originally planned location of cut through 10, the assessors made the decision to still have the vehicle stall at T=10 to determine the CMW responses.

The workers were briefed on the level 1 protocols at 10.30 am. As SCSRs were limited, all workers were advised to treat this as a real exercise and that non-verbal communication was to be used throughout.

The level 1 exercise commenced at 11.00 am. Workers were advised that a loud bang was heard and they were knocked to the ground. They were advised of an acrid smell and that the ventilation had been reduced. The three workers selected were handed their SCSR and goggles. A worker was selected to use the phone to contact control. A non-verbal protocol sticker was placed on the phone to assist. After a few minutes, communication was established and proceeded using the protocol. The ERZC gathered the workers in a huddle and made the non-verbal decision to drive out using the PJB. All workers gave the thumbs up and the area was evacuated. The driver did not wear the vision

limiting goggles. However, the ERZC was in the passenger seat and the driver was instructed by the assessors to drive at a speed that the passenger felt comfortable enough to navigate. At 11.06 am, workers with the goggles were told to remove them.

At 11.10 am, the ERZC was told his gas detector was alarming with a low oxygen content and a high carbon dioxide reading. The ERZC got out of the PJB (brand name for a flameproof diesel powered man-riding vehicle) and continued to monitor the gas detector while waiting for his team to join him at the rear of the PJB. He was told that the oxygen concentration was stable and carbon dioxide was stable. The ERZC signalled to his team to remain calm and motioned to the driver to go back to the driver seat. He then signalled to his team that they would drive out. The team gave a thumbs up and re-entered the PJB. The ERZC was told that the gas detector had ceased alarming and that the oxygen was increasing and carbon monoxide concentrations were decreasing. The PJB was re-started and the workers resumed evacuating the mine.

At 11.20 am, the workers arrived at 20 cut through. The three workers fitted with the SCSR decided to experience walking out. This was agreed to by the assessors. The group leader adopted a *stop, turn and look* approach to ensuring that no team member was left behind. This occurred approximately every 50 metres. The workers made it to the 17 cut through CABA station. There were no level 1 CABA placed at this location. One worker decided that they could not continue with the SCSR. Two workers decided to carry on and obtained *blind man* sticks to facilitate the escape. The lead walker used one stick as a walking cane and both workers held the second stick to maintain contact. They then walked to 13 cut through at a good pace. In total, they spent 40 minutes using the SCSR and 20 minutes at a brisk walk up a 1 in 8 incline. They commented on how hot the SCSR was and the difficulties in keeping the mouth piece in place. This was an extremely good effort by both workers and it was encouraging to see that they placed themselves in a position to experience first-hand SCSR use under duress, and also considering one worker was a *clean skin*. All workers entered the PJB and the workers removed their tags at tag board (10 cut through).

At 11.25 am the ERZC made the decision to collect the other two-man transport vehicles. The assessors were unaware of his motives for this decision at the time. Travelling with the other workers. The ERZC stopped at each CABA station to contact control to advise them of the number of persons, location and advise that they are under CABA suits, also that verbal communication was re-established

All coal mine workers arrived at the level 1 designated CABA station at cut through 7. All CMW decided to don the CABA. The two CMW with the SCSR were instructed to wear the units and change over to the CABA. All CMW were able to effectively don the CABA within five minutes. The two CMW wearing the SCSR showed good techniques swapping over (deep breath of the SCSR before swap). All CMW assisted each other to ensure this was an efficient process.

At 12.10 pm, communication was made with the control room. It was to advise them of the plan to travel by vehicle directly to the surface with no further stops under CABA. Confirmation was given from control communication.

At 12.15 pm, workers boarded the PJB. Drivers were assisted when removing their tanks to ensure face seals were not compromised. They drove with the CABA cylinder in front of them.

At 12.25 pm, the ERZC spotted a team of workers who were evacuating on foot. He made the decision to stop and pick up these workers. At 5 cut through, additional workers were picked up and the convoy of three man transports made its way out of the portal at 12.35 pm.

All CMW were met at the surface by incident control management and were asked to collect their tags and sign off by the tag board attendant. Vent crew 102 were instructed to make their way to a designated area to provide information to IMT staff. The ERZC correctly stated the incident parameters (loud bang, knocked off feet, acrid smell and reduced ventilation). Another CMW discussed the PJB losing power and stalling. The coal mine workers were asked to hand in any gas detectors and make their way to the lamp room to return equipment, sign out of the mine and make their way to the team debrief.

What worked well?

The assessors noted that the following elements of the exercise worked well:

- The team performed the self-escape exceptionally well, and coped with the need to adapt to changes.
- The ERZC controlled the situation well and predicted that the PJB would be operational after the stall.
- Verbal communication was done well.
- Donning of the CABA was efficient and effective.
- The workers showed commitment to participating in the level 1 exercise event and to testing their abilities.
- The non-verbal stickers on the DAC assisted the workers in communicating with control.
- Areas were clearly marked including CABA and DAC.
- The decision process to collect other men transported increased the evacuation speed of other coal mine workers from the mine.

Areas for improvement

The assessors noted the following areas for improvement:

- Workers reported that with the restricted visibility goggles it was too difficult to read PED display.
- No medical staff were observed on arrival for Vent Crew 102. While no injuries were reported, some workers may have been fatigued or stressed and required attention.

103 Development

Assessors: Caine Williams, Edward Godbold and Matthew Way

The assessors were deployed to MG 103 crib room where the bullgang including the ERZC were located. The team were briefed on the purposes of the exercise.

At 11 am, the exercise commenced and the production crew were advised that they had felt a pressure bump and there was a significant loss of ventilation. The crew isolated the face and then commenced evacuating to the crib room to contact the CRO to find out what had caused the pressure bump and loss of ventilation.

The ERZCs then accounted for all of the crew members and proceeded to check the vehicle and the rescue equipment. The CRO contacted the crib room and stated that the main fans were still running

and that there had been a carbon monoxide (CO) exceedance in the longwall. The CRO then contacted them again and stated that they were to commence evacuating the mine. There was only one PJB in the panel and the crews split and the production crew took the PJB and the bullgang made the decision to walk out of the mine. The CABA was taken by all of the men (there were 12 suits to be allocated between the crews) and the drift runner commenced driving out of the panel. The ERZC rang control and informed them that they had one crew evacuating on foot and the other crew evacuating the mine in a PJB.

The crew in the PJB proceeded to 15c/t where it encountered a dust cloud and gases (16% O₂, off scale CO and 3% CO₂) and the vehicle then stopped. The ERZC told the crew to put on the SCSR and to go into the belt road to continue the escape on foot via the second egress. While in the belt road the crew turned the pull keys on the belt to provide CRO with a location for the crew as they evacuated.

Once in the mains, the crew were able to signal to vehicles leaving MG 102. The remainder of the evacuation was by vehicle.

At 11c/t the crew went into the CABA refill station to check the roadway and were told that the ventilation was fresh air and that it was still very sluggish. The ERZC then told the crew to remove their SCSR and then he called the CRO and informed him:

the MG103 production crew was at 11c/t

that they had encountered a dust and gas cloud at 15c/t MG103

that he was going to proceed out of the mine via the primary escape way.

He was told by the CRO to wait on the line for further instruction and then was told by the CRO to continue evacuating the mine.

While proceeding to evacuate the mine the crew was constantly checking the condition of the team members, the condition of the VCDs and making sure that they were all travelling at a pace that everyone was comfortable with. They had CABA with them but were not wearing it as they were still in fresh air.

At the MG103 tag board the ERZC informed the CRO of how many people were on the tag board and took down the names and continued out via the primary escape way up D hdg constantly checking the ventilation devices and the gases in the ventilation.

When the crew reached 9 c/t they inspected and saw that the C hdg overcast had been damaged and required patching up. The ERZC attempted to call both of the CRO numbers and went to the reception both times and reception was unable to connect them to the CRO. After several attempts to connect to the control, the ERZC then passed on the information to reception regarding the overcast and where the MG103 crew was in regard to evacuating the mine. The ERZC told reception that this information needed to be passed onto the IMT and the CRO.

The ERZC then rang the CRO again at the bottom of the drift and got reception who was able to connect him to control this time and he was able to relay the information to the CRO regarding the crew and the damaged overcast that had been seen at 9 c/t C hdg. Three PJBs then came and the crew was able to get a ride to pit top.

At pit top there was a sentry at the tag board who took the names of the CMWs as they came out and directed them for a debrief.

What worked well?

The assessors noted the following elements of the exercise worked well:

- There was a good response to the initial incident, loss of ventilation and pressure bump.
- Gathered the men and isolated the face.
- Organised the teams with the CABA and two groups—no issues with half the team walking out.
- Quick response to the gas plug to don the SCSR and to move to the second egress.
- Good communication with control with regard to how they were exiting the mine and who was with them.
- Relayed the incident to control as soon as possible.
- No panic at any stage.

Areas for improvement

The assessors noted the following areas for improvement:

- Surface to in-seam communication, in particular the phone diverting to the reception.
- Plug of gas had passed and the crew was still in the area vehicle. This was significant because it could prolong the evacuation from the mine as no attempt was made to restart the vehicle. There are many documented mine disasters with multiple explosions.
- ERZC did not pass on to CRO that the gas levels had dropped back to fresh air.

103 Development Secondary support crew

Assessors: Alan Jones and Ben Giles

This team's original deployment was to be with the 103-secondary support crew. Upon arrival at the 103 crib room, the ERZC advised the assessors that there was no secondary support crew, though there were gas drainage drillers working at 31c/t, so the assessors were dropped off at their location. The assessors introduced themselves and advised the drillers that they would be involved in a level 1 exercise at some stage during the shift and went through the safety requirements for the exercise.

The drilling crew consisted of two Radco contractors—one driller (8 years' experience) and one offsider (8 Years' experience only three weeks onsite)—and 1 Grosvenor mine employee (11 years' experience) who was a trainee ERZC. The offsider and trainee ERZC both were carrying personal gas detectors (PGDs.)

At 11 am, the assessors instructed the crew of the scenario by advising them that they "just felt an overpressure and the ventilation has decreased". After a brief discussion about what may have caused this—possible roof fall or an explosion—they decided to contact the CRO. While waiting for the CRO to answer, the crew discussed places of safety and decided that the 28 c/t downcast shaft was a good place of safety for them to egress to as there were CABA, communications and known fresh air. The CRO did not answer the initial phone call so the crew decided to head to 28 c/t. The crew walked past a phone at 30 c/t and a phone and DAC at 29 c/t but did not attempt to contact the CRO.

The CABA cache at 28 c/t was well sign posted, though the green streamers had wrapped around some cables due to the ventilation velocity and were no longer hanging down or easily visible.

At 28 c/t, two of the crew went into the CABA cache and contacted the CRO, one crew member waited on the traveling road to flag down any vehicles that may pass. The CRO advised that he did not know what had happened and that 103 crew were waiting in their crib room. The trainee ERZC rang 103 crib room to advise the ERZC of his location.

At this time, the crew received a PED message to *evacuate inbye of longwall*. This message was confusing as they were not sure if it meant all person inbye of the longwall panel or the longwall face. After a discussion, the crew decided to stay at the 28 c/t CABA cache. Another PED message received advised them to *evacuate to the surface now*. The drilling offsider debated this PED as he wanted to stay in the known place of safety, a PJB was then spotted heading towards the crew from inbye, this vehicle was full (crew stated they would ride on the floor of the PJB if it were a real emergency) the trainee ERZC had a brief discussion with the ERZC in the PJB, he was unsure what had happened and advised the drilling crew to start walking out. The ERZC did not ask for numbers of people or if there were any injuries. The drilling crew stated they would each grab a CABA unit, though not don it, before leaving the CABA cache.

The drilling crew decided to start walking out by the primary escapeway. Another PJB arrived heading inbye. The CMW driving the PJB stated he was heading inbye to pick up more CMW's from 103 panel.

The drillers continued walking and at 26 c/t they were told they had just walked into a cloud of dust and gas, 16-17% oxygen, off scale CO and CO₂ (as per the scenario). The trainee ERZC noted these readings in his note pad. They advised that they would don their CABA units and explained the checks they would conduct on their CABA. At this time, one of the CMWs donned a SCSR that was supplied for the exercise and vision limiting goggles, the other two assisted him with this and advised him that he had not struck the starter and that his breathing tube was twisted.

The crew continued to walk outbye with the CMW wearing the SCSR and smoke glasses in front using his hand to guide himself along the rib and the other two traveling behind him in a line with their hands on the shoulder of the person in front.

The second PJB arrives heading outbye with the remaining CMWs from 103 crew. This PJB was also full. The ERZC in the PJB asked the trainee ERZC if they had contacted the CRO.

A PED message *currently sorting issues* was received and the crew were unsure what this meant.

The crew advised that the dust and gas cloud had passed. The CMW with the SCSR on continued to wear it, though he removed the vision limiting goggles. The crew continued walking at his pace discussing the next CABA location.

The crew arrived at 20ct CABA refill station, the signage and streamers were good and the bell was audible.

The training ERZC contacted the CRO and confirmed their location, number of people and asked the CRO for information on what has happened. The CRO informed them there was still no information on what had happened. The CRO confirmed the crew's expected travel route before the call was ended. Before leaving the CABA refill station, the crew explained how they would refill and the checks that they would conduct on their CABA units and stated they would grab blindman sticks. The crew then continued to walk out the primary escapeway.

At 15 c/t, the crew came across a PJB parked up in the roadway and one parked up in the c/t. They assessed these vehicles and checked to see if the engines would start, which they did. The trainee ERZC contacted the CRO and advised him that they would be taking both PJBs and travelling out the primary escapeway. Before leaving, the operators confirmed a method of signalling each other with the vehicles horns and checked the area for any other people.

As the PJBs were driving out both vehicles slowed at each c/t to check for other CMWs.

Stopped at 11ct CABA refill station.

PED “Calls to 3551 for CRO”

Trainee ERZC called CRO and confirmed location and use of PJB's for transport. Asked CRO if he had heard from anyone else, CRO advised three men missing, call ended, still no information on the incident.

The driller asked the trainee ERZC to ring back and find out where the missing men were, as he was concerned he may run over them. The trainee ERZC called the CRO and asked if he knows the location of the three missing men, CRO informed him he does not know and advised the trainee ERZC to continue heading out. Before leaving the crew advised they would refill and carry out CABA checks and discussed next CABA refill location at 3 c/t.

Travelling out the crew continued to check for CMW's in each c/t by slowing and sometimes stopping and shining their light into the c/t.

Stopped at 3CT refill station, decided not to refill and discuss plan to go to the TAG board at 1 c/t and to call the CRO and refill the PJB's with water. Before leaving 3 c/t one CMW walked over to the airlock and checked inside and opened the hatch in the stopping door to check in the return for any other CMWs, no persons seen. CMW still wearing SCSR, the unit is hot to touch, no signs of side breathing.

Stopped at 1ct and check TAG board, three TAGs still on the board, trainee ERZC recorded the names on the TAGs and rang the CRO to inform him, CRO advised to keep heading out, one crew member debated whether or not to head back inbye to check for the men still on the TAG board, trainee ERZC advised this is not a good idea and that we must keep heading out. Before leaving the crew confirmed the location of the next CABA refill station, 17 c/t C Hdg.

Stopped at 17ct CABA, all signage, streamers and bells were in good order, there were also guide ropes with stop cones to guide people to the cache.

Trainee ERZC contacted the CRO and advised that this was their last refill station and that they would be heading up the man and materials (M&M) drift

Trainee ERZC asked the CRO if all others are out of the mine, the CRO advised he is not sure and to pick them up if you see them. Still no idea of what has occurred.

Crew continued driving out slowing to check c/t's and the CABA refill at 9 c/t.

Upon arrival at the bottom of the drift the RED light was on, the crew began driving up the drift and then stopped to check with each other that it was OK to continue.

Arrive at the top of the M&M drift, 12:55pm still unaware of what has happened.

The portal guard was not seen on the surface. There was “no road tape” at the top of the entry ramp opposite the surface TAG board.

Arrive at Go Line. CMW removed the SCSR he had donned at 26 c/t, notes the unit is hot and was uncomfortable but still working.

Security at surface TAG board checked names and verified TAGs.

Two *Personal Status Controllers* interviewed the crew members to determine if they need to be interviewed by the intelligence department or not. The crew advised they would need an interview and to go to the lamp room and remove their lamps and sign out.

The crew then entered the interview room. The room was full and uncomfortably hot.

Crew was then told they should have seen the *Muster Marshall* (who was past the entry to the interview room) before entering the interview room so they proceeded to do this, the *Muster Marshal* recorded their names and asked if they were OK.

After waiting the crew were interviewed and their PGD's were tagged and taken for examination. The trainee ERZC advised the interviewer of the men's names still on the TAG board at 103 entry and the gas reading obtained at 26 c/t. During the interview, the *Intelligence Debrief review officer* interrupted and began discussing possible holes in an overcast and the names of the missing men still underground. This conversation could be heard by all persons in the room.

The interview ended and the crew were sent to a training room to wait.



Figure 6 damaged 9 c/t overcast

What worked well?

The assessors noted the following elements of the exercise worked well:

- Trainee ERZC took control of the crew and kept notes.
- Crew members knew the location of every CABA cache or refill station.
- Communication between the crew was excellent
- Crew members assisted offside with the donning of the SCSR
- All phones had up to date phone lists
- All CABA stations were well sign posted and equipped with mine plans and blind man's canes

Areas for improvement

The assessors noted the following areas for improvement:

- Communications from the surface to underground were poor, the crew were never told there had been an explosion, therefore no sense of urgency to get out of the mine.
- PEDs were unclear and sometimes confusing.
- Primary escapeway signs are blue looking outbye and white looking inbye, the reflectors on the high tension cables are also white.
- Signage for phones and DAC's is small.
- Once on the surface the concern was to get information, not the men's welfare.
- Intelligence debrief needs to be stream lined
- Names of missing men should remain confidential.

104 Development and maintenance crew

Assessors: Brendan Iddles, David Dibben and Shannon Doherty

The three assessors travelled with the bullgang (9 CMWs) into the mine and arrived at MG104 crib room 13 c/t. The ERZC went through the start of shift notes with the crew. The ERZC was instructed to proceed business as usual and the crew were deployed inbye to carry out their work duties.

Afternoon shift arrived at MG104 crib room 13 c/t at 10:05. The ERZC went through the start of shift process with the crew. The ERZC was informed to gather both the bullgang and afternoon shift crew and meet at the LOC 'B16' for a brief.

All CMW's in MG104 panel met at the LOC for the assessor's brief. No information provided at this time in relation to the exercise. The only information provided was to ensure all faces were secure, Main water range to be isolated, Shuttle car to be parked at the boot and emptied. CMW's were also shown a location where 11x SCSR's were placed and instructed, in the event you require a SCSR, you must use the ones provided and NOT your belt worn. After the brief the crew was instructed to proceed to their normal work duties.

At 11:00 the exercise had started by showing a flash card to all crew members, stating "felt pressure change and loss of ventilation". Two CMW's and the ERZC saw this at B - C 16 c/t. The ERZC informed a CMW to start notifying others in the panel whilst the ERZC made a phone call to control.

The CMWs at C16 face were provided the information shown to the ERZC. The shuttle car operator was requested to park the car at the boot end and ensure the car was empty and secure. All mining faces were secure. The CMW who was sent to the face by the ERZC instructed all crew members to remain at this location until the ERZC came to see them. Total of 9 CMWs were at this location. After three minutes the crew members could see the ERZC walking down the heading, the crew started walking up the heading and met with him. The ERZC informed the crew, 'there has been a loss of ventilation and the CRO has informed me to gather everyone and go to the crib room'. All crew members were gathered and headed to the crib room.

All CMWs retreated back to the crib room and assembled at the crib room tables. The ERZC tried calling control three times, eventually the CRO answered. The CRO informed the ERZC there has been a loss in ventilation and possible VCD failure. The CRO asked the ERZC to remain in the crib room and continuously monitor the atmosphere. The ERZC completed the call and informed the crew "We are to remain here and keep monitoring the atmosphere and wait for further instructions". The atmosphere was never monitored.

Whilst the CMWs were positioned in the crib room a PED message was received by all CMWs stating "Evacuate to the surface". Two Drift runners were located at crib room. The ERZC instructed all CMW's to head into the drift runners.

The ERZC did not contact control to inform crew were evacuating the section. Once the PED was received the ERZC gathered his crew and left.

Both drift runners left the crib room with all CMWs on board. Heading out Via B Hdg MG104 travel Rd, located at 8ct a "Plume cloud" was encountered. The assessors initiated the stoppage of drift runner's. Assessor informed driver of the leading drift runner "The vehicle is splattering and now has stopped. The ERZC (Who was in the front passenger) was informed "You have a plume and gas readings" (Gas readings O₂= 16%, Co₂= 1.5%, CO= off scale). The ERZC gathered all CMW's from the drift runners and instructed CMWs to fit the SCSRs. All crew members gathered in the middle of the heading between the two drift runners and started the donning of the SCSRs.

11 crew members went through the donning process of SCSR's. The fitting of the SCSRs was done to a fair standard. Only minor issues with mouth pieces twisted, overall no CMWs would have been affected in a life-threatening situation. Once the SCSRs were fitted, the assessors informed ERZC the drift runners could now be started. The ERZC wrote a paper note stating "Head to 5ct CABA" shown to all CMWs.

Arrived 5ct CABA station. Deputy directed all CMW's into the CABA station to initiate the changeover from SCSR to CABA. At this location there were no "Training CABA units". Assessors informed CMW's "Noted" and take it as you performed the changeover from SCSR's to CABA, however leave the SCSR's on for data collection. All CMW's back into drift runners.

The teams arrived at panel entry tag board MG104- All CMW's out of drift runners to collect tags. All tags collected, all crew members back in drift runners. The ERZC phoned control, via phone at Tag board entry. The assessor informed the ERZC he was under CABA and he could talk. The ERZC then spoke to the CRO and informed the location of CMWs and intentions to head to the CABA refill station B17ct Mains.

The crew arrived 17ct B-C CABA station. The ERZC gathered all CMWs out of drift runners Informed CMWs to walk through a simulated "top up" process. Crew went through the process effectively. The

ERZC contacted the control and informed location and intentions of evacuation to the surface. The total evacuation time from initial incident was 67 minutes.

Both drift runners pulled up on the Go Line. Each CMW headed to the surface UG tag board. Met by the 'Tag board Marshall'. Marshal directing CMWs through taped area. Each CMW removed there SCSR at this point.

Crew members stopped by *Personal status officer* in the muster area. Officer only gathered a few crew members and started asking questions e.g. what occurred within your area. Remaining Crew members started spreading out in the muster area, become very untidy. Eventually CMWs were directed to proceed to the lamp room and remove lamp and rescuers.

CMW's met with lamp room marshall, removing their lamps and SCSR's. CMW's were instructed to gather outside in the muster area and head to the training room.

CMWs started to proceed thru to the training room. A person from the mine stopped the MG104 CMWs and asked if they have completed the debrief. Crew replied 'No', the crew were then directed into the debrief room.

Crew members headed into the debrief room the ERZC was not with the group and followed in shortly. MG104 ERZC was sitting away from the MG104 crew members. A debrief officer started conducting the debrief with the MG104 ERZC. A second debrief officer was conducting another debrief with another person. The debrief officer for the MG104 ERZC was following a template of questions. The ERZC was answering the questions separately away from his crew members. The debrief room seemed very disorganised and very confusing as the room was filled with a mixture of other CMWs from different parts of the mine. Each debrief officer needed to split the CMWs into each of their assigned areas of the mine and conduct the debrief as a whole. The debrief officer completed the debrief with the MG104 ERZC, then went over to another group and asked who they were? The group were also a part of the MG104 section. The debrief officer asked exactly the same questions to the group, as the MG104 ERZC.

After the debrief all MG104 crew members were directed to the training room.

The debrief notes were all being filled out by hand then scanned and sent to the intelligence cell.

What worked well?

The assessors noted the following elements of the exercise worked well:

- Overall, evacuation of all CMW's from the MG104 panel was completed in a relative short timeframe (67 minutes) without any unsafe acts observed. Coincidentally having enough man transporters within the panel aided the crews and helped execute the withdrawal in a timely manner.
- Good mine standards, signage and cover for the mobile phones all assisted in the evacuation process.

Areas for improvement

The assessors noted the following areas for improvement:

- ERZCs need to gather more information whilst communicating to the control room in an incident. At no stage did the ERZC ask the control room officer what the atmospheric conditions were within the mine. The control room is a great source to relay important information e.g. Gas readings.

- At no stage did the ERZC use this PGD to monitor the atmosphere. Even when the informed there had been a change in atmosphere (in relation to gas levels). During one phone call to the CRO, he was instructed to remain at the MG104 crib room, with all crew members and continuously monitor the atmosphere. Whilst this was a level 1 exercise correct gas monitoring procedures should be followed
- When the “Plume” was encountered B Hdg 8ct and the drift runner was directed to stop. The ERZC was informed there had been a change in atmosphere and gas readings. The ERZC was not provided with the readings until he conducted a check with his PGD. Continual monitoring of the atmosphere is required whilst no breathing apparatus are not worn and to do this the PGD should be in the ERZC’s hand.
- When the ‘Evacuate to surface’ PED message was received, the ERZC instructed all CMW’s to spread into the 2 drift runners and head to surface. No attempt was made to contact the CRO for more information or inform the CRO of the intention of the crew to evacuate.
- The crew did not don or take a CABA suit with them from the initial place of safety (MG104 crib room). From the information given to the crew members, atmosphere was not thought of. Given the mine had experienced a pressure change and major ventilation drop, it would be recommended to assemble at the first CABA station
- The debriefing structure was much disorganised. Crew members were unsure of the process. Crew members spread out across the room and not uniformed. The MG104 crew were debriefed twice.
- Once in the training room there were a large number of CMWs on their mobile phones as soon as the debrief officers were finished with them.

Outbye

Assessors: David Connell and Scott Barker

The outbye assessors duties were to locate CMWs who were deployed to activities other than the main work areas. These personnel were not the main focus of the exercise, but needed to be covered to see what communications they received and a report on how they responded.

The shotcrete crew along with the outbye EZRC for Zone 1 were in the mains development area (inbye of 104). They were prompted with the assessor notes and reacted by initially calling the CRO and informing him of what had happened. The team then waiting for further instructions from the CRO at the crib room. A PED all workers to evacuate the UG was received. This crew did this via their PJB via the primary egress under breathing apparatus. Non-verbal communication was used while on SCSR.

There were four contractors from Techserve and four contractors from Tolk working at the conveyor tripper drive in A heading. The pre-exercise briefing was given in accordance with instructions.

At 11 am the group were informed that they had “felt and over pressure and noticed a change in the ventilation”.

The Techserve supervisor attempted to contact the CRO using a nearby phone. He could not get through.

After the group received an evacuation PED, the group decided to don SCSRs. One of the group was given a real CSE100, two others were give CSE training units. The remainder of the group were instructed not to use their belt worn SCSRs, but were to assume they were wearing SCSRs and to act accordingly.

Once SCSRs were donned, the group left the work area in a transport along the primary escapeway. When passing under 9 c/t D hdg overcast in the Mains, the group were shown pictures of the damage to the overcast. See Figure 6.

The driver stopped the transport in an outbye c/t D-C heading adjacent to the mains belt tripper drive. The driver then alighted from the transport and proceeded through the machine doors into C heading (hdg) at the tripper drive. The driver crossed the belt to access a DAC and attempted to contact the CRO. No answer was received on the DAC, so the driver returned to the transport.

Once the driver was back at the transport on the D hdg side of the machine doors, he pointed to two CMWs in the rear of the transport and gestured for them to follow him. The two CMWs followed the driver back through the machine doors into C hdg.

The remaining five CMWs decided to follow. Shrugging of shoulders indicated some confusion amongst the group. The five CMWs alighted from the transport and went through the machine doors into C hdg. The five CMWs didn't see the first group of three on the other side of the belt so turned right and proceeded to walk outbye following the belt. This separated the original group into two groups, one of three CMWs, the other of five.

The Assessor followed the group of five outbye to the E4 mains CABA station. This was not the closest CABA station to their original work area. The three wearing real and training SCSRs then commenced changing over from SCSR to CABA.

Whilst the SCSR CABA changeover was underway, the transport arrived containing the other group of three CMWs. Once the changeover was completed, all eight CMWs boarded the transport and left the mine via the primary egress.

Once the group had reached the go line transport parking area, they were met by the tag board controller and directed to follow the taped travel route for debriefing.

What worked well?

The assessors noted the following elements of the exercise worked well:

- PED was sent when call was made to evacuate
- The crews were well drilled in donning of SCSRs and change over to CABA.
- Primary escapeway accessible and quick to egress with transport
- Communication with control room effective both non-verbal and verbal once under CABA
- The initial decision to contact control after a change in the ventilation was felt was appropriate.
- The three men tasked with donning SCSRs and changing over to CABA demonstrated competence. There appeared to be some hesitation in some of the actions performed, however the donning and changeover were performed correctly.

- The decision to don SCSRs and evacuate from the work area in a transport via the primary escapeway after an evacuation PED was appropriate.
- The decision to change from SCSR to CABA was appropriate

Areas for improvement

The assessors noted the following areas for improvement:

- Egress signage small in corner of roadway with blue for primary and yellow for secondary. This could be improved by having a large dropper which extends lower to the floor in case of egress in smoke and by using green for primary. Also to have the signs double sided with red indicating going the wrong direction.
- Drift light was red to stop personnel from entering the drift however this also means that the drift light is red at the bottom of the drift. This means everyone evacuating should be stopping at the bottom of the drift and at a minimum calling control. Drift needs an evacuation mode which illuminates red at the top and “green” at the bottom.
- Appropriate actions for the team to take would have been to stay together in the transport and change over at the first available CABA station. They had no way of knowing what the conditions or atmosphere were and they were self-escaping using SCSRs. Information could have been passed on to Control via the phone at the CABA station.

Conclusions: underground

These conclusions have been derived from the review of the underground assessor's comments on the observations they made while assessing the evacuating CMWs

- The CMWs at Grosvenor mine were well trained in the donning of SCSR and the changeover to CABA. They showed enthusiasm for establishing the duration and several CMWs wore their SCSR for extended period to experience the effects of one that was at the end of its duration. One CMW managed 3 hours 18 minutes from a CSE 100 at rest.
- Non-verbal communications were used at several locations. There were stickers for standardized answers at most locations. Useful information was provided to the control room by this method. Whilst a list of standard questions had been prepared the list was lacking on some occasions.
- Underground standards were good but there were some confusing issues with the reflective droppers with the same colours for one dropper being used to indicate a high tension cable.
- The use of transport vehicles assisted in keeping the time down for the evacuation.
- Some CMWs evacuated and did not take CABA with them, they encountered the gas plume and then had to don SCSR.
- Some of the PED messages created some confusion with the evacuating CMWs.
- During the evacuation process the control room phone diverted to the receptionist who did not understand the technical information being relayed. This caused some confusion with the CMWs during the evacuation process.
- The surface marshalling did not operate smoothly with some CMWs missing the debrief room and going straight to the training room where they mixed with CMWs who were not directly involved in the exercise.
- The debrief process was disorganised with the room becoming crowded and teams not being de-briefed together. Scanning the debrief document and emailing would render keyword searches inoperative.
- Many CMWs were seen using their mobile phones in the training room.
- The lack of control on face creep made it difficult to access the longwall and recover injured personnel on a stretcher.

Recommendations: underground

Mine

- Communication to the CRO needs to be addressed with the control room phone diverting to the reception created some confusion. This should be setup so that an experienced CMW answers the phone so the information can be relayed to the CRO office and the IMT as required.
- Continue to roll out IMT structure / practise more desk top exercises with the newly developed system.
- Drift light was “red” to stop personnel from entering the drift however this also means that the drift light is “red” at the bottom of the drift. This means everyone evacuating should be stopping at the bottom of the drift and at a minimum calling control. Drift needs an “evacuation mode” which illuminates “red” at the top and “green” at the bottom.
- Continue with the level/duration of training in SCSR donning and changeover to CABA. The assessors clearly identified that the CMWs involved in the exercise were proficient in this process.
- Steer/creep the longwall back to the TG to provide adequate access to the MG end of the longwall to allow for safe self-escape in an emergency.
- Review site processes to ensure PED messages are clear and concise in an emergency.
- Ensure portal guards at the top of each drift to prevent re-entry to the mine interact with personnel entering and leaving the mine. (Due consideration should be considered for exclusion zones for a possible secondary explosion).
- Check primary escapeway signs. (Some were missing or blown upside down), the size of phone and DAC signs.
- Stream line the intelligence debriefs to ensure that information is collected electronically and keep CMWS groups separate, more than one debrief room is required.

Industry

- 3 monthly training for emergency response, from self-escape, first response, firefighting and ensure all CMW feel confident and comfortable in using the equipment. This includes refresher training for statutory officials on gas testing and evacuation procedures and the donning of CABA/SCSR in fresh air before evacuating dependent upon the situation being faced.
- Develop an emergency management standard to ensure that all mines have the same:
 - a) coloured escape way droppers
 - b) life line protocols for cones and installation
 - c) non-verbal communications
 - d) communications between evacuating CMWs in their group and when they meet other groups
 - e) CABA spacing

- f) CABA location ancillaries: telephones/DACs, mine plans, white boards etc.
- g) hat colours depicting CMWs experience/role.

Surface assessments

Grosvenor uses a dynamic trained system based upon the Australasian Inter-service Incident Management System (AIIMS 2017). The QMRS mine emergency management system (MEMS) for emergency response is also based on AIIMS. The recordkeeping and planning was all undertaken in EMQnet, a digital based system that allows the sharing of up-to-date status information with teams. AngloAmerican has invested in the system and it is installed at all of their mines.

There are dedicated incident management rooms for planning, logistics and operations, intelligence as well as the emergency management team (EMT) based at the “Hub” (the regional offices where support personnel for AngloAmerican mines are based; See Figure 8). This is adjacent to the entry to Grosvenor mine site. This exercise was the first exercise where an intelligence cell has been trialled, after being recommended at the Kestrel Exercise 2014 and an ideal option was seen in the control room during the Broadmeadow exercise.

Grosvenor had just completed a review of the mine emergency response system and had held a few practice sessions with each of the functional groups, the new system was released just before the level 1 exercise. The statement of intent provides the following information

“This Mine Emergency Response System (MERS) provides the framework for managing an emergency. The MERS provides those accountable for managing an emergency situation with procedures and tools to assist in the collection and dissemination of information, subsequently enhancing situational awareness and decision making. The system is also designed to ensure that affected stakeholders are managed professionally and effectively.”

The intelligence group has the following tasks assigned

- *Gather data and information regarding the incident, verify the information*
- *Ensure that personnel are effectively debriefed to ensure that accurate data on the nature and scale of the emergency is obtained*
- *Evaluating the credibility/reliability of the information*
- *Organising and displaying the intelligence in a way that is relevant and accessible*
- *Present the information/data collected in a useable format*
- *Disseminate the collected intelligence*
- *Analyse the intelligence to provide details to the IMT of the nature, scale and effect of the emergency*
- *Maintain a situational understanding of the incident and what could develop*
- *Prepare/collate information required by QMRS as part of MRAS where required.*

Whilst the system is based upon the premise of only utilising the duty card as required there are a large number of duty cards available for use in the Grosvenor system.

- IMT has six
- Intelligence cell has 23
- Planning has 14
- Operations has 27

- Logistics has 23

That is a total of 93 possible options/roles not including the EMT which has 11 duty cards.

Figure 7 shows the IMT structure and no of duty cards for each group.

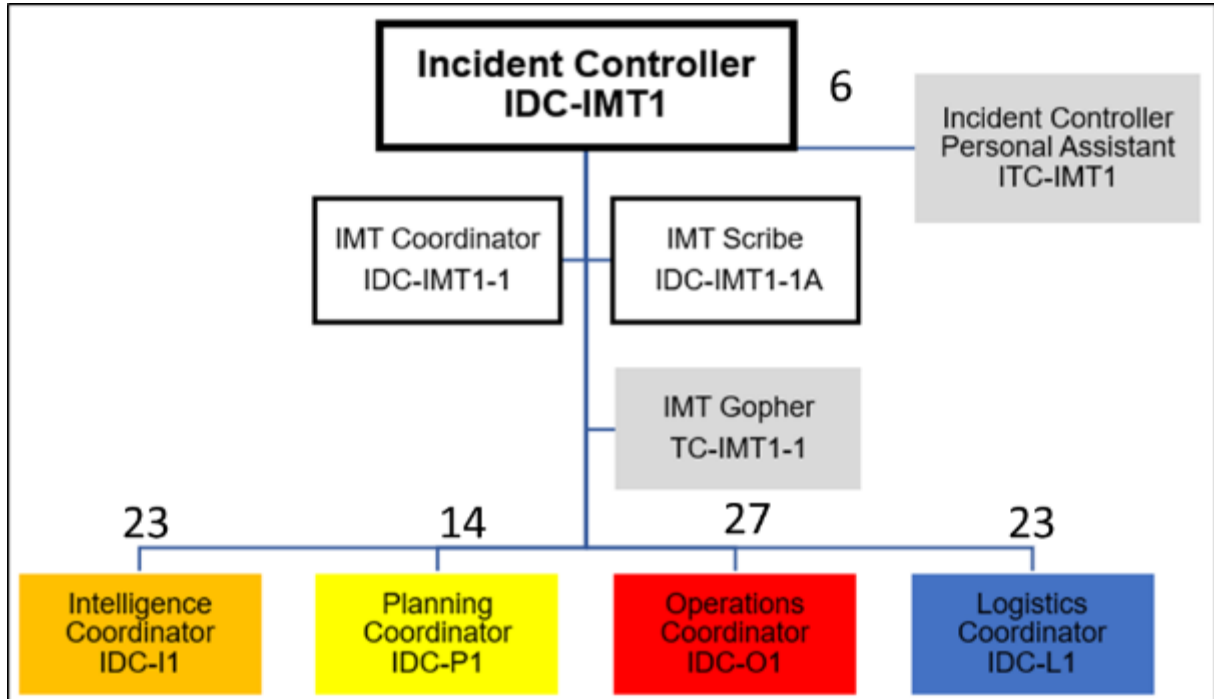


Figure 7 IMT Structure at Grosvenor Mine

Figure 8 shows the location of the rooms along with the QMRS substation and the regional offices.

The Grosvenor MERS states

AIIMS is founded on five fundamental principles:

Flexibility

Management by objectives

Functional management

Unity of command

Span of control

This is the fundamental principal for the site emergency response system.

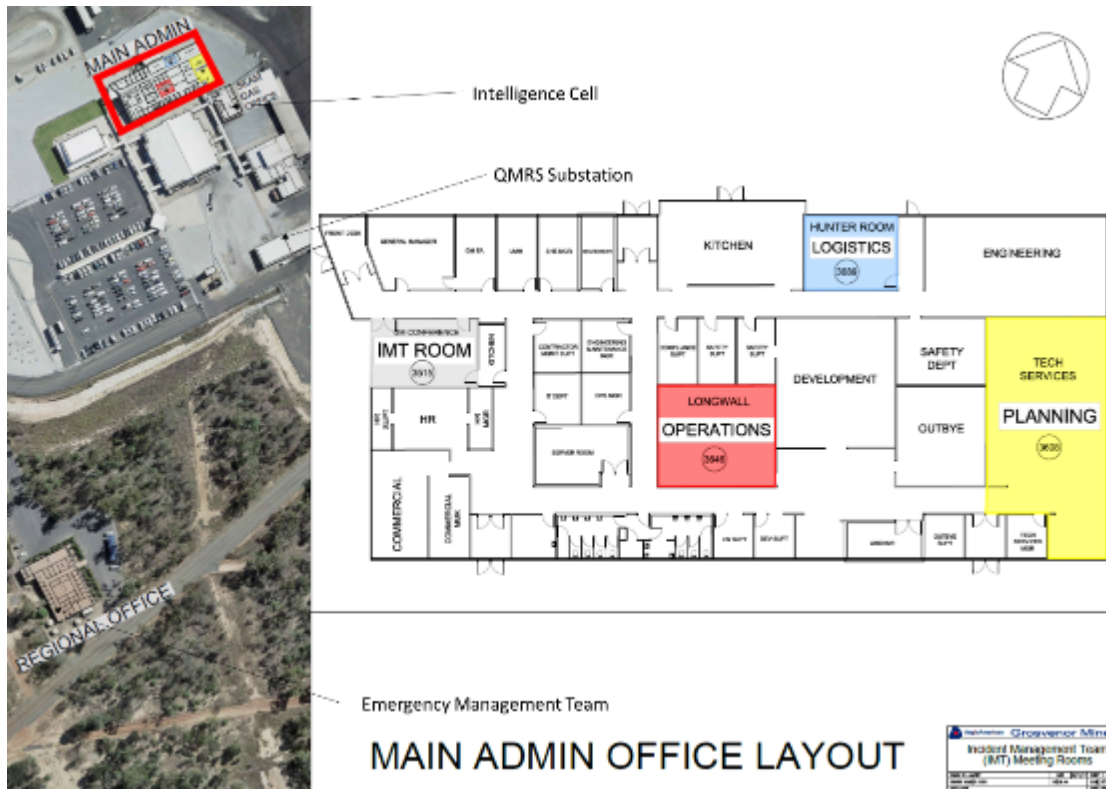


Figure 8 IMT, EMT and QMRS substation locations

Control room

Assessor: Martin Tsai and Shaun Dobson

The level 1 exercise commenced at 11 am on 13 July 2018 when the Control room gas alarms for Longwall 102 were activated and the CRO was given photographs which depicted the scene the MG end of the Longwall face which would have been visible from the installed cameras. See Figure 9. The scene at the TG was described to the CRO and the information provided that there were three CMWs who were obviously dead from the visible injuries. No mock up picture was prepared for this.

The undermanager (UM) on shift was called to the control room where he was informed of the status and initiated the emergency response. He then informed the CRO to inform all ERZCs to retreat to the crib rooms and to contact the longwall ERZC. The emergency alarm was sounded and the underground mine manager (UMM) and production manager (PM) came to the control room where the UM informed them of the incident.

The UMM then initiated the IMT, requested gas data, and asked the emergency response coordinator (ERC) to inform and mobilise QMRS.

The ventilation officer (VO) was then updated by the UMM and asked the CRO to map the carbon monoxide (CO) real time monitors and tube bundle.



Figure 9 Incapacitated CMWs at the maingate end of the longwall face

The UM appointed a CMW to issue the duty cards with persons deployed accordingly, and informed the medical officer (MO) to inform external entities and deployed a CMW to prevent anyone going underground.

The assistant CRO informed UM & PM of 11% oxygen, 50 ppm carbon monoxide, 5.6% carbon dioxide, and 0.7% methane in LW 102 TG. There is a belief of fire due to the oxygen deficiency.

The UM informs the MO of five men being “down” on the Longwall.

The UM identifies the potential of a short circuit of ventilation at the TG doors of LW102 and asks the CRO to contact the ERZCs who are escaping to check the status of the TG doors.

The UM contacted the ERZC for the number of QMRS persons available and informed him of the potential of “Afterdamp” in the TG.

The UM confirms the injury status of persons at the TG end of the LW as to having burns with three dead at the TG and two collapsed at the MG. He informs the UMM (now Incident Controller- IC) and PM (now Operations Coordinator OC) of an explosion and ventilation derangement due to CO reporting to MG104.

OC identifies priority to account for all men and evacuate underground workings and the reversal of ventilation due to fresh air at 11ct. He asks the UM to contact the VO re the ventilation circuit. The VO informs them of the event in the LW circuit where the inbye sensor was previously high but has now reduced and the pressure monitors indicate the TG doors are open. The UM enquires as to the pressure on the intake shaft inbye of the LW however he is informed there are no sensors.

Communication officer reports to UM to divert telephone calls from control room.

UM request Logistics assistance to OC regarding medical info and assistance.

Gas monitoring officer requests permission to UM to send a person to monitor gas drainage holes on surface which is refused it would appear that he was following his duty card but this action was not required.

None verbal communications from 2 CMW's at LW MG who are injured, wearing rescuers, no smoke or fire, safe at moment and require an ambulance.

There were a number of attempts to reconcile persons underground it took two hours after event to confirm the seven unaccounted for CMWs.

Once the IMT process had started information continued to come into the control room and a mini IMT was formed even down to sourcing a whiteboard for noting key information. See Figure 10 and Figure 11.

The IC can be seen in the control room and the information is being collated on top of the mine plan in the centre table.

At one stage the intelligence gopher entered the control room with a mine plan with updated information from the debriefing of the ERZ Controllers showing the positions of CMW's UG. The UM inform the Gopher of the 2 men at the LW MG and other 5 inbye of these.

Yet again this is an example of CMWs communicating with the control room and their UM.

EMQnet not working in the control room until late in the exercise and the control room team used it to look at what had been happening elsewhere in particular on social media and media releases.

If this had been available earlier in the exercise this information could have been entered in and available to the incidence response teams.



Figure 10 mini IMT in the control room

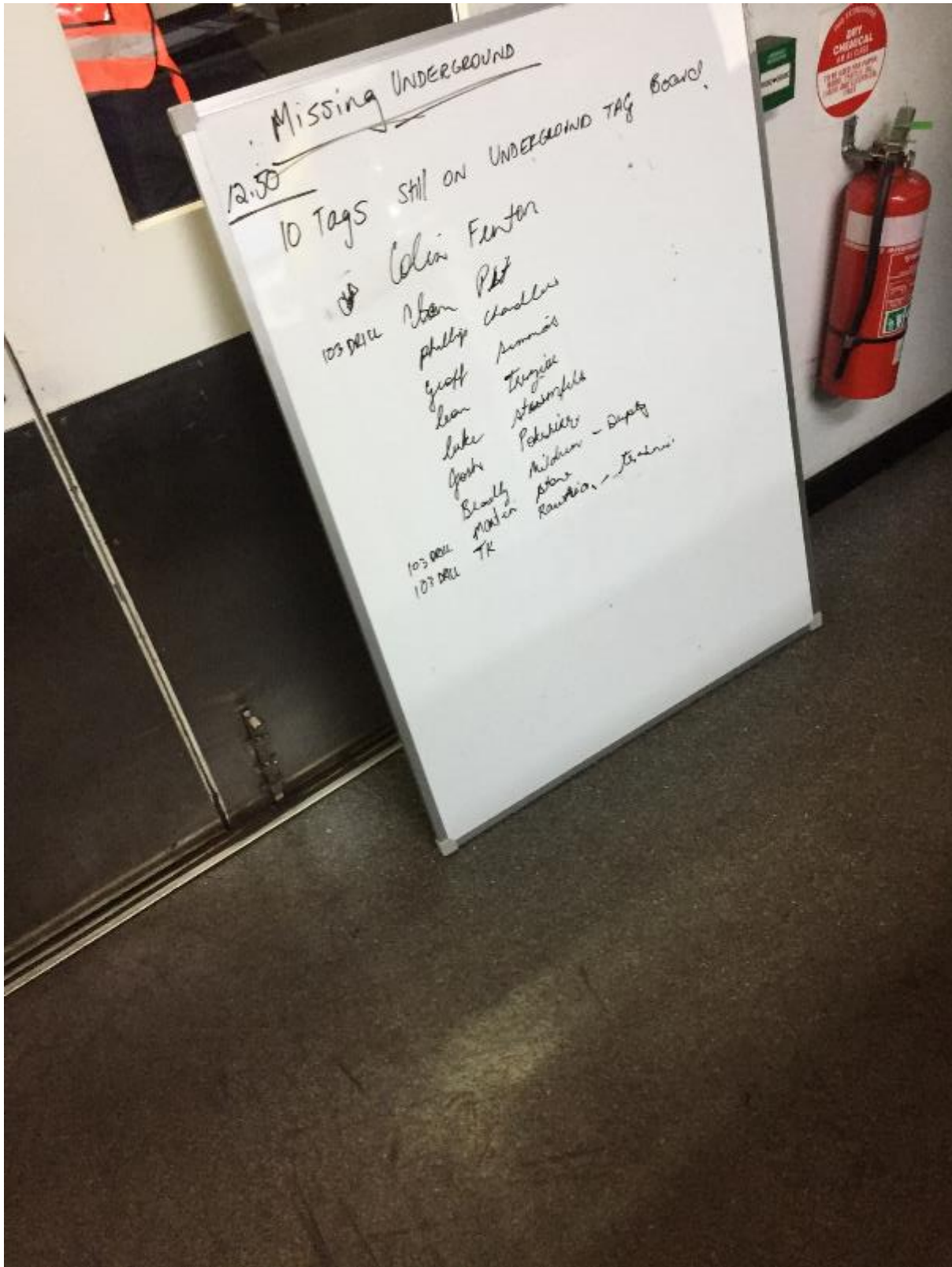


Figure 11 control room whiteboard

What worked well?

The assessors noted the following elements of the exercise worked well:

- The UM and CRO room officer on shift efficiently dealt with the initial emergency response required.
- The QMRS teams deployed underground achieved their objectives.

Areas for improvement

The assessors noted the following areas for improvement:

- The change over from the UM being the initial responder to the IMT being formed and taking control. The UM efficiently managed an initial chaotic control room and response required which was probably due to his extensive experience with mines rescue. However key matters which were identified within the control room and person in there did not flow through to the IMT even though key IMT members were communicated of these findings.
- Throughout the exercise it appeared that there was dysfunctionality between what was happening in the control room and the IMT. The UM was left as an observer/gopher for the OC after the changeover and was not appointed to any specific role he remained focus on the emergency response in the control room except when sent for by the OC.
- Throughout the period of the exercise there was never any mention of the use of TARP's or reference to them. The TARP reference folder in the control room was untouched throughout the event.
- The transfer of telephones from the control room to another line created confusion for the control room operators and persons calling in.
- The identification of who was still underground and clarity of who these people were was not achieved until late into the exercise. This was quite puzzling as the tags were on the board and the cap lamp tracking system could identify where people were.
- Information from injured CMWs was not used to focus the QMRS team's objectives where they were searching the conveyor road outbye.
- The informal transfer of information by the intelligence gopher was open to leakage of potentially harmful emotional exposure.

Incident management team (IMT)

Assessors: David Cliff

Management of the incident including monitoring the status of the event including communicating with other functional groups.

These comments should be read in conjunction with the separate assessments of the functional groups, particularly planning and intelligence.

What worked well?

The assessors noted the following elements of the exercise worked well:

- Regular IMT meetings were held and kept brief.
- The status of the objectives was regularly updated.
- The incident management room was well equipped with dedicated white boards, TV screens and access to the site data highway including Safegas.

- The use of dedicated EMQnet data entry personnel was effective.
- The designation of an intelligence group to focus on collection, analysis and interpretation of information is a good innovation.
- The planning for changeover of key personnel was handled well.
- The IMT formed quickly, as all personnel were already on site.
- The Incident controller regularly updated the workforce on the surface.
- The use of an intelligence group in principle gave a good focus to the identification of what had happened and what could happen.
- EMQNET provided remote personnel access to key information, e.g. the crisis management team in Brisbane, with minimal disruption to the onsite management of the incident.

Areas for improvement

The assessors noted the following areas for improvement:

- EMQnet was still being integrated into the mine emergency response plan and as such there were a number of teething problems including IT issues
- It was reported to the IMT that the Planning group did not have enough people to fill the required roles – this is despite the exercise being staged during the working day on a week day when most of the site surface staff are at work.
- It was not clear how much EMQnet was being utilised outside the IMT room. It appeared to only be used as a record keeper, and tracking allocation of actions and completion of actions rather than assisting in the decision-making.
- The IMT did not appear to utilise all available information in their decision making processes. The potential for a methane ignition was overlooked and focused on fire fighting. QMRS were deployed underground with the potential for an ignition source identified. Earlier detailed analysis of the available gas data would have identified this and expedited the deployment.
-
- There appeared to be a lack of urgency to rescue injured and missing underground workers. It may have been due to the feeling that there was nothing that could be done until QMRS had arrived and organised rescue teams.
- The use of dedicated EMQnet data entry personnel in the various functional areas raised the question how this would have been handled on weekends or at night – would there have been a significant delay in establishing the event in EMQnet under those conditions? It took some time (approx. one hour) for EMQnet to become useful to the IMT, as there was a backlog of information to input.
- There were multiple communication mechanisms in place and not all were compatible, some were formal and part of the emergency response system and others informal and ad hoc.
- The focus of the IMT seemed to be on the recovery of persons underground and little emphasis seemed to be placed on determining what had happened or was going to happen. This is important when deciding if it is safe for rescue teams to enter the mine.

- IMT did not directly track gas concentrations or smoke distribution underground relying on reports from functional groups. IMT did have direct access to Safegas if required.
- There were two large touch screen monitors in the IMT room, one of these could have been used to display the mine plan and current location of persons underground and whether or not they were injured – link to MINEDASH for example. MINEDASH was eventually activated at 3:30 pm (Figure 12). This screen is displaying the mine personnel location on the monitor and included the crew quarantined to do carbofilling, outbye inspections as well as rescue teams and assessors.
- Underground personnel were marked up on a glass covered mine plan (Figure 13). This could have been done better using the touch screen monitors, allowing visibility to the whole IMT.

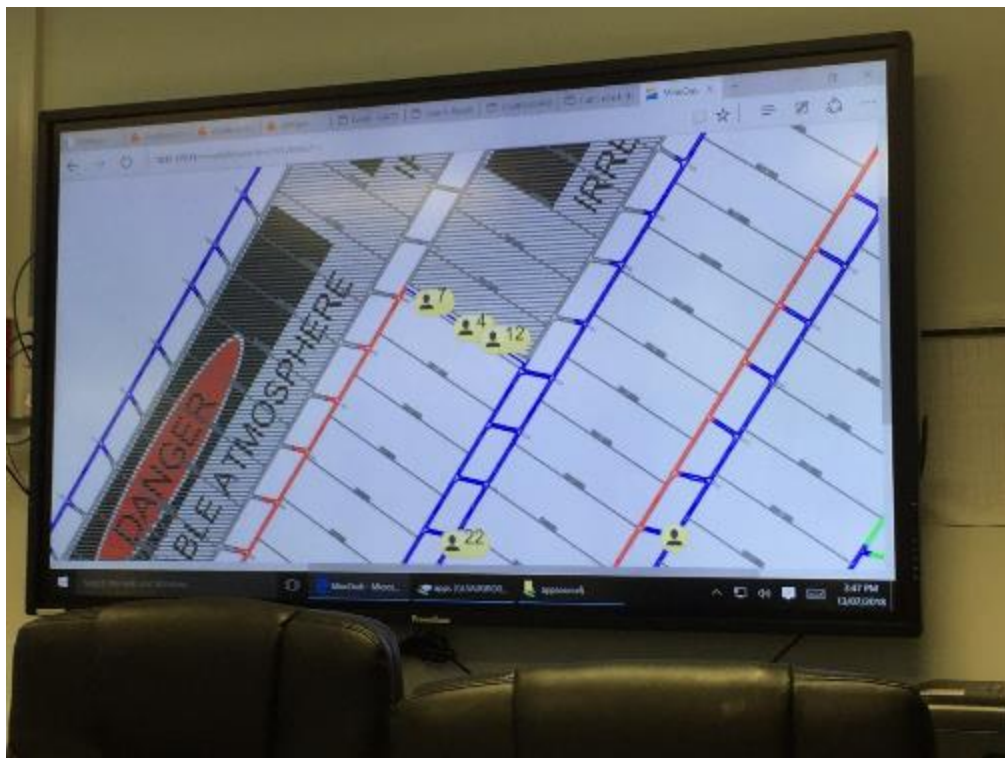


Figure 12 MINEDASH Screen



Figure 13 underground locations of mine workers

- As was noted at the 2016 and 2017 level one emergency exercise, the EMQnet system would be much more valuable if it could be tailored to suit the emergency situations likely to be found at the mine, this includes:
 - a) Quick filtering of update information
 - b) Quick identification of personnel email addresses
 - c) Consider dedicated screens that track personnel status underground (missing persons etc.) and gas status – integrate with MINEDASH
 - d) Integration with MRAS.
- The intelligence group (IG) did not provide the IMT with high quality or definitive information relating to the incident. The IMT did not have a clear picture of the changes to the ventilation system after the initial incident, nor what the incident was. The IG had functions and personnel dedicated to ensuring the quality of the information they provided to the IMT. The information provided was clearly inaccurate and had not been checked. Figure 14 shows a sample of GC results presented to the IMT.
- There are a number of glaring errors in this data. The spreadsheet clearly identifies errors in the data (note the red cells), all samples apparently have total gas concentrations well in

excess of 100 %. The nitrogen values are identified as being calculated by difference but they clearly were not. In addition, the first sample identifies CO concentration as being 20.576 % which is obviously in error when compared to the other concentration data of the sample. Analysis of the correct gas data would have revealed that the explosion was predominantly a coal dust explosion (JTR ~0.8 and H to C ratio ~ 1).

Tube 12 (TG102 8-9CT) error in the gas data

Sample							Calculations				
Date	Time	CH ₄ %	CO %	H ₂ %	O ₂ %	CO ₂ %	N ₂ % (by diff.)	Check	Condition	Ellicott X	Ellicott Y
13/07/2018	12:00	0.48%	20.576%	0.93%	11.30%	6.42%	81.33%	121.01%	Explosive II	9.548	4.532

GROV35

Sample							Calculations				
Date	Time	CH ₄ %	CO %	H ₂ %	O ₂ %	CO ₂ %	N ₂ % (by diff.)	Check	Condition	Ellicott X	Ellicott Y
13/07/2018	12:00	58.70%	0.411%	0.23%	5.02%	0.42%	81.33%	146.11%	Lean	41.122	-34.799

Tube #11 (TG102 3-3A) - 0.78 Ethane - bag to be re-run

Sample							Calculations				
Date	Time	CH ₄ %	CO %	H ₂ %	O ₂ %	CO ₂ %	N ₂ % (by diff.)	Check	Condition	Ellicott X	Ellicott Y
13/07/2018	12:00	0.59%	1.988%	0.93%	11.10%	6.68%	81.33%	100.32%	Lean	-4.293	3.893

Tube #9 Fresh air [mains 1CT A-B]

Sample							Calculations				
Date	Time	CH ₄ %	CO %	H ₂ %	O ₂ %	CO ₂ %	N ₂ % (by diff.)	Check	Condition	Ellicott X	Ellicott Y
13/07/2018	12:00	0.21%	0.020%	0.00%	20.73%	0.06%	81.33%	102.43%	Lean	-5.327	8.753

Tube 12 (TG102 8-9CT)

Sample							Calculations				
Date	Time	CH ₄ %	CO %	H ₂ %	O ₂ %	CO ₂ %	N ₂ % (by diff.)	Check	Condition	Ellicott X	Ellicott Y
13/07/2018	12:00	0.45%	2.058%	0.93%	11.30%	6.42%	81.33%	102.49%	Lean	-4.527	4.403

Figure 14 GC Results presented to IMT

Operations

Assessor: Craig McCamley

The incident was initiated underground at 11am within 10 minutes of the first emergency phone call, the operations team leader was appointed under the duty card system. The operations leader attended the first IMT meeting where it was explained that an event had occurred underground in the longwall area. It was explained that there were a couple of men down at the TG of the longwall and a couple also down at the MG. Instructions for an orderly withdrawal of all persons from the mine had been issued by the UMM (IMT leader). The operations group structure is shown at Figure 15.

Once the first IMT meeting was closed the operations leader commenced issuing duty cards for his team using the folders located outside the operations team meeting room. Next, he walked to the control room.

The control room was very busy, with several operational people and assessors crowded in. An update was given to the operations leader by the shift UM. Key points in this update included:

- the longwall tailgate double doors were blown wide open (learned via a phone call from underground)
- the CMWs at the tailgate showed clear signs of burns

- a possible scenario was suggested by the shift UM that considering the information to hand at this time, there may have been a frictional ignition of methane at the tailgate of the longwall which blew out the tailgate doors thus short circuiting the ventilation

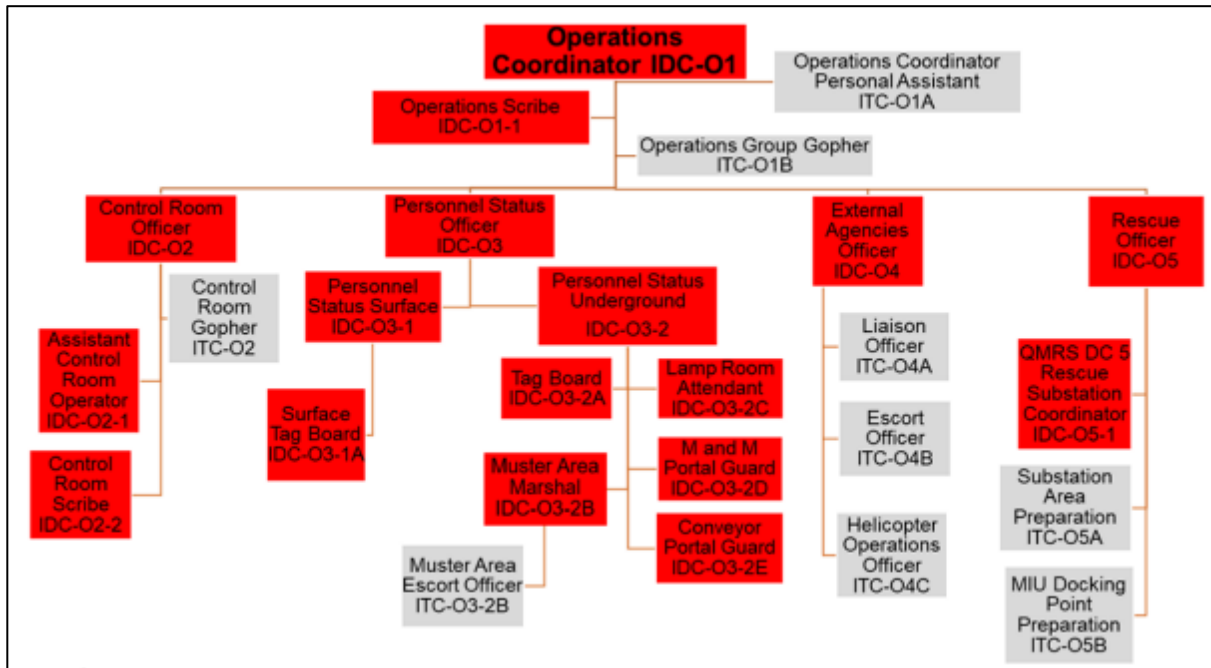


Figure 15 Operations Group Structure

The operations leader returned to the IMT Room where he joined the second IMT Meeting seven minutes after the scheduled start. The operations leader gave a concise update of how the withdrawal of mineworkers from the mine was proceeding. In summary the withdrawal was proceeding well, however it was clear that there were three men with burns, not moving, at the TG of the longwall and two men, not moving, at the MG end.

After the second IMT meeting closed, the operations leader held the first operations team meeting. The EMQnet was displayed on the wall in the room via a projector. The operations leader gave an update of the situation to his team and set objectives and tasks. The update was conducted in a calm, matter of fact manner. The clear objective was “getting all people out of the mine”. At that point it was known that 77 out of the total of 119 underground, were accounted for.

The mines rescue coordinator was updated at 12:24 hrs and an update provided of how the QMRS were placed to respond.

During the next IMT Meeting the scenario of an ignition of methane at the TG corner was offered by the Intelligence Team.

During the next operations meeting at 1303 hrs the personnel status officer explained there were ten men still underground. It was unclear where they were coming from or what their names were. The task of identifying the names, locations and status of all persons remaining underground was given to the shift UM. The team was also made aware at this point that the two men located at the MG had come to and had donned self-rescuers. This then became a key focus of the IMT and operations team. To get assistance to these men who were known to be alive but unable to self-escape, a discussion was had to identify ways to help the men once the self-rescuers expired. (Ideas such as finding an air hose and turning it on, building an air shroud/curtain). This information, along with the

news that QMRS was being mobilised was asked to be communicated to the two men at the Maingate via the DAC.

There was a distinct quiet period within the operations team which started at about 3 pm. This was while the QMRS response was being coordinated.

At this stage the EMQ Net, which had been used to download actions and updates was reviewed. The team was able to see what was happening elsewhere on the Mine site and to also give and receive tasks. The task of organising replacements for the existing team was done during this period.

What worked well?

The assessor noted that the following elements of the exercise worked well:

- **Duty Card allocation** - The operations team duty cards were allocated efficiently. With key roles prioritised by the operations leader and appointed early in the exercise. Due to the high number of duty cards to be issued the operations leader delegated some of this work to others in the team. The last duty card was issued at 11:58 am.
- **Leadership** - The leadership displayed by the operations coordinator and IMT Leader assisted with stabilising the teams and providing direction. The tone of communication was calm. Instructions were given clearly. There was also a lot of coaching given by the operations leader to team members during the response.
- **Team Work** - The “drum beat” of IMT/operations meetings was reached after about two cycles. The scribes within the operations team assisted greatly with keeping their leader on time.
- **EMQ Net** - The EMQnet was initiated and used from the beginning of the exercise by the operations team. The requirement to provide updates through the EMQnet seemed to galvanise the team to ensure the key facts of the situation were firstly understood and then communicated. Late in the exercise the EMQnet became a resource that the team used to give and receive tasks and to learn what was taking place elsewhere.
- The EMQnet seemed to be easy to learn as the operations team trained two replacement operators, on the run, during the exercise.
- **Resources** - One result of the high number of duty cards was that the operations leader always had people to give tasks to. The team was not under resourced.

Areas for improvement

The assessor noted the following areas for improvement:

- **Information transfer** - Key information gathered soon after the incident (in the control room) was discovered but not passed on to the planning or intelligence teams. This could have assisted greatly in determining the cause of the event earlier.
- **Communications** - Communications with the Mines Rescue Coordinator was difficult and sporadic. The location of the QMRS Sub Station contributed to this.
- **Meeting structure** – The level of structure modelled in the IMT meetings was not replicated in the operations meetings. The Operations meetings were less focussed and readily distracted.

Planning

Assessor: Neville Stanton

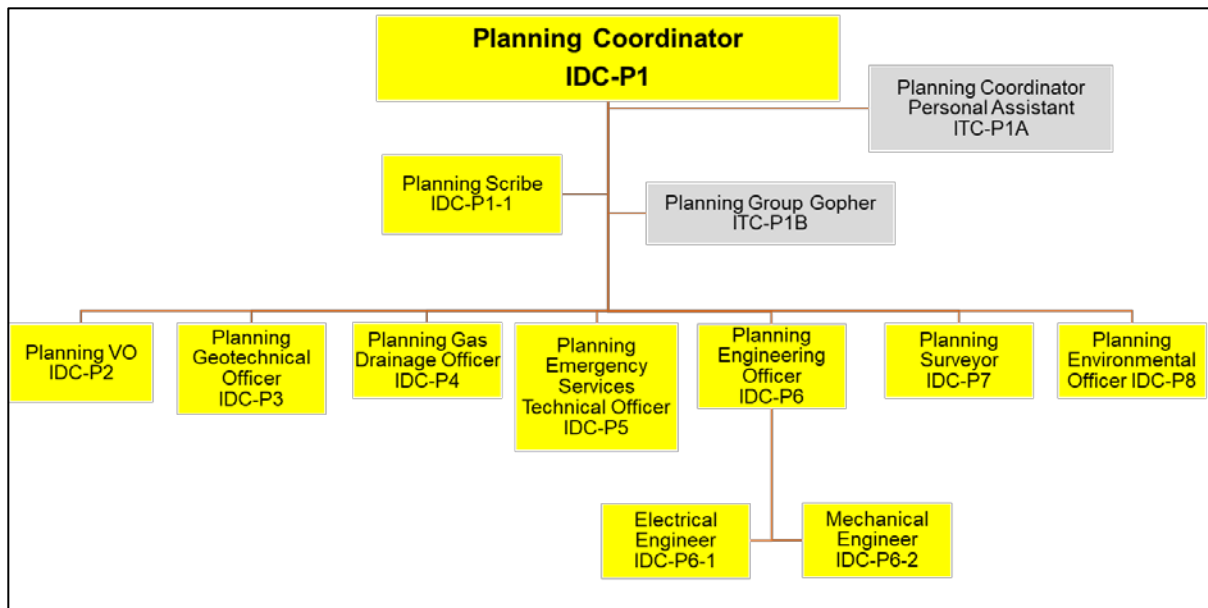


Figure 16 Planning Group Structure

The Planning Group evaluates and analyses intelligence on the current and forecast situation and develops strategies and plans to meet the incident objectives for consideration by the IMT.

Specific responsibilities of the Planning Group are:

- Prepare response strategies,
- Present action plan options to the IMT identifying risks and likely outcomes associated with each and nominating the preferred option including justification (dependent on scale and nature of incident),
- Identify new and emerging risks,
- Immediately inform the Incident Controller of any significant changes in the emergency situation,
- Provide technical skills appropriate to the nature of the emergency,
- Identify assistance required from external resources (e.g. Simtars) as required, and
- Develop business continuity and recovery strategies/plans.
- The planning coordinator leads and manages the Planning Group and is accountable to the Incident Controller.
- The structure of the planning group is shown Figure 16. The planning coordinator may delegate some or all the roles shown in depending on the size and complexity of the incident and the needs of the incident response. The planning coordinator should get positive acknowledgement that all persons appointed understand their role and what is expected of them.

Note: dependent on the scale and nature of the event, a separate intelligence group may not be formed, in which case planning group will undertake the activities otherwise assigned to the intelligence group.

What worked well?

The assessor noted the following elements of the exercise worked well:

- The two screens at the planning table both used during the exercise.

Areas for improvement

The assessor noted the following areas for improvement:

- There did not appear to be direction and control, personnel not given direct tasks and held accountable
- The EMQnet was not used to the full capacity
- The planning team appeared to be solely focused on the extinguishing of the perceived fire which did not follow a risk based approach for potential hazards that may have been introduced.
- The expectations of getting personnel from other operations to come to Grosvenor for night shift there was no consideration given that they had just worked a shift and they expected them to show up at Grosvenor for night shift
- Moranbah North Mine next door did not receive any formal notification during the level 1 exercise for request of assistance.
- Have some training for coordinators and stand in coordinators on how to direct traffic during briefings
- Have the EMQnet used for daily operational tasks so that personnel become familiar with the use

Logistics

Assessor: Clay Brown

The initial emergency call over the P.A system in the operations building was heard at 11:18 am. Two persons entered the Logistics room approximately 5 minutes later.

The Logistics room is of a good size, containing tables set out in a u-typed fashion with plenty of seating, white boards on the wall to the rear of the room, a projector attached to the centre of the ceiling, a projector screen to the front of the room and plans available. The duty cards for the Logistics team were held in a cabinet in the corner of the room. Figure 17 shows the structure of the Logistic team.

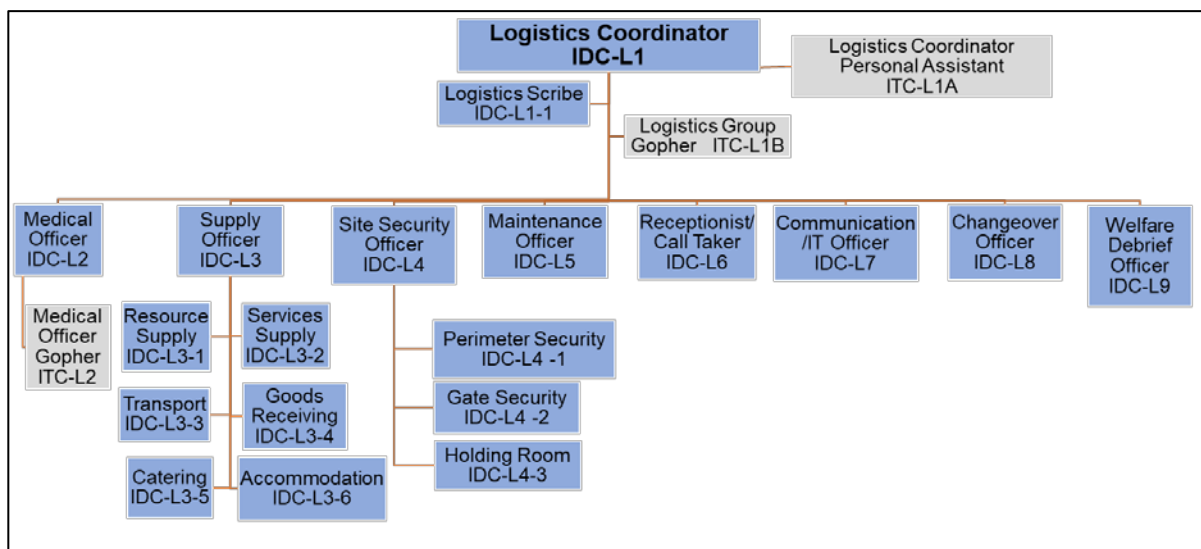


Figure 17 logistics group structure

At 11:26 am, the Logistics coordinator left the room and proceeded to the IMT room where the IMT Leader briefed the attending coordinators. After the initial IMT meeting the Logistics coordinator started attempting to contact personnel via his mobile phone for his Logistics team. The Logistics coordinator made comment that he was concerned that he couldn't raise the required personnel as they had been sent to Training Room 2. This is where the Logistics coordinator walked to, to source personnel to fill roles for the Logistics team. Soon after the site security officer, maintenance officer and the Logistics scribe duty cards were handed out, reviewed and vests donned. It was found that not all duty card holders had vests available to don. The Logistics coordinator gave instructions to the site security officer to "lock down the perimeter of the mine". The mine plans in the Logistics room may have assisted in the team understanding the full requirements of securing the mine site or at least driven more discussion regarding security. Once the site security officer reviewed his duty card, he left the Logistics room to issue three other duty cards and to carry out his responsibilities of the duty card. During the initial handing out of the duty cards the Logistics coordinator was observed briefing the duty card holders the status of the emergency at the mine, their responsibilities and ensuring they understood their expectations of being a duty card holder. The Logistics scribe commenced setting up a laptop computer in readiness for EMQnet. The Logistics scribe was observed reminding the Logistics coordinator of the next IMT meeting due which assisted the Logistics coordinator in preparing for the next IMT meeting.

By 12:06 pm the medical officer, communications IT officer and the welfare debrief officer duty cards had also been distributed. By 12:29 pm the communications IT officer had reported that the phone diversion was in place.

The Logistics team had investigated and secured available accommodation in Moranbah in readiness that the event continued. A more thorough investigation was undertaken into any other major works or events that were occurring in Moranbah or surrounding areas that may affect the availability of accommodation in town.

Approximately three hours into the emergency exercise, a person entered the Logistics room asking if the ambulance had been mobilised. At this point the Logistics coordinator informed that person the Logistics team had not been asked and suggested the task be put into EMQnet requesting the task to be done. It appeared the Logistics team could not confirm if the ambulance or the police had been

deployed. However reports came through that Moranbah Ambulance Station had been contacted earlier in the day.

Many social media events were observed to be communicated to the Logistics team throughout the day. The Logistics coordinator was observed reporting on this in the IMT meeting and also discussing this within the Logistics team, however this just didn't seem a major priority for the team, to stamp out or take control in preventing or halting the misleading information continually being projected on social media. It wasn't until approximately 12:50 that a question was asked within the Logistics team, if mobile phones can be taken off personnel.

The Logistic team worked well in securing resources from site and other mines giving detail of availability, quantity and delivery times. The Logistics team also started to search for persons within the mine that had EMQnet experience so the process could continue when the team was relieved from their duties as a result from the handover process.

What worked well?

The assessor noted the following elements of the exercise worked well:

- The Logistics scribe appeared well skilled in the use of EMQnet which was beneficial to the team in updating and recording of information.
- Once EMQnet was established, the recording and tracking of tasks for action was beneficial.
- Logistics coordinator appointed the maintenance officer to head the Logistics team while the Logistics coordinator was not in the Logistics room and attending the IMT meeting.
- The Logistics coordinator frequently checking in on the welfare of his team and if the level of detail from the IMT was satisfactory, to assist them with the performance of their responsibilities.
- Sourcing of food to provide to the mine's workforce on a large scale in a short time period with minimal food options available.
- The team successfully secured accommodation in Moranbah on a large scale, had the event continued. Out of box thinking from the Logistics team in regards to, if other potential large scale events or major works were happening within the town's surroundings which would have been detriment to the availability of any accommodation.

Areas for improvement

The assessor noted the following areas for improvement:

- Establish and maintain a Logistics status board. This was not observed.
- Utilise the whiteboards provided in the Logistics room, to promote discussion during the meetings to capture information.
- Plans of the mine were available in the Logistics room, however they were not utilised. The mine plans may have assisted in the team understanding the full requirements of securing the mine site or at least driven more discussion regarding security of the mine site.
- Ensure all duty card holders have a vest provided specific to their duty card position so they are clearly identifiable as an official during an event.

- There became confusion regarding lists of people that the team were tasked with compiling and reporting back to the IMT. This was evident both in the Logistics room and when discussing in the IMT meeting room. There appeared to be several lists of personnel that required compiling and reporting on.
- Have sufficient numbers of radios available to provide persons holding duty cards for communication purposes across the mine site.
- Ensure relevant emergency contact details are available within the Logistics room

Intelligence cell

Assessor: Steven Dawe

During the initial response/activation it was evident that the planning and intelligence groups were covering off on the majority of the basics solely from experience rather than following the duty card process. There were times during the first 45 minutes where the teams were working faster than the systems and processes that were there for use. This did not have an adverse effect during the initial phase. Eventually they settled into roles and the duty card system caught up and they were able to use some of its functionality to structure the response. Initially there was time spent debating who should do what based on skill sets due to the number of duty cards that needed to be issued for the event. This could be streamlined with a better general understanding of the duty card system. The Intelligence group structure is shown at Figure 18.

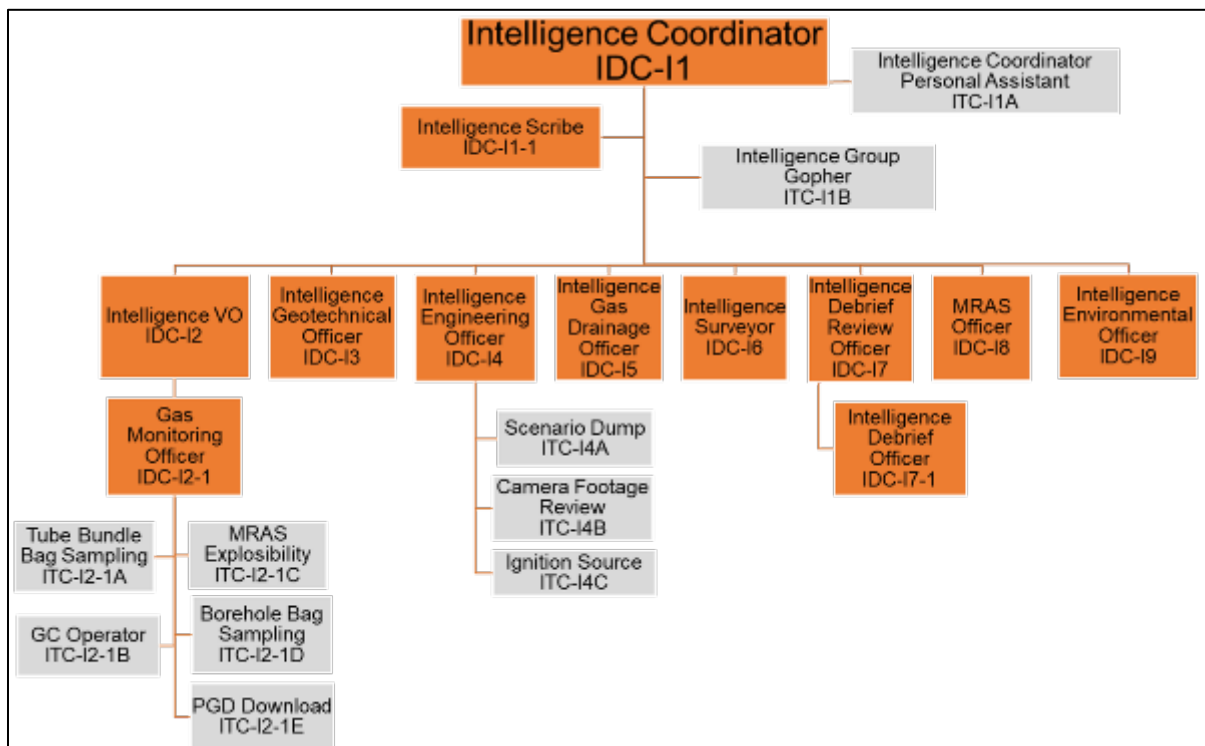


Figure 18 Intelligence group structure

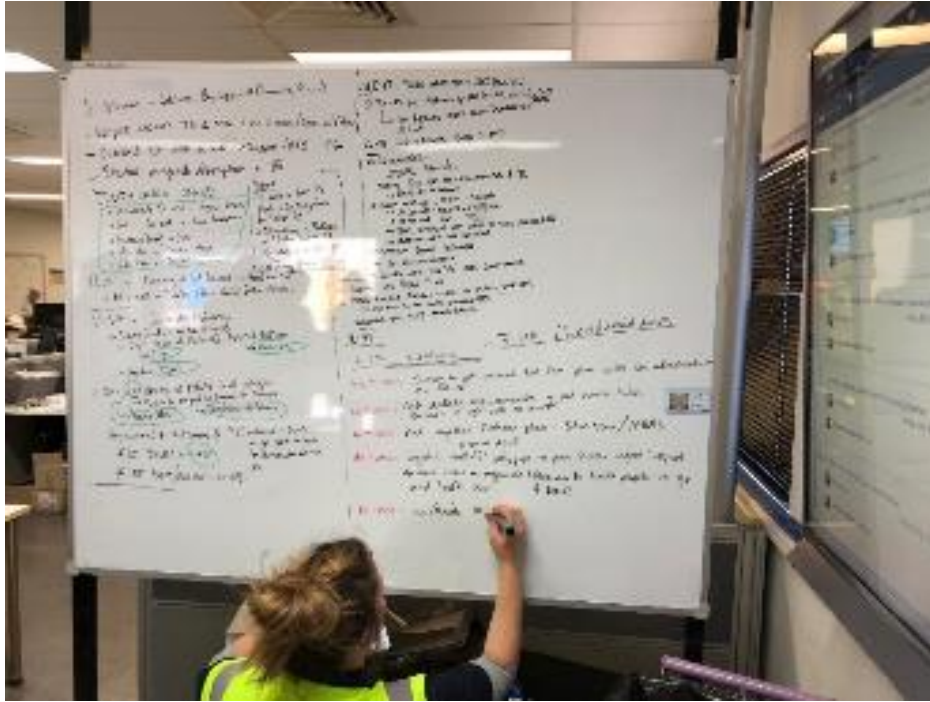


Figure 19 Planning/intelligence group action whiteboard

The intelligence group made the decision to use the planning room which was sound in theory but did initially lead to many people congregating in an area that had limited resources.

The use of EMQnet was sporadic and seemed to be reviewed post meetings rather than during. This appeared to impact the structure of the joint intelligence/planning group meetings where objectives were not reviewed and recorded formally. The use of whiteboards in the planning room was kept to a minimum but when used was one way that actions were captured. See Figure 19.

Regarding the Mine Re-entry Assessment System (MRAS) the intelligence group expressed concerns that it was time consuming to complete especially when sharing a computer with the ventilation officer. There is a task card “MRAS explosibility graph” that should be assigned to ventilation assistant with access to their own computer to work in conjunction with the ventilation officer.

Eventually they determined to complete a hard copy, however this process did not allow enough time for sound interrogating of the answers with fact and definitive answers.

When a scenario lends itself to deploying personnel into a mine with a dynamic situation the intelligence and planning groups must work simultaneously to solve the puzzle whilst supplying information to deploy or re-enter the mine. There must be clear expectation and focus from the IMT right through to individual duty card holders for gas monitoring results and the continuous monitoring and trending of relevant data always whilst personnel are being deployed underground or remaining underground. This cannot be underestimated. It would be prudent to ensure that personnel analysing and/or interpreting atmospheric data are capable of recognising anomalies and have processes in place to verify and re-check abnormal results.

Due to the number of duty cards with similarities between planning and intelligence it lent itself to some confusion at times and mixed direction in regard to gathering intelligence and solving the puzzle versus planning.

Where intelligence and planning teams are closely linked at a mine there needs to be clear expectations and demarcation of roles so that information gathering is streamlined and communicated.

In the 2014 level 1 exercise at Kestrel the police identified the control room as a possible site for the intelligence cell at North Goonyella in 2015 the control room was established as an unofficial IMT by the shift UM with key information not getting to IMT in a timely manner. In 2016 at Grasstree was the first time EMQnet was utilised and was seen to be proficiently utilised because the mine had used it as an information and communication solution for dealing with a major longwall recovery.

In 2017 at Broadmeadow the UM was assigned in the role of on scene controller and he established himself in the control room where he populated a white board with key information and facts. The issue was the only way this information was relayed to the planning group was by telephone. At one stage in the exercise the IMT controller took a photograph of the whiteboard to capture the information.

Again in 2018 the shift UM established himself in the control room and again ran an informal IMT identify key information. Access to EMQnet was not established until late into the exercise when the control room used it to view media releases and other information, proving that such systems are an ideal way of keeping key personnel up-to-date.

Again key information did not get to the relevant groups in the emergency response. This issue of diverting the phones away from control room also caused issues.

What worked well?

The assessor noted the following elements of the exercise worked well:

- Switched on personnel assigning many tasks correctly much quicker than the duty card system would allow during the first 1hr of the event.
- The debrief officer created a ventilation plan with notes and current debrief information (Figure 20). Worked well for passing on information and led to clarification on a few key points they were not picked up straight from the debrief forms.
- During the response (Planning meeting) the Mines inspector made excellent observations and contributed to highlighting some key areas that would underpin decisions coming from the Planning team.
- The Mines Rescue Officer also made timely inquiries with the planning team to assist with a key focus of continuous monitoring of gas data during the mines rescue team's deployment into the mine.



Figure 20 debrief information being presented to intelligence cell

Areas for improvement

The assessor noted the following areas for improvement:

- Mine re-entry assessment system was assigned to an individual with minimal understanding of the intent and process. This task needs to be assigned to a relevant experienced person and given priority based on the scenario presented.
- The intelligence team appeared to conducting planning functions rather than data gathering all the relevant information.
- Where intelligence and planning teams are closely linked at a mine there needs to be clear expectations and demarcation of roles so that information gathering is streamlined and communicated to or between those groups responsible for making the plans

Emergency management team (EMT)

Assessors: Nikky LaBranche and Theodore Georga

The EMT was well rehearsed and was formed quickly after the start of the exercise. The team quickly realised that they were too remote from the IMT and moved closer to keep up to date. The EMT received phone calls from the crisis management team in Brisbane which were technical in nature and they were not knowledgeable to respond to these technical questions.

As all of the duty cards were not issued the team checked to other cards to ensure that no actions were missed

What worked well?

The assessor noted the following elements of the exercise worked well:

- Appropriate people were assigned to roles
- Realised early on the drawbacks of the designated location for EMT and moved down to the GMs office to be closer to the IMT.
- Developed a system where after the IMT meeting the IC would attend the EMT meeting and call the crisis management team (CMT) in Brisbane corporate office

- Liaised well with head office, shared information clearly and openly.
- Involved appropriate external agencies (Griffin Psychology - EAP) as needed.
- Succession planning was addressed early – called personnel at Moranbah North for relief.
- EMT controller took the opportunity to stop and reassess the current situation and refocus the team's efforts.

Areas for improvement

The assessor noted the following areas for improvement:

- There were IT issues getting everyone onto EMQnet and getting started.
- Next of kin were informed too late – people would already have been informed via non-official means.
- Head office unnecessarily delayed the next-of-kin and media response process – they were being cautious and trying to overly verify information, but this left them vulnerable to information leaks.
- The EMT were often being distracted by technical questions from head office without having any technical personnel available to answer questions. Technically qualified people would be better to intersect with operations or intelligence teams.
- Reconsider the location of the EMT room. Physical distance in the hub area was an impediment to the team operating efficiently – the team recognised this and relocated within the first hour.
- There was no consideration of providing sitreps to external stakeholders such as politicians, police or other relevant and interested organisations.

Mines rescue response

Assessor: Dale Davis, Matthew Fellowes and Andrew Broadfoot

QMRS were contacted at approximately 11.10 am to respond to an underground emergency at Grosvenor mine. The information conveyed to QMRS was of an incident in the longwall followed by high gas readings.

As a result of the notification QMRS implemented their Alerts call out system to notify brigadesmen and establish availability. One of the QMRS operations managers was on site at the time of the emergency and assumed leadership for the response.

Entry of teams to undertake the designated tasks was done in accordance with QMRS procedures. The MRAS risk assessment process was done in parallel to ensure team safety on deployment. The QMRS teams were ready to deploy after about 90 minutes but the MRAS and final clearances took considerably longer. It took a while to focus on MRAS even though the MRAS officer was allocated early.

One comment was heard from a Grosvenor duty card holder stating that QMRS were here but had not deployed. There appears to be an expectation that once a team is formed QMRS can deploy. It would appear that many CMWs are not aware of the requirements that need to be in place for an underground deployment. Whilst this is a level 1 exercise and the deployment can be expected a wider understanding of the deployment requirements appears necessary.

The MRAS officer had little mining experience to draw on and was unsure of the deployment requirements for QMRS which further complicated the process.

Team preparation and deployment protocols were followed as per procedures and teams deployed as per mines rescue guidelines. The teams experienced difficulty fitting the wheels to the wheeled stretcher, the decision was taken to use it without wheels.

QMRS was tasked with rescue/retrieval of five known casualties situated in the longwall including three potential fatalities at the tailgate and two casualties towards the maingate as well as locating two missing CMWS.

Once approval to deploy was given, team briefings was quite efficient.

Updating of QMRS via the incident board all done verbally.

The QMRS deployed, determined the ventilation quantity in B heading and established a fresh air base. Team 1 conducted tests of their suits and proceeded uncoupled (with permission from surface) to the edge of the irrespirable atmosphere. Team 1 then recoupled their BG4's and conducted a final suit test. Team 1 then began search and rescue which lead to the longwall MG where they found the 2 injured CMW's. They gave and assisted the injured to don fresh SCSRs, established the injuries and conducted first aid (water/plastic wrap burns, checking for additional injuries, using splints). A member from QMRS attempted to communicate with the surface from the longwall DAC, informing that the two injured CMWs were found and were undergoing first aid. The call reached the wrong person on the surface and no further communication was received from the surface. Team 1 assisted the less injured CMW to escape to the FAB on foot and placed the other in a stretcher for escape to the FAB. However, it was unsafe to carry the person in a stretcher to the FAB due to the position of the BSL constricting the entry/exit path.

What worked well?

The assessors noted the following elements of the exercise worked well:

- The principles of incident management were generally adopted, with clear team Tabards and positions easily identifiable. Teams had their work areas well sign-posted. Grosvenor is a big site and very well resourced. There were no shortage of staff which allowed for scribes and gophers to assist the IC.
- EMQnet was observed to be being used by each work team and did provide a good communication link.
- The site had excellent systems to control the location of people and abundant underground communications.
- The brigadesmen responded in good numbers in quick time and the teams were self-managed and seemed very competent. Additional suits arrived in a timely manner and 4 x teams were ready to deploy in around 90 minutes.
- The Mines Rescue personnel were very professional and well trained. All work well in their teams and were ready for deployment in a fairly short time.

Areas for improvement

The assessors noted the following areas for improvement:

- The paper based system was used as the MRAS officer struggled with the electronic version. This was done in the joint intelligence and planning groups' area. The office seemed overly populated and noisy.
- Communication between IMT and the Mines Rescue. The briefings were very informal and not always the latest data was presented. The lack of relevant information or technology to assist in maintaining situational awareness to help reflect the current status of the incident and access to validated gas data at the rescue building could assist with this
- The briefing white board was not prominently displayed and not clearly identified
- Only team leaders were briefed. If something was to happen to the team leader then the others may not know exactly what to do.

Social media

Assessor: Elliott Franks

During the exercise the mine and Anglo American were presented with a number of social media posts which would quite likely have been posted should such an incident occur. Both Anglo American and the mine were encouraged to communicate and respond as they would in a real scenario.

In the social media world it is important to provide up-to-date information and facts as soon as it is possible. Many large organisations fail to respond in a timely manner to posts. It is important to get the facts out as soon as they are known. Whilst there may be legal ramifications which large organisations could be concerned with i.e. not accepting liability or self-incrimination there is a need to create some balance.

Scenario 1 – Incorrect information

The first scenario had incorrect information being circulated on Social Media. The wrong mine (North Moranbah) was mentioned and inflated number of casualties was mentioned.

This scenario was designed to put pressure on the communications team to issue a statement as soon as possible.

Response

AngloAmerican released a holding statement at 12pm. However this was not received until 1pm so it cannot be verified that it was released at 12pm. The holding statement verified the location of the mine and that an incident had occurred.

Scenario 2 – Initial casualties

The second scenario included rumours of excessive casualties at Grosvenor mine. The Social media posts were posted in the Moranbah Community group which would have circulated quickly through the local community.

This scenario was designed to encourage the mine to lock down communications, correct the misinformation and to contact the emergency contacts.

It was known that many of the CMWs in the training room had access to their mobile phones. They had nothing else to do other than wait in the room between the updates.

Response

There was no response from AngloAmerican. This would have resulted in misinformation being communicated throughout Moranbah. Concerned community and family members would have arrived at site to gather more information. This is particularly likely as Grosvenor is so close to the town of Moranbah.

Scenario 3 – Naming the victims

The last scenario involved communicating with the next of kin of potential victims. It is imperative during an emergency that the contact with the next of kin is done by trained professionals who work for the mine. This would have to be done in conjunction with the police, the initial notification of a fatality has to be done by the police. The information provided at the start of the exercise was of three fatalities at the TG, no graphic photograph was provided. This ensures that the correct procedures are followed to minimise harm to the families. There is also the danger that family members can speak to the media and further complicate the media response.

As the workers on the surface had complete access to their phones during the entirety of the exercise, it is highly likely that they would have passed on information about the potential victims to the next of kin. As there was an information vacuum, this information could have reached Social Media very easily.

Response

The mine did end up contacting the next of kin, however this was enacted much too late. The next of kin was notified at 4:26 pm. It is estimated that the names were officially known at 2 pm and the workers above ground would have worked out the names before that. This would have caused a great deal of distress to the family members of the miners. In the scenario, a news crew was talking to a trapped miner's family. This is very possible if the proper procedures are not followed.

If the police had been able to respond to site for the exercise there may have been some guidance from the responding officers on how this contact would be made

Areas for improvement

The assessors noted the following areas for improvement:

- It is highly likely that AngloAmerican would have lost control of their message very early in the day. They would have been inundated with family members, concerned locals, media and union representatives on site.
- It is imperative that next of kin are notified as early as possible. This is to ensure all the proper assistance is given to the family members and to ensure correct message is being passed to the media. This also could involve the police in this notification process
- An immediate controlled response or action is required in relation to social media events to quickly stamp out misleading information.
- If communications are not controlled the media will cause additional stress on the mine. This will hamper rescue operations.
- Access to outside communications should be limited to workers on site. If workers are allowed to use their phone, at a minimum they should be told not to pass on information apart from their current health.

- Review options for controlling unauthorised mobile phone usage during an emergency
- To alleviate this, the mine and or AngloAmerican need to act early to correct myths, communicate with family members and control the message.

Conclusions: surface

The Grosvenor emergency response system had just been updated and whilst individual groups had practiced the whole system had not been tested in unison.

A common concern for all the assessors was the number of duty cards that were issued and how this could be sustained over a 24 hour period. If the incident had occurred on a weekend; as a lot of key staff operate on a fly in fly out (FIFO) roster from Brisbane.

The structure of the IMT meetings was well coordinated and yet again all available resources were not used in the room to display relevant information i.e. the two touch screen displays. The IMT was more comfortable with using the mine plans laid under the Perspex screen on the table.

EMQnet again provided good information transfer as would any such information database. The key is not to use it solely for incident response. If such a system was used for everyday planning and event management (i.e. fall on longwall or broken conveyor belt) the system would be utilised in a more efficient manner and personnel be more experienced in using the available resources. Touch screen systems are now commonly used in schools and fast food outlets.

Poorly prepared documents were presented in the IMT room namely the gas information which clearly was identified by the document format.

Two teams relocated from their designated rooms to rooms closer to the action the intelligence cell and the EMT. Whilst this worked for the EMT when the intelligence cell was in the same room as planning and the functionality became compromised. The intelligence cell is identified in AIIMs and the MEMS course also references the need for intelligence gathering and collation. When checking with one assessor who was ex police it was stated that the intelligence cell normally gathers information and passes on to the appropriate function group for action.

During the initial response the components of the intelligence group were unsure how information was to be communicated between comms room and intelligence group. There should be clearer understanding of how information is communicated and gathered and shared amongst the incident management group.

The control room again became a mini IMT with information being discussed and analysed there. In three of the last four exercises this has been the case and key information (intelligence) and not been made available in IMT. This could be an ideal location for the intelligence gathering with a dedicated person to ensure that all data is recorded and forwarded to the required group. Using an information management system would greatly assist in this operation. For example the UM had clearly identified a frictional ignition as the cause of the incident and explosion damage to the TG air doors at 11:38 am. EMQnet was not available until late into the exercise in the control room.

Diverting the phones away from the control room caused confusion for underground CMWs. The critical period is the first few hours and it would be unwise to divert the calls away from the control room during this period.

The QMRS operations manager being on site for the start of the exercise had an influence on deployment time for QMRS as he was quickly across the intricacies of the incident. It must be remembered that MRAS is a risk based approach to facilitate the deployment of rescue teams and as such key information needs to be gathered and validated to facilitate the deployment.

CMWs do not understand the deployment requirements for QMRS in emergency situations. There is a belief that once sufficient teams are present they can be deployed. (This could be driven by the fact

that RS8 requires a deployment of QMRS). The deployment is dependent upon a risk based approach to ensure there is no danger to the mines rescue teams on deployment and that everything is at an acceptable level of risk. There have been numerous occasions where mines rescue have deployed underground and been killed in a subsequent explosion.

A CMW with limited operational experience was give the duty card to fill out the MRAS. He worked on filling out a paper based assessment. There was confusion and noise in the room where he was assimilating the information.

Non-verbal communications was used by used CMWs on the longwall to relay important information to the surface. It was identified that an additional catalogue of questions need to be prepared that can be used on an as needed basis.

CMWs were seen on their mobile phones where all personnel not involved in the exercise were marshalled. As CMWs evacuated from underground they were sent to the same building. There were no activities/interaction with these CMWS other than the update from the IMT controller.

Simtars was not contacted by any mine staff at any time during the exercise.

Over many years the exercise has sometimes been regarded as a pass or fail test or there is fear of the exercises, it is understood that several CMWs came down with what was termed "level 1 fever" one assessor was asked how did we go? The answer to that questions *"is it's like playing golf you are playing yourself. It is an opportunity for improvement for all involved."*

Recommendations: surface

Mine

- The mine to review its mine emergency response system to streamline the process as a result of the areas for improvement identified in this report, in particular the number of duty cards.
- Review the planning and intelligence group functions and resources in particular gas interpretation. Intelligence should gather data and pass on to the correct personnel. There are insufficient resources on a coal mine to have duplication of effort.
- Ensure that external assistance for gas analysis and interpretation is notified.
- Use the EMQnet or other electronic database/communications system for managing the mining processes so that its functionality will be fully understood in an emergency situation. This includes:
 - Having the system available in the control room (a good possible site for the intelligence gathering function)
 - Having the system available in the QMRS substation for briefing purposes.
 - Use touch screen systems as part of the everyday mine management process
 - Ensure that access is available elsewhere on site as identified in the emergency response system review.
- Relocate the EMT to the SSE's office/main offices and have the EMT controller attend the IMT meetings.
- Reconsider the diverting of the telephones from the control room to the receptionist this created confusion with the evacuating CMWs and sometimes they did not get to talk to the control room or the person they were trying to contact.
- IMT maintain a visible record of key incident information to ensure that they are not forgotten or overlooked. Examples of this include the early reporting of the details of the explosion, the operation of the longwall, the destruction of air doors and the loss of ventilation in the tailgate.
- Include into the mine's emergency management procedures, a process that is enacted to limit unauthorised mobile phone usage or control mobile phone coverage that prevents or reduces the likelihood of misleading information being distributed externally. (Should mobile phone coverage be limited by the mine consideration need to be made to ensure that this does not affect external emergency response and communications are available for key response personnel including the inspectorate, police, ISHR, QMRS and any other key technical teams responding to the incident).
- Have a process for immediately having a controlled reaction/statement that deals with or provides persons externally the mine's status and use social media to respond promptly to correct incorrect information.
- Review the protocols for the use of UG cameras in the event of a major incident/fatality. If there were multiple fatalities on view at the TG these images would be accessible on multiple screens onsite and offsite.
- QMRS use the electronic data management system to:

- a) Replace the ERT whiteboard and have key information displayed for briefing incoming brigadesmen
- b) Record the teams and who is in each team so it is clear to everyone how many teams are available and who is in each team.
- c) Identify designated transport drivers with each team.

Industry

- Adopt an industry wide data management system for operational management and emergency response and standardised access for external agencies such as QMRS, Mines Inspectorate, ISHR and Simtars as applicable.
- QMRS and the industry to work together to identify a streamlined way to ensure that the MRAS information is populated in a streamlined manner and that all data entry is verified. This would include the training of several site personnel (to cover all shifts/rosters) in the objectives of MRAS to assist them in understanding the rationale behind the data and enable the timely preparation of the re-entry documentation.
- QMRS to review the process for attaching wheels to the wheeled stretcher. Last year one wheel fell off and this year it could not be attached.
- Industry to identify a way of occupying CMWs not directly involved in the emergency response, separating evacuating CMWs from the remainder of mine staff and resolve the issue of mobile phone usage in such circumstances.
- Review communication with next-of-kin and ensure families are told prior to any opportunities for leaks to occur from non-official sources this will include working and liaising with the police in particular the district disaster coordinators in Mackay/Rockhampton as appropriate.

Recommendations

These recommendations have been made with the aim of providing continual improvement in the mines and states emergency response capability. Information is provided at Appendix C on issues to consider when running level 1 type exercises.

The recommendations have not been ranked in any order of priority. All mine sites and other agencies should review the recommendations and should utilise them in the gap analysis of their emergency response systems as well as audit tool prompts.

The numbering system being utilised is derived from a spreadsheet first put by Mike Caffery as gap analysis between level 1 emergency exercise recommendations and coal mine emergency response schemes. This spreadsheet has been utilised as part of the chief inspectors initiative to form a second work group to follow up on the recommendations from task group 4 (Moura No 2 Disaster).

As this is the 21st level 1 emergency exercise the primary number is 21. This will assist in cross referencing the spreadsheet and level 1 emergency exercise reports.

Mine

- 21.01 Communication to the CRO needs to be addressed with the control room phone diverting to the reception created some confusion. This should be setup so that an experienced CMW answers the phone so the information can be relayed to the CRO office and the IMT as required.
- 21.02 Continue to roll out IMT structure / practise more desk top exercises with the newly developed system.
- 21.03 Drift light was “red” to stop personnel from entering the drift however this also means that the drift light is “red” at the bottom of the drift. This means everyone evacuating should be stopping at the bottom of the drift and at a minimum calling control. Drift needs an “evacuation mode” which illuminates “red” at the top and “green” at the bottom.
- 21.04 Continue with the level/duration of training in SCSR donning and changeover to CABA. The assessors clearly identified that the CMWs involved in the exercise were proficient in this process.
- 21.05 Steer/creep the longwall back to the TG to provide adequate access to the MG end of the longwall to allow for safe self-escape in an emergency.
- 21.06 Review site processes to ensure PED messages are clear and concise in an emergency.
- 21.07 Ensure portal guards at the top of each drift to prevent re-entry to the mine interact with personnel entering and leaving the mine. (Due consideration should be considered for exclusion zones for a possible secondary explosion).
- 21.08 Check primary escapeway signs. (Some were missing or blown upside down), the size of phone and DAC signs.
- 21.09 Stream line the intelligence debriefs to ensure that information is collected electronically and keep CMWS groups separate, more than one debrief room is required.

- 21.10 The mine to review its mine emergency response system to streamline the process as a result of the areas for improvement identified in this report, in particular the number of duty cards.
- 21.11 Review the planning and intelligence group functions and resources in particular gas interpretation. Intelligence should gather data and pass on to the correct personnel. There are insufficient resources on a coal mine to have duplication of effort.
- 21.12 Ensure that external assistance for gas analysis and interpretation is notified.
- 21.13 Use the EMQnet or other electronic database/communications system for managing the mining processes so that its functionality will be fully understood in an emergency situation. This includes:
- a. Having the system available in the control room (a good possible site for the intelligence gathering function)
 - b. Having the system available in the QMRS substation for briefing purposes.
 - c. Use touch screen systems as part of the everyday mine management process
 - d. Ensure that access is available elsewhere on site as identified in the emergency response system review.
- 21.14 Relocate the EMT to the SSE's office/main offices and have the EMT controller attend the IMT meetings.
- 21.15 Reconsider the diverting of the telephones from the control room to the receptionist this created confusion with the evacuating CMWs and sometimes they did not get to talk to the control room or the person they were trying to contact.
- 21.16 IMT maintain a visible record of key incident information to ensure that they are not forgotten or overlooked. Examples of this include the early reporting of the details of the explosion, the operation of the longwall, the destruction of air doors and the loss of ventilation in the tailgate.
- 21.17 Include into the mine's emergency management procedures, a process that is enacted to immediately confiscate mobile phones or control mobile phone coverage that prevents or reduces the likelihood of misleading information being distributed externally. (Should mobile phone coverage be limited by the mine consideration need to be made to ensure that this does not affect external emergency response and communications are available for key response personnel including the inspectorate, police, ISHR, QMRS and any other key technical teams responding to the incident).
- 21.18 Have a process for immediately having a controlled reaction/statement that deals with or provides persons externally the mine's status and use social media to respond promptly to correct incorrect information.
- 21.19 Review the protocols for the use of UG cameras in the event of a major incident/fatality. If there were multiple fatalities on view at the TG these images would be accessible on multiple screens onsite and offsite.
- 21.20 QMRS use the electronic data management system to:

- Replace the ERT whiteboard and have key information displayed for briefing incoming brigadesmen
- Record the teams and who is in each team so it is clear to everyone how many teams are available and who is in each team.
- Identify designated transport drivers with each team

Industry

- 21.21 Three-monthly training for emergency response training, from self-escape, first response, firefighting and ensure all CMW feel confident and comfortable in using the equipment. This includes refresher training for statutory officials on gas testing and evacuation procedures and the donning of CABA/SCSR in fresh air before evacuating dependent upon the situation being faced.
- 21.22 Develop an emergency response standard to ensure that all mines have the same:
- Coloured escape way droppers
 - Life line protocols for cones and installation
 - Non-verbal communications
 - Communications between evacuating CMWs in their group and when they meet other groups
 - CABA spacing
 - CABA location ancillaries: telephones/DACs, mine plans, white boards etc.
 - Hat colours depicting CMWS experience/role
- 21.23 Adopt an industry wide data management system for operational management and emergency response and standardised access for external agencies such as QMRS, Mines Inspectorate, ISHR and Simtars as applicable.
- 21.24 QMRS and the industry to work together to identify a streamlined way to ensure that the MRAS information is populated in a streamlined manner and that all data entry is verified. This would include the training of several site personnel (to cover all shifts/rosters) in the objectives of MRAS to assist them in understanding the rationale behind the data and enable the timely preparation of the re-entry documentation.
- 21.25 QMRS to review the process for attaching wheels to the wheeled stretcher. Last year one wheel fell off and this year it could not be attached.
- 21.26 Industry to identify a way of occupying CMWs not directly involved in the emergency response, separating evacuating CMWs from the remainder of mine staff and resolve the issue of mobile phone usage in such circumstances.
- 21.27 Review communication with next-of-kin and ensure families are told prior to any opportunities for leaks to occur from non-official sources this will include working and liaising with the police in particular the district disaster coordinators in Mackay/Rockhampton as appropriate.

Appendix A: Exercise timeline

Location	Surface Observation	Time	Underground Observation	Location	Team
		8:15	assessors deployed from the surface to the underground locations underground assessors pre briefed the CMWs on the level 1 emergency exercise and at 11:00 informed them of the effects that they would have felt as a result of the		
		10:50	LW level 1 assessor contacted CRO stating that for the purpose of the level 1 emergency exercise the shearer is cutting into the TG in normal cutting sequence. Citect screens will not reflect this but for the purpose of the exercise the shearer is cutting into the TG	MG 102 LW	LW Face
		11:02	Crew boss from Techserve attempted to call control from LW LTU phone. The phone call wasn't answered.	LW LTU	Techserve x 4 Tolk x 4
		11:02	Team all donned assist 1 CMW with Donning process.	8C/T 102 M/G	102 Main crew
Control room	Surface Alarm Sounds 555 rang - answered by CONTROL - comment that control # is 3555 and often get phantom calls	11:03	All SCSR fitted. Workers in crew assisted each other. Some twisting was observed on hoses, however workers showed good techniques.	102 Maingate B Heading 30ct	Vent Crew
		11:04	A worker was selected to use the DAC to contact control. A non-verbal protocol	102 Maingate	Vent Crew

			sticker was placed on the DAC to assist. After a few minutes communication was established and proceeded using the protocol	B Heading 30ct	
		11:04	Decision made to head to "place of safety". Evacuation PED received. Crew commenced donning rescuers (1 real and 2 training rescuers used). Call to control abandoned due to no answer.	LW LTU	Techserve x 4 Tolk x 4
		11:04	Non Verbal communications initiated with CRO at phone 7-8 C/T 102 maingate.	7-8C/T 102 M/G	102 Main crew
		11:05	Crew informed of reduced Ventilation (second Cloud)	7-8C/T 102 M/G	102 Main crew
		11:05	Called control phone rang out no answer, made decision to walk to 28 c/t downcast shaft	31 c/t 103	31 c/t drillers
		11:06	DECISION - ERZC signals workers into a huddle and non-verbally communicates plan to vacate the mine using the PJB.	102 Maingate B Heading 30ct	Vent Crew
		11:06	Real SCSR on. Difficulty experienced opening the SCSR retaining strap.	LW LTU	Techserve x 4 Tolk x 4
planning/IMT	In the technical services room no action, staff continuing to work	11:06	Walking outbye with self-rescuers on in single file last man had hand against rib	7-8C/T 102 M/G	102 Main crew
control room	Briefing of UMM at Control Room included injured and deceased, LW alarms and visual of MG and TG of Longwall.	11:07			

		11:08	All workers safely on board PJB and evacuation underway.	102 Maingate B Heading 30ct	Vent Crew
		11:08	Crew back at Crib room and change over to CABA started	7C/T 102 M/G	102 Main crew
	QMRS Alerts call issued	11:09			
		11:10	ERZC was told his gas detector was alarming with a low oxygen content and a high carbon dioxide reading. The ERZC vacated the PJB and motioned for his team to join him at the rear of the PJB. The ERZC was told that the oxygen concentrations were still dropping and carbon dioxide was increasing. The ERZC signalled to his team to remain calm and motioned to the driver to go back to the driver seat. He then signalled to his team that they would drive out. .	102 Maingate B Heading 27ct	Vent Crew
		11:10	All personnel from face arrived in crib room, all accounted for. ERZC called control asked if fans were still running - yes.	MG103 Crib room	MG 103 Bull Gang
		11:10	Crew left in transport.	Primary egress from LW LTU	Techserve x 4 Tolk x 4

		11:10	Call from CRO saying that they were investigating an event associated with the LW and to wait for instructions.	Crib room 27ct Mains C to B	shotcrete
IMT Meeting Room	Operations Coordinator appointed by IMT Leader	11:11			
planning/IMT	Planning Lead informed the Technical Services team that there has been an incident underground and that an IMT has been formed Planning lead and intelligence lead went to IMT	11:12	PJB re-started and workers vacate area.	102 Maingate B Heading 27ct	Vent Crew
		11:12	Longwall team donned SCSR 9ct B hdg	MG 102 9ct Bhdg	LW Face
MR Building	QMRS Ops Manager 1 receives call from QMRS - he is on site	11:12	All accounted for - production and Bull gang crew	MG103	MG103 Production crew
		11:12	Set number 1261 CABA unit malfunctions. Team assist the CMW and change over to a second unit.	7C/T 102 M/G	102 Main crew
		11:13	PED - evac inbye of longwall (only 1 person in crib room received PED)	MG103 Crib room	MG 103 Bull Gang
		11:13	PED received "EVACUATE INBYE LW"	8-9CT C HG	LW 102 A/S production crew
		11:13	All persons on CABA, call to control to let know situation.	7C/T 102 M/G	102 Main crew
		11:13	Arrived at 28 c/t downcast shaft which also had a CABA station in the c/t.	28 c/t 103	31 c/t drillers

			Decided to try to call control again, CRO answered the group gave their location details on what they had experienced from the incident, and plan to egress. Group then had a discussion on whether or not to egress or stay at a place of safety. Group decision was split but decided to stay at 28 c/t. Then received a PED to evacuate inbye of longwall.		
planning/IMT	Status update from IMT Account for everyone that has evacuated Information on what has happened, CO levels and we have people down in the maingate and tailgate, there has been a change in the ventilation Back in 1125 and issue the relevant duty cards to your team	11:14	All crew members back in the cribroom	MG 104 cribroom 13ct	MG104
Operations Meeting Room	Operations Duty Card folders taken out of cabinet (at entrance to door) and brought into the Operations Room for distribution. Intelligence duty card allocated	11:15	Loaded CABA into PJB. Only 1 PJB in the panel, production crew in PJB, Bull gang to evac on foot carrying CABA.	MG103 Crib room	MG 103 Bull Gang
		11:15	Commence SCSR time trial. Crew demonstrated good skill with donning SCSR using low visibility goggles, (good idea using lid off SCSR to keep rescuer off body) all CMW remained calm and composed during the donning process)	8-9CT C HG	LW 102 A/S production crew
MR Building	QMRS Ops Manager calls all team members - looking for those who can respond in 1 hr - report to substation co-ordinator	11:15	Checked the Drifrunner - awaiting instruction from the CRO only one Drifrunner in the panel - organising which crew was going to walk out and which	MG103	MG103 Production crew

			crew was going to travel out in the Driftrunner		
		11:15	ERZC tried calling control 3x, eventually control answered @ 11:17	MG 104 cribroom 13ct	MG104
		11:15	Assessor told that dusty and PGD was alarming on CO. ERZC immediately told the crew to don Rescuers and ERZC then made nonverbal comms to CRO	Crib room 27ct Mains C to B	shotcrete
		11:15	Call to control, "9 people leaving in PJB"	7C/T 102 M/G	102 Main crew
MR Building	confirmation 13 brigadesmen on site as part of the crews	11:16	Transport stopped in c/t between C and D hdgs adjacent to the main belt tripper drive. Driver alighted and made his way into C hdg through the doors in the c/t D-C, crossed the belt and attempted to call Control on the DAC. The Driver was simulating wearing a SCSR. No Answer received from Control.	Main belt tripper drive	Techserve x 4 Tolk x 4
		11:16	Left note on CABA door "9 people left in drifty"	7C/T 102 M/G	102 Main crew
Operations Meeting Room	EMQ Net opened up on computer and displayed on big screen on wall in Operations Room.	11:17			
MR Building	Emergency Emergency Emergency loud speaker message all persons to gather in the training rooms could not be heard in the training rooms	11:17	ERZC made communication with control. ERZC asked for an update and what do you want us to do? Control officer informed the ERZC there has been a loss in ventilation and possible VCD failure. The control room officer asked the ERZC	MG 104 cribroom 13ct	MG104

			to remain in the cribroom and continuously monitor the atmosphere.		
planning/IMT	Issued Ventilation Planning Duty Card and MRAS and Gas monitoring task cards	11:18	PED received "EMERGENCY EVACUATE"	8-9CT C HG	LW 102 A/S production crew
		11:18	Longwall team completed donning SCSR	MG 102 9ct Bhdg	LW Face
	Noticed people being mustered from main aboveground area to area (Muster point)	11:18	Left Crib room in PJB's x 2. Wearing CABA	7C/T 102 M/G	102 Main crew
		11:19	PED "Evacuate to the surface" 2x Drift runners at crib room. Personnel all accounted for by ERZ Controller. ERZC did not contact control to inform crew were evacuating the section. Once PED was sent, ERZC gathered crew and left.	MG 104 cribroom 13ct	MG104
		11:20	PED - Emergency evacuation	MG 102 9ct Bhdg	LW Face
		11:20	ERZC instructed all crew members " Hop into drift runners and head to surface'. All crew members spread out into 2 drift runners and left 13ct cribroom.	MG104 cribroom 13ct	MG104
EMT	Personnel arrived and began to form room	11:20	PED received by crew to evacuate the mine. Crew in PJB to evacuate via primary egress	Crib room 27ct Mains C to B	shotcrete

		11:21	The three workers fitted with the SCSR decided to experience walking out. This was agreed to by the Assessors. The group leader adopted a "stop, turn and look" approach to ensuring that no team member was left behind. This occurred at approximately every 50m.	102 Maingate B Heading 20ct	Vent Crew
		11:21	PED received "EMERGENCY EVACUATE"	8-9CT C HG	LW 102 A/S production crew
EMT	Initial discussions about the situation occurred	11:22	Escaping 5 men wearing SCSRs arrived at E4 CABA station and commenced changeover onto CABA from SCSRs.	E4 CABA station	Techserve x 1 Tolk x 4
		11:22	Emergency PED to evacuate not everyone received the PED	7-3 C/T 102 MG	102 Main crew
Logistics Room (Hunter Room)	Two persons entered the Logistics room. One person was the appointed Logistics Coordinator.	11:23			
planning/IMT	White board being used to write current information	11:23			
planning/IMT	Planning and Intelligence lead went to IMT	11:24	Getting tags off tag board	Start of 102 M/G panel	102 Main crew
		11:25	PED - Evacuate to surface	102 Maingate B Heading 18ct	Vent Crew

		11:25	Phone control, no answer, continue evacuation	Mg103 37CT	MG 103 Bull Gang
		11:25	Transport with the other 3 men from the crew arrived at E4 CABA station and commenced a simulated changeover onto CABA.	E4 CABA station	Techserve x 4 Tolk x 4
EMT	EMT controller contacted the General Manager (off-site at the time) to advise of the situation -	11:25	Pulled up at the drillers site - and inspected for people	MG103	MG103 Production crew
		11:25	Vehicle arrived from inbye had Bullgang crew in it and there were no more seats available vehicle was full, the group debated on whether or not they would get in anyway but decided not to and vehicle drove away.	28 c/t 103	31 c/t drillers
Main IMT Room	Logistics Coordinator to the IMT room for an IMT meeting. IMT Leader briefing the Coordinators. Operations Coordinator updating the IMT room. IMT leader gave instructions to the Logistics Coordinator with actions due for next meeting. IMT leader communicated next IMT meeting 11:50	11:26	Three workers on foot arrive at CABA station. Rest of the team arrived. SCSR. Two workers decided to carry wearing SCSR and obtained "blind man" sticks to facilitate the escape. The lead walker used one stick as a walking cane and both workers held the second stick to maintain contact.	102 Maingate B Heading 17ct	Vent Crew
IMT Meeting Room	First formal IMT meeting started. Key points in update given by IMT Leader: An instruction for an orderly withdrawal of persons from the mine had been given. A situation has occurred underground with early indications that there are a couple of guys down at the MG of the Longwall, and a couple of guys down at the TG of the Longwall.	11:26	All crew members in drift runners heading to the surface along MG104 travel Rd. "Plume cloud encounter"- Initiated stoppage of drift runner's. Assessor informed driver of the leading Driftrunner "The vehicle is splattering and now has stopped. , the ERZC gathered all CMW's	MG104 8ct	MG104

			from the drift runners and instructed CMW's to fit the SCSR's		
	IMT meeting: Update on priorities including orderly withdrawal from mine and notifications to external parties. Intelligence was instructed to initiate debrief process Next meeting scheduled for 11:50	11:26			
EMT	EMT roles assigned to staff - EMT controller; scribe; EMT controller PA; commercial; legal-family-external stakeholder.	11:26	The group then noticed a vehicle coming from outbye it was heading in to pick up the face crew the crew continued to evacuate on foot	28 c/t 103	31 c/t drillers
IMT	IC starts briefing - see David Cliff camera - MR mobilised; ERT at Hub	11:27	Contact with control at tag board	Start of 102 M/G panel	102 Main crew
EMT	Team began to receive EMQnet notifications on mobile phones	11:27			
planning/IMT	IMT status update Couple guys down maingate and tailgate High CO, ordered an orderly evacuation Mobilised mines rescue notified EMT at the hub	11:27			
Logistics Room (Hunter Room)	Logistics Coordinator attempting to contact personnel for the Logistics room via his mobile phone. Logistics Coordinator expressed his concern that he could not raise assistance as all personnel were sent to the surface training room 2.	11:28			
IMT Meeting Room	Operations Leader gave update. Key points: The orderly withdrawal of persons from the mine was underway.	11:28			
planning/IMT	Priority Safety of the men - Logistics we need a full head	11:28			

	count Start debrief of crews as they come out				
EMT	EMT controller began compiling briefing for corporate office. Noted for briefing that longwall explosion, irrespirable atmosphere, casualties (unknown number), waiting to confirm which external agencies to notify	11:29			
		11:30	Two workers adjacent cut through	102 Maingate B Heading 16ct	Vent Crew
		11:30	All 8 in crew reboarded the transport and proceeded out via the primary egress	primary egress from E4 CABA station	Techserve x 4 Tolk x 4
IMT	IC - ordered evacuation - priority get people out, determine what is going on, site to be locked down	11:30	Check on CMW's under SCSR (all ok)	MG 102 9ct Bhdg	LW Face
		11:30	Stopped at 17ct to change over to CABA and make verbal coms to crew (17ct did not have any training CABA so just pretend)	17ct C heading	shotcrete
		11:30	Panel Exit Team got tags off personal token board	Start of 102 M/G panel	102 Main crew
IMT Meeting Room	IMT meeting closed. Time set for next meeting at 11:50 hrs	11:31	Check CABA pressure didn't refill, continued to travel out in PJB	B hdg 15 C/T	102 Main crew

EMT	Decision to notify Glen Britton, Executive Head of Underground Operations	11:31			
IMT Meeting Room	Operations Coordinator gave personal update to IMT Leader. One on one.	11:32	Each crew member went thru the donning process of SCSR's Only minor issues with mouth pieces twisted,	MG104 B Hdg 8ct	MG104
EMT	EMT received call from "site supervisor". Discussed which external services to contact. No calls requested at this stage.	11:32			
planning/IMT	Update - if no one has a job don't need to be here Liz Marnane Intelligence Coordinator, assign duty cards for Debrief review, and Debrief Officer, will require a runner	11:32			
		11:33	PJB arrives from outbye. Evacuation now by vehicle	MG 103 34-35CT	MG 103 Bull Gang
	Logistics Co-Ordinator arrives at the muster area to engage a Logistics team to meet in Hunter Room	11:34	PED - Deputies call	102 Maingate B Heading 15ct	Vent Crew
EMT	Information received - High CO, people down (casualties), withdrawal of people from the mine ordered, mines inspectorate and ISHRs already notified by another team.	11:34			
planning/IMT	requested MRAS stuff for mines rescue gas nose points, incident questions for QMRS can you allocate No one assigned to compile the MRAS information	11:34			
Training Room 2	The Logistics Coordinator sourced 2 CMWs from Training room 2. On route back to the Logistics room, the Logistics Coordinator was verbally	11:35	Stop at 28CT, check for personnel	MG103 28CT	MG 103 Bull Gang

	discussing the issue in the mine. Gas levels, persons in the mine, etc.				
Operations Meeting Room	Operations Coordinator chose roles from his structure that needed to be filled outside the Operations Room.	11:35	PED received "DEPUTIES CALL CONTROL"	8-9CT C HG	LW 102 A/S production crew
	Rescue Officer delivered MRAS pack to planning meeting, MRAS Officer and Explosibility duty cards issued	11:35	Dust cloud at 15ct coming towards the vehicle - 16%O2, off scale CO and greater than 3% CH4	MG103	MG103 Production crew
		11:35	Arrived 5ct CABA station. ERZC directed all CMW's into the CABA station to initiate the changeover from SCSR to CABA.	MG104 5ct	MG104
		11:35	Check CABA pressure didn't refill, continued to travel out in PJB	5 C/T mains	102 Main crew
	Person arrives at front access and is disallowed entry and a group of people leave muster area and are escorted to remove tags off tag board	11:36	Two workers adjacent cut through. Showing good pace and discipline	102 Maingate B Heading 14ct	Vent Crew
EMT	EMT controller delegated tasks to notify corporate office personnel.	11:36	PED "deputies call CRO"	5 C/T mains	102 Main crew
EMT	Head office notified of incident via Head of corporate HR.	11:37	PED - deputies call control. Met drillers at 26 CT. Drillers left to walk as vehicle was full.	MG103 26CT	MG 103 Bull Gang
planning/IMT	Logan Mohr going through duty cards, requested to find someone for the Engineering Officer	11:37	Call control at bottom of M & M drift, no answer continued travelling out In PJB	M & M Drift	102 Main crew
Control Room	News received that men at Tailgate had burns. Showed signs of burns. UM suggested to Operations Coordinator that scenario could be a	11:38	PED all deputies to call CRO	MG103	MG103 Production crew

	frictional ignition of methane at the TG of the Longwall (from the shearer). The resulting methane explosion could have blown out the Longwall overcast thus short circuiting ventilation inbye.				
Intelligence cell	Intelligence Meeting: Team briefing (Verbal with no record)	11:38			
planning/IMT	Planning Coordinator who is plugging information into EMQnet No one has a log on EMQnet except Planning Lead	11:38			
Logistics Room (Hunter Room)	The Logistics Coordinator gave instructions to the Site Security Officer to lock down the perimeter of the mine, i:	11:39			
Portal	Transport arrived on surface	11:39			Techserve x 4 Tolk x 4
front gate	Co-Ordinator advising person at front gate cannot enter due to a level 1 emergency exercise.	11:39			
planning/IMT	Returned to issue duty cards some confusion on the duty cards leave the duty cards	11:39			
		11:40	Two workers on foot decided to stop. In total they spent 40 minutes using the SCSR and 20 minutes at a brisk walk up a 1 in 8 incline. One worker was a "clean skin" who had been at the mine for 8 weeks.	102 Maingate B Heading 13ct	Vent Crew
Control Room	Control Room operator stated: 103 Panel - no news. 104 escaping.	11:40	PED - Sorting issues. ERZC called control, informed CRO of intentions and personnel on foot at 26 CT	MG 103 20CT	MG 103 Bull Gang

Intelligence cell	Update from Ventilation Officer with possible TG doors compromised, explosion at longwall and Tube bundle results off scale on Carbon monoxide and on Real time monitor (RT61), loss of VCD's.	11:40	Transport arrived at go line parking area, crew alighted in CABA. Crew proceeded to tag off and asked the official controlling the tag board if they could remove their CABA. The official replied that he wasn't authorised to give that permission. The crew removed their CABA.	Go line	Techserve x 4 Tolk x 4
		11:40	PED received "WE ARE CURRENTLY SORTING ISSUES", during this times assessors taking observations of CMW under SCSR.	8-9CT C HG	LW 102 A/S production crew
		11:40	ERZC called the crew out and went back to the cribroom to call control	MG103	MG103 Production crew
		11:40	Arrived at panel entry tag board MG104- All CMW's out of drift runners to collect tags.	MG104 panel entry	MG104
		11:40	PED "we are sorting issues"	M & M Drift	102 Main crew
Muster area	Crew met by official who asked if they had any information to relay about the incident.	11:41			Techserve x 4 Tolk x 4
planning/IMT	Fill in paperwork EMQnet no information on the incident Planning Coordinator requested a ventilation plan with the gas sensors	11:41			
Logistics Room (Hunter Room)	Logistics Coordinator commenced updating Scribe of status of LW high gas levels and men down.	11:42			

Control Room	Control Room operator stated: Cannot confirm if 103 Panel self-escaping.	11:42			
	Front gate locked and confirmation of no access allowed for anyone to enter that is not required for the situation	11:42			
QMRS	called Mag North - alerts sent out - awaiting alerts - alerts sent out at 11:14	11:43			
EMT	Briefing provided to Head of Safety and Sustainable Development via phone to inform of current situation	11:43			
planning/IMT	Planning Coordinator briefed team to start looking for hand over details No information is to go off site	11:43			
Logistics Room (Hunter Room)	Site Security Officer left the Logistics room to issue 3 other duty card packs	11:44			
Control Room	UM informed Operations Coordinator of location of all men underground via the shift deployment list. 3 men at TG had burns. 2 men at MG down. No names for any persons at the Longwall.	11:44	All tags collected, all crew members back in drift runners. ERZC phoned control,	MG104 panel entry	MG104
EMT	EMQnet connected to large screen display. Some technical issues with logging in being experienced.	11:44			
Logistics Room (Hunter Room)	The Scribe reminded the Logistics Coordinator of the IMT meeting to be held in 5 mins.	11:45	Encountered Plug of dust and gas. PJB stopped running. Donned CABA.	MG 103 15CT	MG 103 Bull Gang
Control Room	Control Room Operator stated: 103 all on way out.	11:45	Check on CMW's under SCSR all in good spirits, All are right to continue. SCSR are not getting hot and are not uncomfortable.	MG 102 9ct Bhdg	LW Face
Intelligence cell	Intelligence coordinator asked about electrical infrastructure in area and what would be the safest escape route given new circumstances.	11:45	Crew turn the pull key and each DAC to indicate where they were as they evacuated up the belt road	MG103	MG103 Production crew

EMT	EMT controller took the opportunity to assess current situation in EMT team to ensure that all staff understood their roles and there were enough people involved to manage all of the required roles.	11:45	Change over to CABA at B heading 14 - 15ct (this is where the training CABA suits were - change over went very well)	B heading 14 - 15ct	shotcrete
		11:45	Informed group that the haze had passed and the air appeared to be normal. All persons in the group said they would leave there rescuer on and continue egressing the mine.	25 c/t 103	31 c/t drillers
Control Room	Control Room Operator stated: Have not heard of/from anyone inbye of the Longwall.	11:46			
		11:47	group walking passed 24 c/t	24 c/t 103	31 c/t drillers
EMT	Decision to notify the Employee Assistance Program (EAP) provider of emergency situation on site. EAP provider advised that they would be attending site and arrangements were made to ensure provider could access the site.	11:48	Crews out of the mine	Surface	102 Main crew
planning/IMT	IMT room No contact with 103 QMRS update x 5 from Grosvenor on site IC mentions ops manager is not in the meeting If people are not wearing tabards they are to go to the training rooms	11:48	Person wearing rescuer told group to slow down	23 c/t 103	31 c/t drillers
Logistics Room (Hunter Room)	A social media event was released with incorrect information and shown to the Logistics Coordinator.	11:49	Arrived 17ct B-C CABA station. ERZC gathered all CMW's out of Driftrunner Informed CMW's to walk thru a simulated "Top up" Process. Crew went thru the process effectively. ERZC contacted		MG104

			control and informed location and intensions of evacuation to the surface.		
		11:49	group walking passed 22 c/t	22 c/t 103	31 c/t drillers
IMT Meeting Room	The IMT meeting did not start until 11:55 as not all required personnel were present. The Logistics Coordinator presented his update to the IMT meeting which included the handing out of duty cards to his team, full scale lockdown, Medical Officer was deployed, social media coming out with misleading information. The Logistics Coordinator asked the IMT for clarification on the mine head count and if the Mines Inspector was being escorted on site. An action for the Logistics Coordinator was to have the front phone manned.	11:50	DECISION - Two workers decided to walk up to tag board and wait for vent crew team.	102 Maingate B Heading 10ct	Vent Crew
Control Room	Update via phone from underground received. Longwall TG Double Doors blown apart	11:50	All CABA donned, buddy checks complete. ERZC accounted for all personnel and welfare checked. ERZC appointed person to be last in order of march (mines rescue trained). Briefed personnel on atmosphere.	MG 103 15CT	MG 103 Bull Gang
	IMT meeting: update included RT off scale in LW return, no change in quantity but a drop in pressure. Potential pulse through the mine which saw an increase in CO reported and now returning to measurable amounts on RT sensors. Tube bundle point 12 TG102 was off scale.	11:50	Rang the CRO and told to wait by the phone and await further instruction	MG103	MG103 Production crew
		11:50	Come off CABA on go line	Surface	102 Main crew

		11:51	Tags off tag board and written down by person at the tag board	Surface	102 Main crew
		11:51	group walking passed 21 c/t	21 c/t 103	31 c/t drillers
Control Room	Operations scribe indicated to Operations Coordinator that there was 4 minutes until next IMT meeting.	11:52	Called back by the CRO and told to continue to escape the mine	MG103	MG103 Production crew
Intelligence cell	VO reports on gas and ventilation	11:52	Asked what they had seen in muster area	Surface	102 Main crew
planning/IMT	Ops controller :-There is no contact inbye of longwall, three in the longwall tailgate they have visible burns, two on the maingate no movement	11:52	Arrived at 20 c/t CABA station The group decided to refill their CABA units here and continue to wear them. Rang control (first time since 28 c/t) gave location asked the CRO for more info on incident none given told CRO the plan to continue walking out of the mine,	20 c/t 103	31 c/t drillers
planning/IMT	Intelligence coordinator update on gas Real time is off scale There has been no change with the ventilation There has been a pressure drop Tailgate double doors are down a pulse has been sent through the mine Tube bundle is coming on line 12c/t off scale Bag samples from tube bundle to go to GC for analysis No source of the incident think it is the Longwall not sure Information has no detail	11:53	ERZC called control, informed re CABA and decision to walk out. After phone call, ERZC was informed gas levels are now close to fresh air, the plug of gas has passed. Decision remained to walk.	MG 103 15CT	MG 103 Bull Gang

Control Room	Operations Coordinator appointed Portal Guard duty card and explained key points of role to person appointed.	11:54	All CMW's back into drift runners 17ct Bhdg Mains. Headed to surface	B Hdg Mains	MG104
		11:54	Cap lamps and rescuers off, put away and number recorded by person in cap lamp room	Surface	102 Main crew
planning/IMT	Debrief from - #'s 119 UG early - at 11:48 77 UG - no contact people inbye - description of people from LW cameras	11:55	Refilled CABA suit at 2-4 ct. Crew discussed whether they would have ordinarily stopped here - they concluded with the lowest suit pressure still at 250 they wouldn't have bothered doing that again.	2-4ct E hdg	shotcrete
EMT	EMT controller was informed that EAP provider would be on-site soon	11:55	Left 20 c/t and continued walking outbye	20 c/t 103	31 c/t drillers
		11:57	Directed to training room 2	Surface	102 Main crew
IMT Meeting Room	Operation Coordinator has all Duty Cards assigned.	11:58	Both drift runners at the bottom of Man and Materials drift	Pit bottom	MG104
		11:58	group walking passed 19 c/t	19 c/t 103	31 c/t drillers
EMT	Additional role of EMT coordinator role assigned	11:59			
		12:00	Notional refill CABA at 11CT FREEK station	MG 103 11CT	MG 103 Bull Gang
IMT Meeting Room	Logistics Coordinator gave update. Operations Coordinator took a phone call from UM while in IMT Meeting.	12:00	Check on CMW's under SCSR (all ok)	MG 102 9ct Bhdg	LW Face
muster room	Roughly counted around 150 people in the Muster area and still using mobile phones	12:00			

EMT	EMT controller took time to reassess EMT roles and personnel and provided an update to all EMT staff about current situation and objectives	12:00			
planning/IMT	Logistics Site is in full lock down Social media coming through, it mentions Moranbah North, need to notify Moranbah North If you are not wearing a tabard you are to go to the training room	12:00	group walking passed 18 c/t	18 c/t 103	31 c/t drillers
IMT Meeting Room	IMT Leader asked for people to establish a relief team.	12:02			
	management by objectives update: - Escape of men UG; identify source of explosion; control situation	12:02			
planning/IMT	Actions Get the persons to the surface Reception phone cannot transfer work out the problem Strategy Safety of the men Identify the source of the event Control the event Start using EMQnet	12:02	group walking passed 17 c/t	17 c/t 103	31 c/t drillers
IMT Meeting Room	Report from UM to Operations Coordinator (via phone): 103 Crew reported that when they were at 15 c/t they felt a pressure bump and had "gas off scale"	12:03			
IMT Meeting Room	Meeting closed. Next meeting set for 12:30	12:04			
	Intelligence Debrief Review Officer requesting people who have come up from the longwall to go to the planning room	12:04	In training room 2, people on their phones	Surface	102 Main crew

	Inspector arrives	12:05	Reached surface doffed CABA at go line.		shotcrete
planning/IMT	Intelligence Coordinator updated Safety of the men, identify the source of the event We don't know what has happened 77 people still underground 103 11c/t and 103 15c/t felt a pressure bump and gas off scale People on the tailgate with visible burns, people on the maingate no movement We had some sort of an explosion we have 2 off scale tube bundle points get someone to the tube bundle hut to take the bag sample and get to the GC for analysis	12:05			
Logistics Room (Hunter Room)	The Logistics Coordinator was updated by the scribe when he re-entered the Logistics room of 2 more media events. The Welfare Debrief Officer was present. The Logistics Coordinator updated the Logistics team of actions arising from the IMT. Some actions were closed out this meeting. Next IMT meeting time given by the Logistics Coordinator.	12:06			
	Ventilation issues (Planning team meeting), Update to group 77 still UG, source of ignition, additional explosion risk, control UG situation. Pressure bump experienced 15ct and CO spike but back to normal.	12:06	Called the CRO - counted how many were on the tag board and took a record of the names that were on the board	MG103	MG103 Production crew
EMT	Other staff in the building were informed about the emergency situation	12:06	Arrived at 15 c/t and found 2 PJB's sitting in the roadway. Checked vehicles both started.	15 c/t 103	31 c/t drillers
		12:07	Arrived on surface out of the Man and Materials drift - All CMW's accounted for in 2 drift runners from MG104	Surface	MG104

EMT	Began using the whiteboard to keep track of tasks and current situation	12:07	Told to not use social media and ask for volunteers to help out.	Surface	102 Main crew
Operations Meeting Room	Brief given by Operations Coordinator to team. Key points: 3 men at TG with burns. 2 men at MG not moving. No contact from anyone inbye of the Longwall yet. "Our focus is getting all people out of the mine".	12:09	Both drift runners pulled up on the Go Line. Each CMW headed to the surface UG tag board. Met by the ' Tag board Marshall'. Marshal directing CMW's thru taped area	Go line	MG104
		12:10	Arrived at designated Level 1 CABA station. CABA available. ERZC decides that team will wear CABA.. All workers were able to effectively don the CABA within 5 minutes.	102 Maingate B Heading 7ct	Vent Crew
		12:10	Crew members stopped by "Personal status officer" in the muster area. Officer only gathered a few crew members and started asking questions. Eventually CMW's were directed to proceed to the lamp room and remove lamp and rescuers.	Muster area	MG104
		12:10	Divided crew and debrief to ERZC rest of crew sent to holding area at training room		shotcrete
		12:10	Asked to come back to training room at go line for debrief	Surface	102 Main crew
muster room	Incident Controller briefs all in the training room of the situation that there are high CO levels reported and they are treating it as a true case scenario and there are currently people still UG. Advised not to use mobile phones and that an update will be given asap on the what the cause is as they don't know at this stage	12:11			

EMT	Informed that 77 people still underground	12:13			
planning/IMT	QMRS Ops Manager 1 who can I talk to about the MRAS information MRAS officer what is going on?	12:13			
			CMW's met with Lamp room marshal - Removed lamps & SCSR's. CMW's were instructed to gather outside in the muster area and head to the training room.	Lamp room	MG104
	QMRS Ops Manager introduced to MRAS officer by Planning Co-ordinator	12:14			
Logistics Room (Hunter Room)	Another social media event was released	12:15	Workers boarded the PJB and vacated the area. Drivers were assisted when removing their tanks to ensure face seals were not compromised.	102 Maingate B Heading 7ct	Vent Crew
	Debrief officer updated VO directly with "explosion knocked off feet".	12:15	PED received " INBYE LW CALL CONTROL"	8-9CT C HG	LW 102 A/S production crew
		12:15	Check on CMW's all ok (SCSR are getting hot) PED - inbye LW call control	MG 102 9ct Bhdg	LW Face
EMT	EMT controller asked External stakeholder coordinator to begin working on media release	12:15	CMW's started to proceed thru to the training room. A person from the mine stopped the MG104 CMW's and asked if they have completed the debrief. Crew replied 'No', the crew were then directed into the debrief room.	Muster area	MG104
planning/IMT	VO talk to QMRS Ops Manager 1 QMRS high CO off scale Planning team seem to be disorganised Only one computer that has Safegas to get gas	12:15	Drove PJB's slowly to 11 c/t CABA station checking c/t's on the way	19 c/t 103	31 c/t drillers

	data from, 10 people standing around looking at the computer screen				
	Collar pressure normal - from control; real time on line; QMRS Ops Manager discussing with Intelligence VO for data for MRAS; discussion about only having 1 x computer available with Safegas instead of 3 so will be slow	12:16	PED - Calls to 3551	102 Maingate B Heading 7ct	Vent Crew
EMT	Decision made to relocate to main office as working from the hub was providing difficult RE communication with other teams	12:16			
	Note QMRS are starting to arrive at gate entry	12:17	Arrived at 11 c/t, Group refilled their CABA units and called control CRO- gave location of the group and that we have both vehicles.	11 c/t 103	31 c/t drillers
Logistics Room (Hunter Room)	The Logistics Coordinator was discussing with his team to come up with a brief regarding the social media events to escalate via the IMT. "A requirement for a media release".	12:18	All workers safely on board PJB and evacuation underway.	102 Maingate B Heading 7ct	Vent Crew
		12:18	PED received "CALLS TO 3551 TO CONTROL"	8-9CT C HG	LW 102 A/S production crew
Logistics Room (Hunter Room)	The Intelligence Engineering Officer entered the Logistics room asking the Welfare officer to run a report of GC trained personnel. The Current scribe was tasked with sourcing another scribe. At this time she left the room.	12:20	Found the C hdg 9ct overcast to be damaged - Attempted to ring the control room operator	Mains	MG103 Production crew
QMRS	MR brigades on site - 8 x external 2 internal - could form 2 x teams x 5; call to D Carey - request	12:20	Finished debrief	Surface	102 Main crew

	to check Duty Card 7 - phone adjacent mines co-ordinator - Planning is chasing up gas data around LW panel				
Operations Meeting Room	Personnel Status Officer gave update. There are 45 tags left on the Underground tag board. 17 tags left on the surface tag board.	12:21	Crew members headed into the debrief room.	Debrief room	MG104
		12:22	At tag board. Tags removed	102 Maingate B Heading Tag board	Vent Crew
	QMRS Ops Manager enters operations - updates to situation from ops co-ordinator - QMRS Ops Managers update about MR - currently working thru MRAS; Ops manager 2 expected 12:30; MR brigades on site =8 with further 13 on their way **** Secondary explosion being discussed - from report from 15ct 103 - people may have barricaded themselves in	12:22	Rang both the CRO numbers and this went to reception - she was unable to get through to the CRO	Mains	MG103 Production crew
Logistics Room (Hunter Room)	Another scribe entered the Logistics room. The current scribe updated her with information from what she knew from her time in the training room.	12:24			
Logistics Room (Hunter Room)	Logistics Coordinator updated the new scribe of the mine status. An update came through from EMQNET of the CMWs.	12:25	ERZC spots workers vacating on foot. DECISION - ERZC makes call to pick up six workers.	102 Maingate B Heading 5ct	Vent Crew
		12:25	brief LW crew on other part of exercise (2 x injured persons at MG)	8-9CT C HG	LW 102 A/S

					production crew
		12:25	Continued on driving out to 3 c/t CABA station checking c/t's on the way	11 c/t 103	31 c/t drillers
Operations Meeting Room	Update provided to team from UM. Key points: A second pressure bump had been felt by those underground. Portal Zone has been set up.	12:27			
EMT	EMT re-established in General Manager's office in main office area	12:27			
EMT	EMT controller received briefing on situation from the Incident Controller. Head office staff involved via teleconference.	12:28	All workers safely on board.	102 Maingate B Heading 5ct	Vent Crew
		12:28	Arrived at 3 c/t CABA station Group decided not to refill as their units were still full decided to continue on to the panel tag board. Checked belt road before leaving	3 c/t 103	31 c/t drillers
Logistics Room (Hunter Room)	Another media event was given, again with incorrect information. Communications Officer updated the team of the phone diversion in place.	12:29			
EMT	Decision that head office will be preparing media statement.	12:29			
EMT	Head office informed workforce has been debriefed on current situation and surface staff have been "called in"	12:29			
planning/IMT	IMT update 38 not out from underground, 17 on the surface	12:30	2 x CMW commence nonverbal communications with control using DAC	8-9CT C HG	LW 102 A/S

	<p>5 injured they are on their way out, 5 first aiders waiting at the IMO's 103 10 men on CABA on foot LW cribroom 9 men Pit bottom 104 men all accounted for 5 on LW face need the MRAS information 13 QMRS ready to attend from off-site 8 QMRS personnel on site Intelligence Getting PGD downloads Safegas computer Potential ignition source LW MG corner Planning Intake / return issues List people for replacements people to get to Moranbah within the next 5 hours Social media, explosion at Moranbah North Mine not Grosvenor Make local hospital informed List of people from training room #2 Contacted people to notify Actions List of people in training room #2</p>		<p>along monorail (simulating LW face) Control room operator seemed calm asking questions using nonverbal communications, CMW demonstrated good skill using nonverbal skills, wasn't too long winded whole process took around 5 minutes. Asked basic questions.</p>		<p>production crew</p>
		<p>12:30</p>	<p>Group checked tags on the board, 3 extra tags excluding the groups were still on the board Called CRO- notified him of the names of the tags on the board, told to continue to egress the mine, discussed plan to drive to the next CABA station at 17 c/t in the mains to refill. Group had brief discussion about looking for the persons whose tags were on the board but decided to continue to egress.</p>	<p>103 tag board</p>	<p>31 c/t drillers</p>

	QMRS Ops Manager set up computer between Planning and Ops	12:31			
	Call for FAB controller and assistant to be readied	12:32	DECISION - Additional workers picked up at CABA station. All PJB's full.	102 Maingate B Heading 5ct	Vent Crew
EMT	Decision made to draft holding media statement. Not to be released at this stage.	12:33	All workers safely on board PJB and evacuation underway.	102 Maingate B Heading 5ct	Vent Crew
EMT	EMT scribe mentioned that she did not know how to use EMQnet	12:34			
IMT Meeting Room	Intelligence group gave update. Key points: Situation caused by ignition of methane on Maingate corner.	12:35	Outside	Surface	Vent Crew
	TB 103 MG - Bag sample, Ignition source possible, downloading PGD data, Safe gas computer in IMT room (Unknown to Intel group) Next meeting 13:30	12:35			
	QMRS Ops Manager starting Captains Task sheet	12:35			
EMT	As of 12:04, there had been 4 social media "leaks"	12:36	Attempted to contact CRO at the bottom of the drift and went to the reception again - she was able to patch to the CRO and the information was relayed to the CRO regarding the stopping	Mains	MG103 Production crew
		12:36	started to drive to 17 c/t in the mains via c heading	103 tag board	31 c/t drillers

IMT Meeting Room	Logistics Coordinator gave report the IMT: Still a lot of social media. Request to escalate. Phone diversion in place, water supplied to persons in training room, working on contingency plans. Will confirm on reliefs for next meeting.	12:36	Arrived at 17 c/t mains, the group refilled their CABA units and called control CRO- gave current location and the plan to egress (continue to drive c hdg) CRO said okay and pick up anyone along the way	C heading 17 c/t mains	31 c/t drillers
	QMRS Ops Manager requests mine plans from surveyors for LW block for MR teams - MR trailer on site	12:38			
EMT	EMT controller asked for EMT status update to be added to EMQnet, including that Corporate Management Team (head office) had been formed.	12:40	Workers were met at the surface by incident control management and were asked to collect their tags and sign off by the tag board attendant. Vent Crew 102 were instructed to make their way to a designated area to provide information to IMT staff.	Surface	Vent Crew
muster room	Noticed that some people still using their mobile phones	12:40	3 x PJBs exiting mine picked up the crew and took to the surface	Surface Tag board	MG103 Production crew
IMT Meeting Room	IMT scribe read through actions.	12:41			
EMT	. Relaying technical information. Tailgate dropped to 100PA, tube bundle online, bag samples taken. 77 still underground as at last update. 2 U/G workers no signs of life, 3 have burns. Seeking source of explosion. EMT has not received update to say if fans are operating.	12:41			
Logistics Room (Hunter Room)	Social media update informing of explosions and multiple fatalities	12:43			

EMT	Question asked if all surface personnel are accounted for. Not confirmed yet. 5 injured people on the way out of the mine. Social media reporting the incident happened in the wrong location. Advised that social media commentary is ramping up.	12:44			
EMT	IMT briefing from Incident Controller. 38 people remain underground. 5 injured coming out in vehicle. 17 people on surface unaccounted for. No definitive cause established. No reports of fires. Damage to ventilation underground.	12:45	Check on CMW's under SCSR - One of the CMW's that was communicating with control stated he was felling fatigued but OK, He had just stood up and walked 20m to the face DAC that was located on the monorail. The CMW then communicated to control using nonverbal communication (5mins) then walked another 20 m and sat back down he was accompanied by another CMW who was under SCSR but he felt fine.	MG 102 9ct Bhdg	LW Face
planning/IMT	2 x people don't know where IMT is	12:45	Took tag off the tag board had name recorded and were directed to an area to be debriefed	Surface Tag board	MG103 Production crew
		12:45	All MG104 crew members have been debrief and directed to the training room	Debrief room	MG104
Intelligence cell	Debrief officer - over pressure felt CO increase and O2 decrease. C Hdg 15ct underpass was blown out/damaged. 2 guys injured at the LW, not clear whether MG. Ventilation model - VO and Intel coordinator discussed possibilities - Damaged VCD's but not sure about Regulator.	12:47			
muster room	Planning Co-Ordinator arrives looking for people	12:47			

EMT	Mines rescue has been mobilised. Have asked for other mines rescue teams to be put on standby.	12:48			
Operations Meeting Room	UM gave an update of the locations of all persons underground and status.	12:49			
Operations Meeting Room	Breaking news received. 10 men left underground. Have names of the men still underground.	12:50			
EMT	EMT scribe access to EMQnet fixed. Still no access to EMQnet for head office	12:50			
Operations Meeting Room	Operations Coordinator discussed cause of ignition. Still unknown but believed to be an ignition of methane at the Maingate. UM replied "No it was at the Tailgate"	12:51			
	MRAS Officer was sent to SEGAS computer in IMT room to gather further MRAS data	12:53			
Operations Meeting Room	Personnel Status Officer updated team: Key points: the 17 unaccounted for on the surface are mostly drillers. There are 10 men left underground. 2 x men are asking for an Ambulance. Operations Coordinator asked "Are the 3 at the TG dead? Are the 2 at the Maingate the ones asking for an Ambulance or are 2 of the Tailgate men asking for an Ambulance?"	12:54			
muster room	Noticed that people in the training showing signs of boredom. (For future look at things they can amuse themselves with to be kept in the muster area)	12:55	Control room operator initiated comms to LW crew update information on non-verbal comms	8-9CT C HG	LW 102 A/S production crew
planning/IMT	From a planning thinking what are we going to do, has there been an explosion or fire still burning Had an event, need to look at what to do, start looking at mobilising drill rigs	12:55			

	Haven't done any ratios to see what the problem is. Scenario on Had an event incident in LW compromised the doors, inbye MG corner felt pressure wave				
		12:55	Arrived at portal entrance the person wearing the self-rescuer removed it once on the surface (rescuer on at 11:40 and removed at 12:55-1hr 15mins duration	Portal	31 c/t drillers
	Planning team meeting: (Brainstorm) - Possible fire burning, solution (boreholes), LW event update - possible MG LW Face, fresh air plan requested by QMRS	12:56	Arrived at go-line Tag board controller was there taking persons names and asking them to remove their tags from the board and directed them to the muster area and briefly spoke to the Personnel Status UG controller who took their names and informed them to follow the cordoned off area and continue on through to remove your lamp and rescuer and heading into the de-brief room.		31 c/t drillers
Operations Meeting Room	Operations Meeting closed. Next meeting 13:20 hrs.	13:00	Checked on CMW's under SCSR all ok	MG 102 9ct Bhdg	LW Face
Intelligence cell	QMRS Ops Manager with Intelligence gas drainage officer - nothing explosive at this point in time, CO off scale?? - viewing bag sample results - no question of checking whether tubes may have been compromised by explosion	13:02			
EMT	Incident controller briefed EMT/head office. 7 people still underground, working on plan to get people out, some people working on emergency response teams might be required to rest and come back for relief. Head office asked what happened, but seemed that there was no clear	13:02			

	indication about what actually happened underground. Vague mention of explosion, but nothing definite.				
planning/IMT	Inspector asked is there an active fire underground Based on the ventilation there is no flow, monitoring indicate there is.	13:02			
Operations Meeting Room	Operations Coordinator spoke with the team. "There are 10 men underground. I want to know of the 7 Longwall men. The 2 at the Maingate, 3 at the Tailgate, 2 require an Ambulance. What are their names and locations?"	13:03			
muster room	Incident Controller arrives with update. 7 People UG and plan to get them out. Requested a list of everyone in the room to be done and maybe if not required they can maybe leave site. Noted that the cause is from an overpressure explosion and there is a reduction in pressure UG. Asked if everybody comfortable & if any more facilities required	13:03			
EMT	Media statement has apparently already been sent to media and posted on social media	13:03			
Operations Meeting Room	UM left the room stating he would find this out.	13:04			
QMRS/intelligence	Surveyor delivers plans of LW - too much detail for MR - have heavy coloured lines showing belt rd.; egress etc.	13:05			
EMT	EAP provider arrived at the front gate, arrangements for her to be let in made	13:06			
	Ignition sources confirmed by Engineering duty card holder (Power on 2ct, 9ct and MG102 non-flame proof equipment, reviewing camera footage	13:07			

	from previous 30mins. Decision to debrief ERZ controllers to run contaminates model.				
	QMRS Ops Manager - update - MR teams ready to deploy - waiting on gas data and trends	13:07			
planning/IMT	QMRS ready, waiting on MRAS information Getting the information on the PGDs Ventilation Officer needs information from the deputies to run the model Going through the actions	13:08			
IMT Meeting Room	Operations Coordinator and Personal Assistant wrote the names of the 10 men remaining underground on aboard and then left this board facing the wall. Confidential.	13:10	visibly notice SCSR getting uncomfortable on 2x CMW making Comms to control, moving getting up and down from DAC to make comms etc.	8-9CT C HG	LW 102 A/S production crew
planning/IMT	QMRS Ops Manager requests off Planning team 4 x man transporters plus Grosvenor drivers to be arranged and sent to MR shed	13:10	The group started the de-brief process, took the groups gas detectors and tag them, ask location they were working, took their names, asked for a description of what happened.		31 c/t drillers
		13:12	first CMW to come off SCSR (was one of the 2 x injured CMW making comms)	8-9CT C HG	LW 102 A/S production crew
planning/IMT	PC and inspector discussing the situation Using the whiteboard instead of EMQnet	13:12			
Logistics Room (Hunter Room)	Site Security Officer still had not received the list of persons to let through the gate	13:13	CRO initiates comms again to CMW. Confirm 2 x CMW names	8-9CT C HG	LW 102 A/S production crew

Rescue substation. Under cover area.	Rescue Team 1 commenced team surface checks on equipment. BG4s had already been bench tested.	13:15	2nd CMW off SCSR	8-9CT C HG	LW 102 A/S production crew
Operations Meeting Room	Operations Coordinator gave Mines Rescue Officer an update on the location of the 10 men remaining underground.	13:15			
EMT	EAP representative briefed by EMT stakeholder officer	13:15			
		13:16	3rd CMW off SCSR	8-9CT C HG	LW 102 A/S production crew
planning/IMT	Haven't got enough people on site to assist, need to get people from other sites to assist. Planning coordinator know where logistics are	13:17			
Logistics Room (Hunter Room)	Logistics Coordinator instructed Communications IT Officer to ensure Control Room is not getting bombarded with phone calls	13:18			
Operations Meeting Room	Breaking news: UM report provided. CMWs at the Maingate, and talking. The 3 x men at the Tailgate are not moving. There are 2 x men at the 8 to 12 c/t area somewhere.	13:20			
Logistics Room (Hunter Room)	Media release from Anglo	13:22	PED received "LW WE ARE COMING TO GET YOU"	8-9CT C HG	LW 102 A/S production crew
Logistics Room (Hunter Room)	Planning Coordinator + his scribe entered the room requesting contacts for relief personnel for planning team as there are not enough personnel	13:23			

	on site to cover roles. L.C can do this. LC requires a list of suitable people.				
Rescue substation. Under cover area.	Rescue Team 1 checks completed. 5 extra SCSRs included in equipment.	13:23			Rescue Team 1
Operations Meeting Room	UM tasked with contacting men at the Maingate and asking them "What are your injuries? Have you heard from or seen the 2 men inbye (8 to 12 c/t)?"	13:24			
muster room	Psychologist arrives and briefs people in training room	13:25	PED LW ERZC call control.	102 9ct	LW Face
Operations Meeting Room	Mines Rescue Officer informed Operations Coordinator that the two men at the Maingate are on self-rescuers. "It is important that we get to them".	13:27	CRO contacts 2 x CMW on LW face	8-9CT C HG	LW 102 A/S production crew
	QMRS Ops Manager requests re-entry control questions from MRAS	13:29			
EMT	Briefing provided to Queensland Mines Rescue staff	13:29			
IMT Meeting Room	Operations Coordinator gave update. Key points: 2 x men at Maingate are now on rescuers. The 3 x men at the Tailgate remain unmoving. There are 3 men unaccounted for in the 8 to 12 c/t area inbye of the Longwall.	13:30			
IMT Meeting Room	L.C updated IMT of Anglo report, union report both via the media. Only mine rescue through the gate. Still a requirement to get ISHR on site.	13:37			
IMT Meeting Room	IMT Team went through actions. Meeting closed. Next meeting set for 14:30	13:38			

		13:40	CRO contacts CMW to see if they could read gas sensors at MG	LW	LW 102 A/S production crew
	QMRS Ops Manager doing final MRAS checks - then plan to go and sit with IC for final sign off of plan and clearance to deploy - still compiling deployment forms	13:43			
IMT Meeting Room	Operations Coordinator had a one on one conversation with Mines Inspector in the IMT meeting Room.	13:45			
planning/IMT	Deputies in planning room being debriefed by the intelligence assist on details that happened underground	13:45			
EMT	Incident controller briefed EMT/head office. 7 people remain underground, tailgate doors have been breached, mines rescue has been briefed, first two mines rescue teams mobilised on-site, 30 personnel on standby, methane levels underground not a concern.	13:46			
planning/IMT	Phone around missing a Ventilation Officer to assist in the handover Plan B who can cover for the Ventilation Officer MRAS what do we need to do to get the information 2 x persons at the maingate, 2 x 8-9c/t, 3 at the tailgate Still don't understand what happened and were people are underground Have we got explosive gases underground and were are the source of gases	13:46			

		13:47	CRO contacts CMW, confirms name of 5 missing CMW on LW face, and can you use the compressed air in panline. (knowing their SCSR will be running out soon if not already)	8-9CT C HG	LW 102 A/S production crew
	QMRS Ops Manager completes forms and task lists - Waiting on IC who is in EMT	13:48			
		13:50	4th CMW off SCSR	LW	LW 102 A/S production crew
EMT	Next of kin contact details gathered and ready.	13:52			
EMT	Starting to prepare to let evacuated staff leave the site. Will be provided with the media statement and instructions to not release or discuss any details of the incident.	13:53			
	ERZ controller debrief was fed into VO plan, Question asked Is spreadsheet up to date, Are we taking bag samples - Prioritised MRAS verbal answer to questions. GC results. Actions from this meeting were captured by scribe	13:55			
	QMRS Ops Managers reviewing gas data with IGDO - discussing interp possibilities of gas data - breached seal for wandering CO	13:55			
muster room	Incident Controller arrives with update. 7 People are still unaccounted for and Team from Mines Rescue are going down You will be handed a media release statement to anybody who can leave site, which advises them what they should do/say if approached by media.	13:55			

planning/IMT	MRAS information get it done read out the questions MRAS questions being completed	13:56			
Operations Meeting Room	Operations team meeting commenced. Operations Coordinator gave update on status of men underground. UM gave an update of gas environment at Maingate of Longwall.	14:00	Checked 3 x CMW's still under SCSR all ok	102 9ct	LW Face
muster room	(Note there was an incident where a man walking out of the training room bumped into another person with hot coffee. Suggestion to avoid this would be to keep the doors opened as so many people go in/out)	14:01			
planning/IMT	2 x different figures on people underground 10 and 7 QMRS ready to go on the surface need to know the FAB location pushing for the MRAS document to be completed Technical Services very relaxed in getting the MRAS information there is no urgency .	14:02			
		14:06	CRO contacts 2 x CMW on LW face, asked about location of other CMW, and reassured saying QMRS have been deployed. (Now off non-verbal comms, CRO questions were not very probing.	MG end of LW face	LW 102 A/S production crew
	IC discussion with QMRS Ops Manager on MRAS interp and entry plan - discuss driving in under O2 - WN allows under fresh air but no further than TG in Mains 15CT C Hdg - ops manager indicates no explosion risk - (IC) requests vent readings at start of panel in MG and to phone readings thru to IMT at phone #3515 -	14:10			

planning/IMT	MRAS document completed	14:11			
	Deployment plans signed off by IC - discussing FAB at 14-15ct mains (last known fresh air) but QMRS Ops Manager convinces IC that can proceed to 9 CT MG LW panel - Analysis of data from Intelligence cell to IC not observed - to allow IC to make this critical and important decisions??	14:14			
Operations Meeting Room	There was conflicting information coming to hand as to the last two remaining men underground. There are 3 confirmed at Tailgate, two confirmed at the Maingate, the last two may be at the mid face on the Longwall or inbye of the Longwall.	14:15			
Operations Meeting Room	IMT Leader was observed walking to brief the Mines Rescue teams.	14:15			
		14:18	LW ERZ controller stopped using SCSR	102 9ct	LW Face
		14:20	PED received "QMRS DEPLOYED"	MG end of LW face	LW 102 A/S production crew
Rescue substation. Under cover area.	Rescue Team 1 checks completed. 5 extra SCSRs included in equipment.	14:21	CMW stopped using SCSR	102 9ct	LW Face
Rescue substation. Under cover area.	IC arrived at rescue substation and asked where the QMRS Ops Manager was. No answer was provided to the IC. IC gathered assembled teams and other people at the rescue substation for a briefing. IC thanked people for attending from other sites and gave a brief description of current situation.	14:23			IC and all assembled at rescue sub station

Rescue substation. Under cover area.	Wheeled stretcher from QMRS trailer had the wheels removed by Team 2 and one of the wheels wouldn't attach Stretcher was to be taken without wheels.	14:27			Rescue Team 2
planning/IMT	MRAS is good to go. Inspector asked have we done a Trickett ratio? - NO	14:28	CRO contacted 2 x CMW on LW face, discussed how using the compressed air on panline is going, reassured saying QMRS deployed	MG end of LW face	LW 102 A/S production crew
Rescue substation.	QMRS Ops Manager arrived at rescue substation and assembled captains for briefing in a room inside the substation.	14:29			QMRS Officials and team captains
	QMRS Ops Manager providing Captains briefings to MR teams at MR station - discusses traces of ethylene in TG - no questions re this - had names of missing but no cap lamp #'s - QMRS Ops Manager said # them 1-7 and he will get and phone them thru to FAB	14:29			
IMT	Mines Inspector asked Planning coordinator about CH4 in TG. Sensor vs TG vs possible fire? Have you done a Trickett?	14:30	Last CMW stopped using SCSR after he walked from 9ct Bhdg to the DCB 10 to 11 c/t Bhdg the 2 CMW's that were alive stayed at the MG and the 5 x CMW's that were dead were at the TG.	102 DCB 10 - 11ct	LW Face
		14:33	last CMW off SCSR	MG end of LW face	LW 102 A/S production crew
planning/IMT	Next meeting at 1530 QMRS will be active soon	14:40			
Rescue substation.	Transport left rescue substation with Team 1 to go underground.	14:44			Rescue Team 1

	Captain began briefing his team in the back of the transport. Team 1 equipment and FAB equipment was to be transported UG in another transport.				
planning/IMT	QMRS 1st team is at pit bottom QMRS Ops Manager 1 told	14:47			
		14:52	Transport stopped for Team 1 to commence Task 1 - vent and atmospheric survey.	B15 Mains, 102 travel road	Rescue Team 1
Operations Meeting Room	Quiet period. Waiting for news from Mines Rescue. EMQ Net was studied for news.	15:00	CRO contacted 2 x CMW on LW face, saying QMRS deployed 10 mins ago	MG end of LW face	LW 102 A/S production crew
		15:01	Transport left B15 102	B15 Mains, 102 travel road	Rescue Team 1
		15:05	2 x CMW's contacted CRO asking them to hurry up they were in pain. Still no questions about the nature of injury's	102 MG	LW Face
		15:06	Transport arrived at 9B 102, Rescue Team 1 alighted with FAB Controller. Commenced set up of FAB	102 9B	Rescue Team 2 FAB Controller
		15:09	FAB Controller called out to the surface for permission for Team 1 to proceed inbye uncoupled. The phone number dialled was answered in the LW office	102 9B	FAB Controller

		15:24	Team 2 completed FAB checks and removed masks. Team 1 left FAB uncoupled as planned and proceeded inbye 9ct B hdg 102.	FAB	Rescue Team 2 Rescue Team 1
		15:33	Team 1 proceeded into 10B-A 102	10B-A 102	Rescue Team 1
		15:37	Team proceeded inbye 10ct in A hdg 102. Team experienced difficulty in accessing the face in BA due to the proximity of the BSL to the pillar side rib.	A10 102	Rescue Team 1
		15:41	The first member of Rescue Team 1 reached the LW MG and discovered 2 casualties.	LW MG	Rescue Team 1
		15:42	Casualties indicated that 5 people were on the face towards the TG. Team 1 captain gave instructions to team of actions to take. Casualties placed on SCSRs.	LW MG	Rescue Team 1
		15:57	Team 1 began formulating a plan to extricate the 2 casualties from the MG back to FAB.	LW MG	Rescue Team 1
IMT	Teams get to men at MG - report back condition - request rigid stretcher	16:01	Casualty 1 with a suspected fractured femur was assisted to hobble from face.	LW MG	Rescue Team 1
		16:06	Team 2 arrived along the side of the BSL and were given an update by a Team 1 member.	LW MG	Rescue Team 2
		16:07	Team 1 began moving casualty 2 in a collapsible stretcher towards the MG	LW MG	Rescue Team 1

			roadway. Casualty 2 had a suspected fracture to the lower leg.		
		16:10	QMRS commence stretcher carry of CMW and assist other injured CMW off LW face	MG end of LW face	LW 102 A/S production crew
		16:14	Assessor called a stop to the extrication of casualty 2 due to safety concerns for the casualty and the rescuers due to very cramped conditions and poor rib. The assessor was confident that Team 1 would have been successful in extricating the casualty had the situation been real.	LW MG	Rescue Team 1
		16:21	Team 3 arrived on MG and proceeded across the face towards the TG. Difficult travel conditions in sections of the face from shield 20 with the face closed.	LW MG	Rescue Team 3
		16:34	Team 3 arrived at TG and discovered 5 casualties.	LW TG	Rescue Team 3
		16:34	A determination of "no signs of life" made for each casualty. Mapping of area requested.	LW TG	Rescue Team 3
		17:04	All teams back at FAB, Team 1 left for surface	FAB	

Appendix B: Resumes of assessors

Trent Anderson: Shearer operator and trainee ERZC Grosvenor

Trent Andersen has over 11 years industry experience. Trent is a fitter by trade and has worked in both development and longwall mining. He has a certificate 4 in underground coal mining and studying for his ERZC certificate. Trent is QMRS trained, S1, S2 and S3 with certificate G2 in risk management. His current role is shearer operator at Grosvenor mine.

Scott Barker: Longwall Production Deputy (ERZC) Grosvenor

Scott Barker has been working in the QLD coal mining industry for 10 years since studying Mining Engineering at the University of Queensland. Scott is also qualified as a ventilation officer, and deputy. He has worked at Oaky North, Kestrel North, and Moranbah North and is currently working at Grosvenor Mine as a Longwall deputy. Previous roles in the industry include, Development Superintendent, Compliance Superintendent and Technical Services Superintendent. He is in the process of studying for the Second Class Mine Manager qualification. Scott was the mole for this year's level 1 emergency exercise

Andrew Broadfoot: Principal Investigation Officer with DNRME

Andrew has been with DNRME for the last ten years. No mining experience. Prior to that, he was with the Queensland Police Service for 18 years.

Clay Browne – Acting Longwall Coordinator Kestrel Mine

Clay Browne has over 30 years in the mining industry, 18 years of this is in the coal industry. Clay Browne has been the Shift Supervisor on A crew at Kestrel mine since 2014. Clay was seconded to the Longwall Relocation team to co-ordinate the install and take off of LW405. From there he was seconded for a term of three months to fulfil the role as Acting Compliance Superintendent and more recently has undertaken a secondment for six months as the Acting Longwall Coordinator for A/B crew. He was appointed as a Deputy at Kestrel Mine in October 2006. Clay has operational experience in mains development and some longwall operations.

David Cliff (Organising Committee and IMT observer) | Professor of Occupational Health and Safety in Mining, Minerals Industry Safety and Health Centre (MISHC) University of Queensland

David Cliff has been Professor of Occupational Health and Safety in mining since 2011. His primary role is providing education, applied research and consulting in health and safety in the mining and minerals processing industry. He has been at MISHC for over 14 years.

Previously David was the Safety and Health Adviser to the Queensland Mining Council, and prior to that Manager of Mining Research at SIMTARS, providing expert assistance in the areas of health and safety to the mining industry for over 26 years. He has particular expertise in emergency preparedness, and fires and explosions, including providing expert testimony to the Moura No2 Warden's inquiry, the Pike River Royal Commission and the Hazelwood Mine Fire Inquiry. He has also attended or provided assistance to over 30 incidents at mines involving fire or explosion.

David Connell Regional Manager – Hunter Valley, New South Wales Mines Rescue

David is currently the Manager of Hunter Valley Mines Rescue Station. He has 30 years experience in the coal mining industry and 21 years in mines rescue. He has been involved in several mining emergencies including Pike River, Beaconsfield and the Blakefield South incident and recovery. He

has also been involved in planning, running and assessing a number of simulated emergencies in both New South Wales and Queensland.

Dale Davis Operations Manager Southern Mines Rescue Illawarra, New South Wales

Dale has 18 years' experience in the mining industry and 14 with Mines Rescue NSW. He is currently the Operations Manager of the Southern Mines Rescue Station. The several years spent out of the industry were focused on safety, injury prevention and systems auditing including 2 years at the University of Wollongong. He has facilitated risk assessments for national and international mining organisations and participated in numerous simulated emergencies providing input into the planning, running and assessment of the events from both the industry's and Mines Rescue perspective. Dale is also currently involved in the process of developing and implementing an Incident Command Control System based on AIIMS as part of the emergency response systems for the N.S.W. mining industry.

Steven Dawe Operation manager QMRS

Steven is currently Operations Manager with Qld Mines Rescue Service responsible for the Underground Training Portfolio. This includes training team members in Emergency Response procedures, Mines rescue team operations, Breathing Apparatus (BG4 and CABA), Fire team operations, Casualty extrication and Atmospheric sampling & monitoring. Steve has attained qualifications in Risk Management, Emergency Management, and OHS and is currently studying a Bachelor of Emergency Management to supplement his Education degree. He has 10 years' experience working in the coal mining industry and has held positions in Emergency Response, Safety & Training and the statutory role of Fire Officer at Oaky Creek no.1 mine and Oaky North Mine. Steve is currently fulfilling the role of QMRS representative on the Level 1 organising committee.

David Dibben Coal Miner at Broadmeadow mine

David has 9 years underground experience at Broadmeadow and has been a continuous miner driver and member of QMRS for 5 years. He is currently studying to become an ERZC

Shaun Dobson Deputy chief inspector of coal mines

Shaun Dobson has over 30 years of coal mining experience starting his career in with a mining contractor in 1978. Shaun worked for British Coal before emigrating to Australia in 2000 and has undertaken several senior roles in Queensland and NSW underground coal mines including Mine Manager at Carborough Downs, North Goonyella and Broadmeadow. Shaun joined the inspectorate in 2013 and has been the Deputy Chief Inspector of coal mines since 2017.

Shannon Doherty shift supervisor Broadmeadow coal mine

Shannon has 22 years mining experience starting as a maintenance fitter in the coal preparation plant. In 1999 he commenced his underground experience at Newlands Coal mine as a LW fitter/operator.

He joined QMRS in 2001 and in 2007 started contracting as LW move fitter/supervisor and undertook assignments at Moranbah North, Grasstree, Bundoora, Crinum and Broadmeadow. In 2010 started full time with BMA Broadmeadow. He obtained an ERZ Controllers ticket in 2013 and currently studying UM's certificate.

Matthew Fellowes General Manager of NSW Mines Rescue Service

Matthew Fellowes is the General Manager of NSW Mines Rescue Service. He holds a degree BEng (Hons) Mining Engineering, holds a NSW Ventilation Officers qualification, a First Class Certificate of Competence and is an experienced practitioner in UG mine operations including ventilation, mine management and mines rescue practices including early warning, monitoring, communications and self-escape systems. Understand the concepts of structured Incident Management, unity of command and functional work groups reporting to an IMT

Elliott Franks | Social Media Manager, DNRME

Elliott Franks is the Social Media Manager for the Department of Natural Resources and Mines. He has been working in Social Media for over 16 years. He specialises in community engagement and disaster responses

Calum Gates Graduate DNMRE

Studied a bachelor of Economics at the University of Queensland. Employed as a Graduate Statistical Analyst with Resources Safety and Health at the start of 2018. Have been working in Performance and Governance in various capacities, including:

- Preparation and analysis of incident data for inspectors and public
- Development and testing of incident reporting dashboard
- Data quality verification and analysis

Theodore Georga | Manager Stakeholder Coordination

Theodore Georga is the Manager, Stakeholder Coordination in the Office of the Commissioner for Mine Safety and Health. He has regularly participated in statewide emergency responses as part of the State Disaster Coordination Centre and in the Department of Health State Health Emergency Coordination Centre. Theodore has more than 15 years of experience in media, communication and social media roles in the Queensland Government and private sector.

Ben Giles Relief UM Broadmeadow

Ben is currently filling the role of relief UM at Broadmeadow mine and have been in this position for 6 months prior to that he was on the longwall as an ERZC for the last 5 years. Prior to being an ERZC he was a longwall operator for about 12 months before doing undertaking his studies. He spent 8 years before going to the longwall as a continuous miner diver in development he has also spent around two years as a contractor performing a number of different tasks from ventilation, road header fault drivage to secondary support.

Edward Godbold trainee statutory official at Broadmeadow mine

Edward graduates from university with a Mining Engineering Degree (Hons) in 2012. He spent 1 year in a mining engineering role at Carborough downs mine then transpired to Broadmeadow where he has undertaken roles as a Mine Planning Engineer and Longwall Analysis & Improvement Engineer. He is currently Trainee Statutory Official - Development and Longwall Production.

Brendan Iddles | Shift UM Kestrel Mine

Brendan Iddles, 16 years mining experience. Currently Shift UM at Kestrel Mine. Held various statutory and production roles within the industry, at various operations throughout Queensland. Currently captain of the Mines rescue competition team at Kestrel Mine. He holds a great passion for

Emergency preparedness and response and thoroughly enjoys learning, contributing and putting forward learnings and outcomes to improve industry standards.

Alan Jones Compliance Superintendent Ensham

Alan has over 28 years U/G coal mining experience and has completed a Diploma and advanced Diploma in U/G coal mine management. He holds a Deputy's ticket and VO ticket

Sharon Jones | Senior Administration Officer, Simtars

Sharon has been at Simtars for 10 years and was responsible for the coordination of all activities to prepare and organise the other 32 assessors to ensure the efficient running of the L1 exercise.

Nikky LaBranche | Principal Mining Engineer, Simtars

Nikky LaBranche recently joined Simtars as Principal Mining Engineer. She has 10 years' experience in surface and underground coal through her work in the US, Colombia and Australia. Her research interests include human factors, lost-time injuries, self-escape, and built in-place shelters. During her time at Simtars Nikky has written a virtual reality self-escape from underground coal training module. Prior to her current position Nikky has worked in various mining engineering roles for BMA Coal, NIOSH Office of Mine Safety and Health Research and Drummond Company.

Reid Marshall Graduate DNRME

Studied a bachelor of Chemical Engineering at the University of Queensland. Employed as a Graduate Engineer with Resources Safety and Health at the start of 2018. Have been working with the Mines Inspectorate in various capacities, including:

- Assisting during diesel emissions audits of underground coal mines
- Drafting guidance notes and recognised standards
- Analysis of fluid power incidents
- Delivering safety communications to industry

Craig McCamley Compliance supervisor Cook Colliery

Craig is employed at Bounty Cook Colliery as a Compliance Supervisor. He holds a Second Class Mine Managers certificate. Craig has 32 years' experience in underground coal mining, predominantly in operational leadership roles. Craig is motivated to pass on what he has learned from countless miners over the years to the next generation of underground coal miners.

Matthew Pratt Underground Electrician Grosvenor Coal Mine

Currently working at Grosvenor mine for the past 3 years as an electrician in both longwall and development. Has been working through 3rd class certificate of competency in my own time over the last 12 months and thoroughly enjoying it. Matthew is planning to sit his board of examiners oral and law exam early next year. Having 10 years of experience (mainly longwall) in various coal mines across the Bowen basin, (oaky nth, crinum nth, Broadmeadows) completing electrical apprenticeship at Carborough downs in 2012. Completed QMRS recruit training in July 2017.

Neil Randolph Inspector of Mines DNRME

Neil has over 30 mining experience. He has a deputy's certificate of competency, site senior executive competency and is currently studying for his UM's certificate. Neil has 10 years mines rescue experience and is a qualified trainer assessor.

Mark Sanim Shift Supervisor Broadmeadow coal mine

Mark has over 29 years operational experience in coal mines. He commenced his underground career as an underground diesel fitter and progressed to become a mine fitter and longwall operator. He then studied to become an ERZC and has six years operational experience in that role at different coal mines. He has been the shift supervisor at Broadmeadow for the last three years.

Neville Stanton Mine Manager Moranbah North

Neville has over 33 years of mining experience and holds a mine managers certificate of competence as well as site senior executive, ventilation officer and shot firing. Neville has undertaken supervisory roles for AngloAmerican, Xstrata, BHP and North Goonyella Coal. He started his career in mining as a miner at Ulan in 1985 and worked his way into senior management roles by gaining operational experience at a broad spectrum of underground mines in New South Wales and Queensland.

Craig Tayler Director Training Testing and certification Centre Simtars

Craig Tayler is the Director of the Training, Testing and Certification Centre at Simtars. Operating at Redbank, Craig provides executive direction for the testing, calibration and certification of equipment used in hazardous locations to ensure its safe operation. He also provides leadership for Simtars' Registered Training Organisation (RTO) for the training of industry personnel in various facets of resource sector safety and health.

Craig has been with Simtars for 25 years, including 15 years as an Occupational Hygienist. He is a full member of the Australian Institute of Occupational Hygiene (AIOH), a Certified Occupational Hygienist (COH), holds a Master of Science in Occupational Hygiene Practice and is a NATA signatory for all occupational hygiene test reports.

Martin Tsai Senior Computer Programmer Simtars

Martin has worked at Simtars for over 13 years and leads the software development and support team at Simtars. This team is currently in the process of rolling out a major upgrade to the Safegas database configuration. His team is responsible for the development and maintenance of the Simtars gas monitoring and interpretation software Safegas (tube bundle and real time monitoring and alarming), Ezygas Professional (gas chromatograph operation) and Segas professional the interpretation tool for both the other suites.

Martin Watkinson (Chair of the Organising Committee) | Executive Mining Engineer, Simtars

Martin is the Executive Mining Engineer based at Simtars providing technical assistance to the Australian mining industry in the fields of ventilation, gas monitoring, emergency response, risk management and developing safety management plans.

Martin has been involved in the level 1 emergency exercises between 2001 and 2008 and was the Chair of the committees for the 2006, 2007, 2013 and 2014 exercises.

Between 2007 and 2013 Martin worked for Vale and Adani in senior management roles. He has provided emergency response advice and coordinated emergency exercises in Queensland, New South Wales and New Zealand.

Matthew Way production manager at Oaky North Coal Mine

Matthew Way is currently of the Glencore Oaky Creek senior management team and his career in the industry has ranged from an underground operator, deputy, coordinator, superintendent,

production manager and operations manager. He has over 19 years' experience in the mining industry and has extensive operational management expertise in large scale mining operations. Matthew is currently the Production Manager at Oaky North.

Caine Williams-Trainee Deputy Broadmeadow Mine

Caine Williams has nine years operational underground experience and is an experienced continuous miner driver and is currently working on the top coal caving longwall at Broadmeadow. Prior to commencing his underground career he has 17 years military experience. Caine is currently studying to obtain his ERZC qualification.

Stephen Woods | Industry Safety and Health Representative, CFMEU

Stephen started as an apprentice fitter and turner with Coal Resources of Queensland (Cook Colliery) from 1988. He has worked at Mount Isa Mines and later North Goonyella where he worked in several roles including Fitter, Washplant operator, ERZ controller and Site Safety and Health Representative (SSHR).

From 2012 Stephen was elected as ISHR and is the CFMEU member on the level 1 emergency exercise committee.

Appendix C: Things to consider when organising an emergency exercise

Recognised Standard 8 defines that an audit approach should be taken in developing the scenario for a level 1 exercise. The time frame available for the exercise is one shift.

The standard requires the underground deployment of QMRS. Given that this will take a minimum of four hours, only certain elements of the mine's and States' emergency response system can be checked every year.

Previous recommendations have been made to split the underground deployment of QMRS away from the level 1 exercise. This would enable a full test and interaction of ISHR, Inspectorate at the site IMT meetings and a separate underground deployment could be conducted with deployment sheets and MRAS completed thus not delaying the underground deployment.

Every year the assessors identify ways to improve the exercise. These are presented here to help guide other organisations in their preparation of such exercises.

Many mines that have had exercises held on day shift during the week do not fare well in the assessor's review of the incident management process.

Exercise team

- Too much time spent in area prior to exercise commencing. This gave the workers time to adjust and think about how they would approach an escape rather than a more immediate arrival and response.
- A screen shot of the shearer position in the TG for the CRO to simulate the shearer position for the scenario.
- There seems to be an opportunity to utilise the playback system on the Citect or SCADA system to better simulate the exercise.
- The date was evident to the CMW's they state they knew on Monday that the time of the exercise was being held.
- Self-rescuers for all of the team would have provided greater realism.
- Still camera could benefit from separate light (as originally planned), on mount connected to camera – can use headlamp, but not as steady, and sometimes you want to look around to make sure you're not missing anything.
- The exercise information given was not correctly detailed and had the potential to create confusion. There was no picture of the deceased CMW's at the TG therefore the focus on this was not apparent. Information on whether power was still on underground and were the main fans still running was not clearly communicated.
- The persons involved underground as assessors was not communicated effectively as when reconciliation of tags and lamps was being undertaken it was not clear who was who. I.e. Cap lamps from the other roster in use by the assessors.
- Environmental information given to the FAB controller for the LW MG was illogical. Very little oxygen deficiency was evident yet they were informed that off scale carbon monoxide was evident. For the XAM7000 this meant 10000ppm.

- Because crew knew it was an exercise, and knew to some extent how it would go, this may have affected communications – particularly verbal.
 - Possibly less focus on providing all possible information.
 - Possibly less emotional than would be in actual situation.
 - Future exercise may benefit from some communication protocol to encourage some role-play – e.g. assessor reminds participants at intervals about possible emotional status “Your legs are broken, you’ve received burns, you’ve been stuck down here for hours and you’re not sure how long until you get out. You’re probably in a lot of pain, and might be somewhat scared or desperate.”
 - Ideally based on real world examples of emotional status vs time.
 - If participants act emotions well it could help motivate surface staff.
- GC results for exercise should be available in the standard output format of the site GC to prevent transcription errors.
- To clearly define the objective of the level 1 exercise. If this is to test the effectiveness of a state wide response then all stakeholders need to be tested and proved effective. The exercise stopped after the fatalities were mapped which demonstrated an effective response and deployment by QMRS. It did not demonstrate the mines ability to effectively respond and mitigate the perceived hazards without introducing further risks.
- To utilise more person as observers who are in the process of attaining Deputy and Second class certificates of competency.

Appendix D: Briefing notes prepared for the Assessors

Surface observers

- This is an emergency exercise that you have already been informed about.
- Please treat this exercise as a real event.
- I am the observer for this group.
- Start communication with Level 1 exercise communication
- Do not ring 000 or any external services
- Please tell me if you would have contacted an external service as part of your response/Duty card
- You are free to call QMRS, Inspectorate, ISHR, Simtars or Anglo personnel as required
- You are free to make your own decisions.
- You are not to endanger your own or any other persons safety in this exercise.
- As I am an observer I am not allowed to assist you by answering questions.
- Engage with the site personnel until T=0 general discussions about objectives and learnings of level 1 exercises

Underground observers

- *This is an emergency exercise that you have already been informed about.*
- *Please treat this exercise as a real event.*
- *I am the observer for this event*
- *Do not put your belt worn self-rescuer on. You will be given one if required.*
- Start communication with:

"This is a Level 1 exercise communication"

- You are free to make your own decisions.
- You are not to endanger your own or any other persons safety in this exercise.
- I will give instructions/information with regard to the environment.
- I may ask you to perform activities as part of the exercise test
- As I am an observer I am not allowed to assist you by answering questions.
- Engage with the site personnel until T=0 general discussions about objectives and learnings of level 1 exercises.
- Take care in low light evacuations issues with goggles review the process.

102 Longwall face

Use the briefing sheet to put the people at ease.

Secure longwall:

- **Shearer to be positioned between 120 – 30 chock (not in gate ends).**
- **Shields to be 40% advance across face.**
- **AFC / BSL run clear prior to powering down.**
- **Belt can be left running.**

There needs to be a telephone call to control room saying:

“For the purpose of the level 1 exercise the shearer is now at the TG.”

(Normal shearer positioning will inform the control room where the shearer actually is)

Keep the face team separate from everyone else (i.e. the maintenance crew) and explain to them that they will not be evacuating but will have a role to play in the exercise.

Once the remainder of the team has evacuated let them know the scenario and that several of them will have to play dead at the TG end of the face when QMRS arrive.

You will have a self-rescuer for everyone to try. Ask them if they are willing to see how long it lasts at rest remember lifting it away from the body reduces the temperature and makes it more comfortable.

At 12:30 pm get someone to commence non-verbal communications.

All this person knows is that they are injured and cannot escape (broken limbs burns etc. and they have another injured person with them) they have no knowledge of the 5 at the TG end of the face or the other members of the longwall crew

The scenario is based upon the Upper Big Branch (UBB) explosion where the shearer ignited a pocket of gas in the TG and the resultant coal dust explosion went around the mine. In this case we are only taking out the infrastructure around the TG outbye.

The logic around the survival at the maingate is the percussion from the methane explosion, the lack of ventilation and similar to Daniel Rockhouse at Pike River they recovery sometime into the scenario

Take lots of photographs, When QMRS come to the longwall take the fatalities to the TG tag them

102 ventilation crew

Use the briefing sheet to put the people at ease.

Issue everyone with a dummy self-rescuer.

T=0

Show the signs:-

“Feel a percussion that pops your ears knocks you off your feet.

The ventilation has reduced severely

There is dust and smoke”

Issue with goggles the smoke clears after 6 minutes.

Please collect the goggles and bring them back for re-use

They will be expected to evacuate outbye

Change over to CABA

Can see damage in last open cut through

Evacuating in clean air then the encounter the second cloud for 2 mins not fatal causes PJB to stop will restart when the air clears.

Cloud as per the plans

TOOL BOX TALK

Issued to:	Tick	Target audience:	Tick
Crew Supervisors		All employees + contractors	X
Shift Supervisors		Grosvenor Employees	
Shift Engineers		Electrical technicians	
Contractor Supervisors		Mechanical technicians	
Notice boards		Supervisors	
Grosvenor Staff		Grosvenor Development Crews	
Absentees lamps		Other (specify):	
Others (specify)		Date of Issue:	14/7/18
Grosvenor All Staff	X	Initiated by:	Scott Barker

TOPIC:	LEVEL 1 EXERCISE
<p>On Friday the 13th of July at 11am the Queensland Level 1 emergency exercise was conducted at Grosvenor.</p> <p>The Queensland Mining Warden's inquiry into the explosion at the Moura No. 2 mine in August 1994 recommended, "Emergency procedures should be exercised at each mine on a systematic basis, the minimum requirement being on an annual basis for each mine." (Windridge et al.1996).</p> <p>It has been 24 years since the Moura No. 2 disaster and since 1998 this was the Twenty first level 1 exercise to be conducted.</p> <p>The scenario for the exercise was a frictional ignition in the TG of the longwall causing an ignition of methane and a small coal dust explosion. The explosion was significant causing multiple fatal injuries to a team of five CMW's on the face at the TG and caused significant injuries to two CMW's at the MG who initially were unconscious however eventually could make non-verbal communication via a face promos unit.</p> <p>The explosion at the TG damaged the TG doors causing a significant short circuit and damaged the 9ct D heading overcast.</p> <p>Grosvenor mine personnel responded to the exercise by enacting the self-escape process and evacuating the mine under breathing apparatus. The mines emergency response systems were tested with the formation of an IMT and related duty cards being used to effectively secure the site and work through the scenario. Queensland mines rescue were deployed during the exercise recovering the injured personnel from the MG of the Longwall.</p> <p>The report for the exercise including recommendation and feedback will be completed over the next month by the Queensland Inspectorate however as initial feedback the committee would like to share the following:</p>	

- The professionalism shown and genuine interest from the UG teams to be part of the exercise is to be commended.
- The UG personnel's ability to self-escape, including donning of rescuers and change over to CABA was excellent. Assessors praised the level of confidence shown by the teams.
- Duration of SCSRs were tested during the exercise with over 3 hours recorded for a person at rest on an operational rescuer. Personnel who were self-escaping also tested operational units and covered distances greater than expected limits. A good result.
- Mines rescue was successfully deployed by the IMT. The organisation rapidly gathered personnel deploying 2 active teams and a standby team with enough personnel on site for 4th team to be deployed if required. This was an excellent result.

The committee would like to thank all personnel who were involved in the exercise.

Attached are some photos from the day:







IMPORTANT: - If a person was not present at the talk, place 'A' beside the person's name, and put a copy of the talk in their mailbox/pigeon hole. Only the original fully completed talk, signed by the Supervisor is to be returned to H&S – no need for individuals to return forms.

TICK (or "A") FOR EACH OF THE FOLLOWING:-

I have communicated the information in this toolbox talk to the people above, or placed a copy in their mailbox/pigeon hole.

Supervisor Name:

Supervisor Signature: _____

Date: _____

Comments/feedback (if any):-

References

Coal Mining Act 1925, Queensland Government, Brisbane, Queensland.

Coal Mining Safety and Health Act 1999, Queensland Government, Brisbane, Queensland

McAteer, JD, Beall, K, Beck, JA, Jr, McGinley, PC, Monforton, C, Roberts, DC, Spence, B & Weise, S 2011, *Upper Big Branch, the April 5, 2010, Explosion: A Failure of Basic Coal Mine Safety Practices - Report to the Governor, Governor's Independent Investigation Panel*, Shepherdstown, West Virginia, May 2011.

Recognised Standard 08 Conduct of Mine Emergency Exercises 25 June 2009
Queensland Government, Brisbane, Queensland.

Queensland Department of Mines and Energy Safety and Health Division 1999, *Approved standard for the conduct of emergency procedures exercises*: QMD 96 7393, 3rd revision, Queensland Department of Mines and Energy, Safety and Health Division, Brisbane, Queensland.

Queensland Mines Rescue Service 2006, *Guidelines of Queensland Mines Rescue Service*, 0-9 revision, Queensland Mines Rescue Service, Dysart, Queensland.

Windridge, F. W., Parkin, R.J., Neilson, P.J., Roxborough, F.F. & Ellicott, C.W. 1996, *Report on an Accident at Moura No. 2 Underground Mine on Saturday, 7 August, 1994: Wardens Inquiry*, Queensland Government, and Brisbane, Australia.

Call: 13 QGOV (13 74 68)

Visit: www.dnrme.qld.gov.au