



CMSHAC gas and spontaneous combustion management in a longwall goaf forum

Forum summary



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Contents

The forum.....	4
Graphic recording	6
Issues for discussion.....	10
Appendix 1—Forum agenda	19

The forum

The Coal Mining Safety and Health Advisory Committee (CMSHAC) held an industry forum on 11 November 2025 in Moranbah to share lessons regarding gas and spontaneous combustion detection and control in a longwall goaf.

The forum focussed on operational aspects of longwall ventilation, gas management, managing oxygen in the goaf, inertisation, mine design, representative monitoring and effective TARPs, emergency sealing and re-entry, and controls.

The aim of the forum was to provide an opportunity for stakeholders including statutory position holders in underground mines to share leading practice and learn together with a focus on experiences and knowledge associated with managing events related to goaf management, including spontaneous combustion.

CMSHAC advises the Minister on the safety and health of coal mine workers by:

- giving advice and making recommendations about promoting and protecting the safety and health of persons at coal mines and persons who may be affected by coal mining operations
- periodically reviewing the effectiveness of the control of risk to any person from coal mining operations
- recognising, establishing and publishing the [coal mining competencies](#) that are required to perform certain roles or tasks
- developing a [5-year strategic plan](#) for improving the safety and health of people at coal mines and people who may be affected by coal mining operations
- identifying and prioritising critical risks to the safety and health of people at coal mines and people who may be affected by coal mining operations and providing advice to the coal mining industry about those risks
- providing information to the Minister about the performance of the regulator.

In its 5-year strategic plan, CMSHAC has identified the need for industry to improve its information sharing related to critical risks. This forum is the first of a series of workshops to be hosted or supported by CMSHAC over the next 12 months to address critical issues the tripartite members have identified related to safety, health and wellbeing in the coal mining industry.

Forum agenda

Presentations were delivered by:

- Ken Singer—Acting Commissioner Resources Safety and Health
- Jacques LeRoux—Chief Inspector of Coal Mines, Resources Safety and Health Queensland
- Nathan Kidman—Underground Mine Manager, Kestrel Coal
- Jason Fairweather—Underground Mine Manager, Oaky North Mine
- Michael Carter—Vice President Operational Support, Centurian Mine
- David Caley—Ventilation officer, Broadmeadow mine
- David Macpherson—NSW Department of Primary Industries and Regional Development
- Basil Beamish—Managing Director, B3 Mining Services
- Sean Muller—Director Mine Safety Technology and Research Centre, Simtars
- Ray Smith—General Manager Operations, Queensland Mines Rescue Service

In addition, the Commissioner chaired a panel discussion featuring:

- Stephen Smyth (MEU)—General Vice President, Mining and Energy Union, CSMHAC Member & Industry Safety & Health Representative
- Fritz Djukic—Inspector of Mines (Occupational Hygiene), Resources Safety and Health Queensland, CSMHAC member
- Heather Bell—Vice President Safety, Health and Projects, Anglo-American, CSMHAC member
- Jacques le Roux—Chief Inspector of Coal Mines, Resources Safety and Health Queensland, CSMHAC member
- Sean Muller—Director Mine Safety Technology and Research Centre, Simtars
- Ray Smith—General Manager Operations, Queensland Mines Rescue Service
- David Macpherson—NSW Department of Primary Industries and Regional Development.

See appendix 1 for the full agenda. A selection of the presentation slides is available for download on the [Commissioner's website](#).¹

Attendance

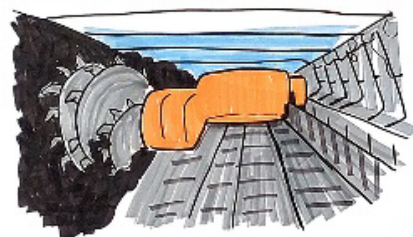
The forum was attended by more than 160 stakeholders from across the coal mining industry.

¹ Presentations have been reproduced with the permission of the presenter. Presentations are available for download at <https://www.crsh.qld.gov.au/news-publications/news/presentations-from-gas-an-spontaneous-combustion-management-forum-now-available>.

Graphic recording

A graphic recording specialist was engaged to capture the main themes of the presentations.





⑬ → Other Ignition Sources

focus on
PREVENTATIVE CONTROLS

Real Time monitoring

how LONG has the problem been INCUBATING?

→ RISK INCREASES every day



Pre Drainage

- SIS drainage
- Infill drainage
- holes drilled in the floor
- GC Piezo Pressure Monitoring

CH₄ + CO₂

Targeted drainage & SIS Drainage to bring down SGE To 50%

We aim to do pre drainage effectively to minimise the need for Post drainage

Post-Drainage

- Surface drilling - Goaf holes flushing out the holes with H₂O
- Gas Reticulation
- Goaf drainage skid arrangements - automated shut down when levels rise too high

Gas monitoring (CH₄)

Ventilation System

design of inbye + outbye

Emergency Response

- ▶ proposed final seal we can seal panels rapidly if needed
- ▶ Inertisation
- ▶ Inflatable seals
- ▶ Mine air Entry - airlocks



we need to look at this...now!

▶ Separating the mine into MANAGABLE ZONES

- ▶ Preparation for re entry
 - reventilation
 - Monitoring for effectiveness

- the GAQ Team helped us control it
- Contain and Seal all entries
- Use remote cameras to monitor it

Drilled holes + cameras ONLY GIVE A REPRESENTATIVE SAMPLE

Looks can be deceiving → Timber may look intact but be 'cooked'



- Rocsil plugs are highly effective
- Monitoring Trailers that can be moved are very helpful

GRAPHIC RECORDING: RACHEL APELT 11-11-2015

Operational Practices Tips and TRAPS



Timelines for Prosecution and Causal Investigation

with ALL Stakeholders
The investigation does
not lead to prosecution
except for obvious legal
breaches

ventilation
fire + explosion PHMP
emergency plan
strata PHMP
These should all interact

Risks and Hazards
MUST be correctly
IDENTIFIED
or the controls will
not be effective

▶ Ensure you get samples
from across the entire site

▶ Pumped concrete seals

✓ comprehensive checklist to
ensure construction is 100%
photodocumentation of each
stage - kept in an image library

▶ N₂ injection to maintain 5% O₂

▶ Comprehensive monitoring of
Sealup → We use DRONES
to map leakage
Defects are mapped + tracked
▶ TARP triggers - 4 goaf management
TARPs including a
transitional TARP

▶ Goaf Management

• Airwash zones
• Foam generator available

▶ Red zones >1000 Pa
are checked every week
and are reported methodically

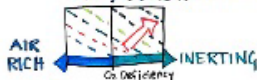
It's critical
to actively
monitor RED
ZONES

★ CO gas evolution with
Temperature

★ Apply Graham's
RATIO to coal self-heating
Status

★ Relationship between
Graham's Ratio + O₂ deficiency

★ Beamish self-heating Plot
with temperature isotherm lines
every mine has its own template



★ Defining the status of
a Mine gate seal:
deactivated or active

▶ Defining whether
the TARP is normal

It can be N₂
HARD to
secure a
supply
of
Nitrogen
Plan
AHEAD!



Looking
for what
is abnormal
A fixed regime of
boundary lines

★ PYRITE-initiated HEATING;
Graham's ratio is kept lower
INVESTIGATE IT!

▶ Panels must be separated
▶ Ventilation
▶ Inertisation

▶ TARPs are set by EXPERTS
And RISK ASSESSMENTS are
verified

▶ Controls are
frequently checked - are they
correctly implemented & Functioning?

▶ Plan assurance: REVIEW
• AUDIT
• Continual
improvement
Performance
standards to MEASURE properly

Every Mine has its
own UNIQUE template

★ A Logrhythmic
Axis is MORE
Sensitive

GRAPHIC RECORDING: RACHEL APELT 11-11-2015

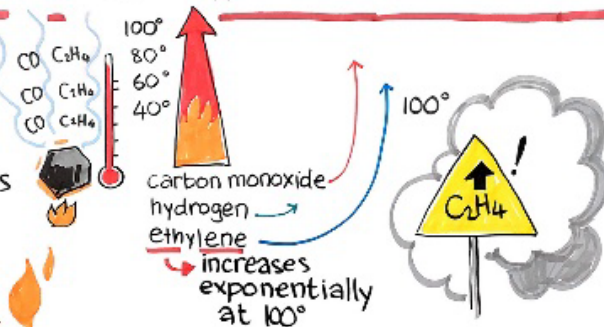
Gas evolution testing

- Scientific testing in a lab to observe what gases are released by coal as it heats

100° - water boils

540° - CH₄ ignites

~1000° - temperature of a flame



- Qld industry Micro GCs can detect ethylene at 0.1ppm → but can be inconsistent
- Simtars gas chemists can remotely check for confirmation of ethylene
- CO can reduce the reading of C₂H₄ but it's STILL THERE

All unexpected ethylene must be investigated

Historic readings are important - baselines + context

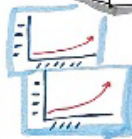
GAG operations

- one shaft needs to be left open:
- only 2 underground coal mines are currently compliant!



Inertisation

and preparation for reentry



You need RELIABLE DATA!

This will also support a RISK ASSESSMENT

- What is the explosive risk for personnel underground
- De-gassing and re-ventilating

- Are our MINE DESIGNS SAFE?
- Are they TOO close together?

What technology can we use to stop sending workers underground?

Emergency Sealing

We need to improve our remote sealing

- Preparatory seals
 - quick seal deployment
 - Are we doing it effectively remotely?
- Airbag seals
 - can it be done from the surface?
- ROCSIL plugs
 - safe location
 - blast exclusion zone



Issues for discussion

The forum allowed for questions for presenters and general commentary to be provided via QR code. A follow-up survey was issued to forum attendees in the week after the forum. The following section discusses some of the themes in the questions and comments raised.

What can be done to ensure the risk of spontaneous combustion or ignition events is controlled?

CMSHAC's advice is for industry to continue sharing learnings which promotes *proper diligence*.

Consider that the strategies and methods of controlling spontaneous combustion and ignition events during second workings extraction are required to be documented in a standard operating procedure (SOP) based on a risk assessment. The following sections of the Coal Mining Safety and Health Regulation (CMSHR) 2017 apply:

- s317 Risk assessment
- s318 Standard operating procedure
- s320 Notices to inspector.

Although there is no definition for proper diligence in the *Coal Mining Safety and Health Act 1999* (CMSHA 1999), it is appropriate to audit for proper diligence during risk assessment processes.

It is noted that the meaning of a similar term *due diligence* is documented in other acts, such as the *Work Health and Safety Act 2011* (s27(5)2 and s18).

The following sections of the CMSHA 1999 (as a minimum) also apply in the process of preparing a second working SOP.

- s29 What is an acceptable level of risk
- s30 How is an acceptable level of risk achieved
- s31 What happens if the level of risk is unacceptable
- s37 How obligation can be discharged if regulation or recognised standard made
- s38 How obligation can be discharged if no regulation or recognised standard made.

² [Work Health and Safety Act 2011](#)

CMSHA 1999 s62 (safety and health management system) subsection (5) details the requirements that relate to principal hazards such as spontaneous combustion and ignition events in underground mines: (d) including principal hazard management plans and standard operating procedures; and (e) identifying critical controls; and (f) containing a way of—(i) measuring, monitoring and evaluating the performance of the safety and health management system; and (ii) taking the action necessary to prevent or correct matters that do not conform with the safety and health management system.

Queensland Guidance Note QGN35: The integration of critical controls into PHMPs for coal mines in Queensland provides guidance on how to identify, implement and monitor critical controls and integrate into principal hazard management plans (PHMPs). CMSHAC encourages mines to direct any questions on the implementation of QGN35 to local RSHQ inspectors.

CMSHAC notes that the new legislation for critical controls applies from June 2026. Obligation holders are required to plan and prepare for the June 2026 changes that will assist with identifying situations when operations need to stop (i.e. controls required to mitigate against materially unwanted events are not in place or effective).

At industry level, CMSHAC's strategic plan has actions aimed at improving information sharing and improving competency in critical risk areas.

The *Coal Mining Safety and Health Advisory Committee strategic plan 2025–30* serves as a roadmap for the advisory committee in its journey towards its vision to have an industry where leading practice is standard, and fatalities are a thing of the past. Relevant actions in the strategic plan to identify what more can be done in this respect are:

- Perform a deep dive into an identified critical risk area: goaf management (underground mines).
- Conduct a gap analysis of competency requirements against CMSHA 1999, CMSHR 2017, and AQF framework and develop a staged plan to close identified gaps.

Will nature and cause information be made available from recent spontaneous combustion events or the 2020 Grosvenor event?

During the panel discussion, the Chief Inspector of Coal Mines Jacques Le Roux explained that he was unable to comment on RSHQ decision-making related to the release of investigations. However, the Chief Inspector provided assurance to attendees that the information provided in his presentation and in the draft Recognised Standard 24 contains relevant information from RSHQ nature and cause investigations on spontaneous combustion events.

During the panel session, the Chief Inspector confirmed he was satisfied that information in his presentation and the planned introduction of *Recognised*

Standard 24: Spontaneous Combustion (RS24) would provide obligation holders with relevant information required to practice proper diligence, noting that until the release of RS24, CSMHA 1999 s38 *How obligation can be discharged if no regulation or recognised standard made* applies.

Any questions or concerns regarding RS24 can be directed to members of the tripartite working group listed [here](#).

CSMHAC has acknowledged a need to improve information sharing across industry, and the first action of this strategy was to facilitate the *Gas and spontaneous combustion management in a longwall goaf forum* and support industry sharing with industry.

What can Queensland do to learn about or implement approaches from similar jurisdictions like NSW?

CSMHAC notes the NSW Resources Regulator has issued a guideline on the [management of spontaneous combustion](#). Mine operators and contractor companies can review and reference this and other technical references from other jurisdictions in their risk assessment processes. This may be an avenue that supports the requirements set by Queensland legislation (for example s38 *Proper diligence* of the Act may apply).

The Commissioner has a [strategic objective](#) to perform a detailed comparison of Queensland mining legislation against NSW with the intent to identify opportunities to learn from NSW and potentially other jurisdictions.

When designing or reviewing pre-drainage networks, what are key things to consider?

CSMHAC notes the lessons available from the [Queensland Coal Mining Board of Inquiry](#) reports, specifically, recommendations 2 and 3 from Report Part II Chapter 4 – LW 104 methane management:

Recommendation 2. Prior to the commencement of each longwall panel, coal mines arrange a review, to be validated by a third party independent engineering study:

- a. to ensure that adequate gas pre-drainage has been implemented, taking into account a margin for error in any predictive modelling; and*
- b. to ensure that adequate post-drainage capabilities are in place, taking into account a margin for error in any predictive modelling.*

Recommendation 3. In light of the evidence that gas emission modelling is inherently flawed, with a high margin of error, coal

mines, at the time of undertaking second workings risk assessments:

- a. Critically assess and scrutinise any gas emission modelling for an upcoming longwall panel. The assessment should include a review of the model's predictive accuracy for previous longwalls;*
- b. Take steps to satisfy themselves that sufficient pre-drainage has in fact been undertaken to the extent reasonably necessary to reduce gas emissions to a safe level;*
- c. Ensure post-drainage systems are designed:*
 - i. with sufficient redundancy to cope with peak gas emissions, including a factor of safety in drainage capacity, and allowing for system failures; and*
 - ii. in such a way that the risk of spontaneous combustion is not increased by oxygen ingress to the goaf;*
- d. Ensure ventilation systems are designed in such a way as to ensure they work in combination with the post-drainage system to dilute predicted peak gas emissions to levels that achieve an acceptable level of risk.*

The interrelationship between principal hazard management plans (CMSHA 1999 s149) is also required to be considered by obligation holders and stakeholders when developing plans. CMSHAC encourages mines to engage with each other to share safety lessons and effective approaches to manage gases and the risk of spontaneous combustion.

Looking at the timelines of previous events/incidents there are no gas explosions since Moura until 2018. There was a major legislation change in 2017 and subsequent to that change there have been 5–6 ignition events (depending on classification of the MNC 1st event). Has any review been undertaken on what unintended consequences arose from that change? For example, Brady-type statistical analysis pre and post the changes. Is there any management of change applied when regulatory changes are made in relation to review criteria? i.e. if a mine implements a major change, it is vital to review (post that change) to ensure there have been no unintended consequences.

CMSHAC note that the changes to the legislation referred to were introduced under the Coal Mining Safety and Health (Methane Monitoring and Ventilation Systems) Amendment Regulation 2020 <https://www.parliament.qld.gov.au/Work-of-the-Assembly/Tabled-Papers/docs/5620t1083/5620t1083.pdf> and explanatory notes are found at <https://www.legislation.qld.gov.au/view/html/asmade/sl-2020-0118/lh#creationhistory>.

CMSHAC also notes the Queensland Coal Mining Board of Inquiry made the following relevant comments:

Management of the hazards of methane emission, and spontaneous combustion, represent a compromise. It was said in evidence that 'good practice in mining regarding one of the hazards generally represents bad practice concerning the other. In particular, a post-drainage system will inevitably draw oxygen into the goaf. Greater extraction of methane from the goaf carries with it an unacceptable risk of spontaneous combustion if the resultant oxygen ingress to the goaf is not well managed.

Therefore, it is incumbent to manage all principal hazards. Such changes are required to be analysed and assessed at site level so that ALARA is achieved in respect to each principal hazard. The following sections of the Act (as a minimum apply).

- s62 Safety and health management system 5(h) if there is a significant change to the coal mining operations of the coal mine—containing a -plan to immediately review the safety and health management system so that risk to persons is at an acceptable level.
- s63 Principal hazard management plan
- s64 Review of principal hazard management plans and standard operating procedures.

Can you achieve an acceptable level of risk without preparatory seals?

Preparatory seals are identified as a method of controlling hazards stated in the database kept by the CEO S10 Standard Operating Procedures of the regulations applies). Included in the database are references to the safety alerts, recognised standards and external publications that relate to the control of the hazards. Regard should therefore be had for preparatory seals as a part of the risk management process for second workings (s317 Risk assessment, 318 Standard operating procedure of the regulations apply).

Sealing part of the mine (for example the longwall panel) may reduce risk associated with spontaneous combustion or a fire out of control, and can simplify re-entry as re-entry will involve part of the mine not the whole mine. Insurers may also see preparatory seals as a way of reducing risk of asset loss and cost impact of a major event.

Modern practices for preparatory seals include Rocksil remote seals that can be planned and be ready to be installed from a place of safety (from surface). These seals generally are only used once personnel have been safely withdrawn from the mine.

Why does Queensland maintain higher acceptable CH₄ levels than other states/countries (for example removal of power 2% vs 1.25% and removal of persons 2.5% vs 2%)?

The level of 2.5% is the highest methane level allowed by legislation in coal mines globally. RSHQ is in the process a proposing legislation changes and working with our policy team. Once the draft proposal is finalised, RSHQ will consult stakeholders with the aim to reduce the level to 2%.

Do enforceable undertakings apply?

RSHQ may accept an enforceable undertaking under Part 15C of the CMSHA 1999 with respect to alleged non-compliance with the Act. RSHQ has issued [guidance](#) that explains its approach to accepting enforceable undertakings and should be read with the RSHQ *Compliance and Enforcement Policy*. This guideline does not constitute legal advice and an undertaking party is encouraged to obtain professional advice about the consequences of entering into an enforceable undertaking with RSHQ.

Note: An enforceable undertaking only becomes an option when the investigation is complete and ready for referral to the workplace health and safety prosecutor. An enforceable undertaking should not be confused with a causal investigation, an option that does not currently exist for investigations in Queensland's resources policies.

What is the definition of seasoned timber and what gasses can be plausibly emitted from unseasoned timber?

Sean Muller, Director of Mine Safety Technology Research Centre, noted the Australian Coal Industry's Research Program (ACARP) has released a report on *Contamination – Ethylene from Timber Supports*.

The report investigated the potential, timeframes, and circumstances for timber to produce ethylene in an underground environment. Ethylene is a key spontaneous combustion indicator monitored in underground coal mine atmospheres. The findings led to the required management of timber supports, to avoid ethylene contamination underground and to increase confidence in mine gas analysis systems.

The report notes that ethylene was no longer detected from the timber 8 days after it was harvested, however Mr Muller recommends mine operators read the report for full context. The report is available on [ACARP's website](#).

Industry needs to guard against making exceptions such as green timber, pool noodles, mushrooms etc. the rule. Ethylene when detected should be investigated. Ethylene is a good indication of a heating if not normally detected and even small amounts may indicate increased temperatures in hard to monitor areas such as the longwall goaf.

Are there any plans to standardise conducting gas evolution testing?

Sean Muller, Director of Mine Safety Technology Research Centre, has stated the small-scale gas evolution testing that Simtars provides has been conducted using the same procedure and parameters for several decades to provide consistency and comparison with prior testing.

When can operators expect updates to Safegas monitoring software?

Safegas 5 is in the final stages of development and is under pilot. More information will be shared shortly on a dedicated page on the Simtars website and via a newsletter.

There seems to be a lack of representation on CSMHAC from underground contractors. Has this been considered?

Contractors are represented on CSMHAC by Steven Faulkner. As the representative for contractors, Steven represents both surface and underground. If you have any questions regarding contractor issues for the attention of the committee, you can submit them through [CSMHAC's portal](#).

Ray Smith spoke to some of the problems with exclusion zones. Is there information available on how to address problems with exclusion zones?

Division 2 (Inspections under safety and health management system) and division 5 (Routine and emergency sealing) of the Coal Mining Safety and Health Regulation 2017 apply. However, there is no specific regulation in this area other than some descriptors from draft recognised standard 24 which states that the following must be considered:

- develop exclusion zones
- operation of the mine from the surface outside of the exclusion zones from portals.

When developing exclusion zones, the requirement for proper diligence applies.

A suggested reference for mine sites is ACARP Project: C29018 – *Safety Distances and Exclusion Zones and Projectiles Ejected from Coal Mine Openings in Case of Large Explosions*. The conclusions are science based and can be useful to the industry. Note that every mine is different and s29 *What is an acceptable level of risk* and s38 *How obligations can be discharged if no regulation or recognised standard made of the CMSHA 1999* apply.

For further information, it is recommended to consult with Queensland Mines Rescue Service who have developed relevant auditing criteria.

How is longwall remote operation allowable given the legislation requires an ERZC to be in the district?

The mine affected constructed a legal argument how they achieve compliance with s315 of the regulation. A mine record entry applies to the start-up shears at the affected mine. S29 and s38 of the CMSHA 1999 apply. The risk management process applied to the start-up shears was endorsed by the risk assessment team and the tripartite review team.

Why isn't gas drainage engineer/coordinator a statutory role?

Currently, a ventilation officer is a statutory role requiring competencies set by CMSHAC. CMSHAC has identified in their current [strategic plan](#) to perform a deep dive into goaf management which may include consideration of competencies and statutory roles.

In Graham's ratio, oxygen deficiency is calculated on the assumption of a constant amount of Nitrogen on the mix. How is this affected by introduction of Nitrogen through inert station?

Basil Beamish of B3 mining services stated:

The introduction of nitrogen inertisation artificially increases the Oxygen deficiency value due to the formula used for its calculation. As a consequence, the GR value is also artificially decreased. This creates an issue for absolute temperature inference as the GR value no longer has any direct relationship with coal temperature value.

To my knowledge there is no proven method for making any adjustment to the Oxygen deficiency value to make allowance for the additional nitrogen introduced by the inertisation process. As such GR trending is normally considered unusable under these circumstances. However, our current practice of using the Beamish Plot (O2 Deficiency vs GR) still enables tracking of self-heating status to be used as well as providing evidence of the inertisation efficiency.

Slide 9 of the presentation we gave emphasises this ([Presentations from gas and spontaneous combustion management forum now available | Commissioner for Resources Safety & Health](#)) once you realise that under nitrogen inertisation the values obtained from monitoring would plot towards the lower right hand corner of the plot. Consequently, any trend towards the right and up would still be indicating a heating somewhere in the vicinity of the sampling location.

Appendix 1—Forum agenda

Forum details

Name	Gas and spontaneous combustion management in a longwall goaf—Lessons worth sharing	Date	Tuesday 11 November 2025
Location	Leichardt Room, Isaac Centre, Moranbah	Time	9.00 am to 4.30 pm
Chair	Ken Singer, Acting Commissioner for Resources Safety and Health		

Lessons worth sharing

A focus on the prediction, mitigation and management of spontaneous combustion in longwall second workings.

Matters to be covered

Longwall panel design, ventilation, gas management including pre and post gas drainage practices, managing oxygen in the goaf, representative gas monitoring and effective trigger level action response plans, emergency response, sealing and re-entry.

Agenda

Item	Time	Item details	Speaker
1	9.00 – 9.20 am	Introduction Context and purpose (industry collaboration and sharing) Coal Mining Safety and Health Committee action plans and TARP Ground rules	Ken Singer Acting Commissioner Resources Safety and Health
2	9.20 – 10.15 am (incl. 10 min Q&A)	RSHQ Learning and recommendations from RSHQ nature and cause investigations RS24 Draft (Spontaneous combustion)	Jacques LeRoux Chief Inspector of Coal Mines
3	10.15 – 10.45 am (incl. 5 min Q&A)	Kestrel Mining context (e.g. longwall ventilation, gassiness, strata) Elements of second working SOP	Nathan Kidman Underground Mine Manager

Item	Time	Item details	Speaker
4	10.45 – 11.05	Morning tea + Remembrance Day 1 minute silence led by Ray Smith, General Manager – Operations, QMRS.	
5	11.05 – 11.35 pm (incl. 5 min Q&A)	Oaky North Mining context Learnings and industry share	Jason Fairweather Underground Mine Manager
6	11.35 – 12.05 pm (incl. 5 min Q&A)	Centurian mine Mining context Learnings and industry share	Michael Carter Vice President – Operational Support
7	12.05 – 12.45 pm	Lunch	
8	12.45 – 1.15 pm (incl. 5 min Q&A)	Broadmeadow Mining context Learnings and industry share	David Caley Ventilation officer
9	1.15 – 1.45 pm (incl. 5 min Q&A)	NSW Department of Natural Resources and Mines NSW guidance material	David Macpherson NSW Department of Primary Industries and Regional Development
10	1.45 – 2.05 pm	B3 Mining Services Some operational perspectives on spontaneous combustion management of a longwall goaf Trigger action response plans	Basil Beamish
11	2.05 – 2.20 pm	Afternoon tea	
12	2.20 – 2.40 pm (incl. 5 min Q&A)	Simtars Gas evolution testing for underground coal mines	Sean Muller Director Mine Safety Technology and Research Centre
13	2.40 – 3.30 pm (incl. 5 min Q&A)	Queensland Mines Rescue Service Lessons in emergency mine sealing and re-entry	Ray Smith General Manager - Operations

Item	Time	Item details	Speaker
14	3.30 – 4.15 pm (45 min)	Panel discussion Facilitator—Ken Singer	
15	4.15 – 4.30 pm	Summary Where to from here?	Ken Singer Acting Commissioner Resources Safety and Health