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Resources Regulator

Regulator perspective on Outburst Management

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Gas and Coal Outburst Committee, Wollongong June 2017

Overview

- Significant incident – Outburst on LW
- Current industry practice & mindset
- Regulator activity
- Outcomes

Metropolitan outburst event

- A relatively small gas and coal outburst occurred on a geological structure on 24th December 2016.
- No harm to workers
- The mine ceased operations and immediately notified the regulator

THIS WAS THE FIRST REPORTED OUTBURST ON A LONGWALL FACE FOR ABOUT 20 YEARS

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Metropolitan outburst event

- After an inspection by the regulator a worker exclusion zone of some 30m on the intake side of the shearer was imposed whilst mining through the structure.
- The mine was permitted to continue operating under direction from the regulator
- This was considered a minor event

Had similar events occurred in the past and not identified as an outburst?

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Metropolitan outburst event

- A more significant gas and coal outburst occurred on 4th January 2017.
- An estimated 800t of coal was displaced, with about 200t into the working environment.
- An irrespirable atmosphere was detected 30m outbye of the shearer

Had the initial event not been identified AND an exclusion zone not been in place, it is likely that the outburst would have resulted in multiple fatalities.

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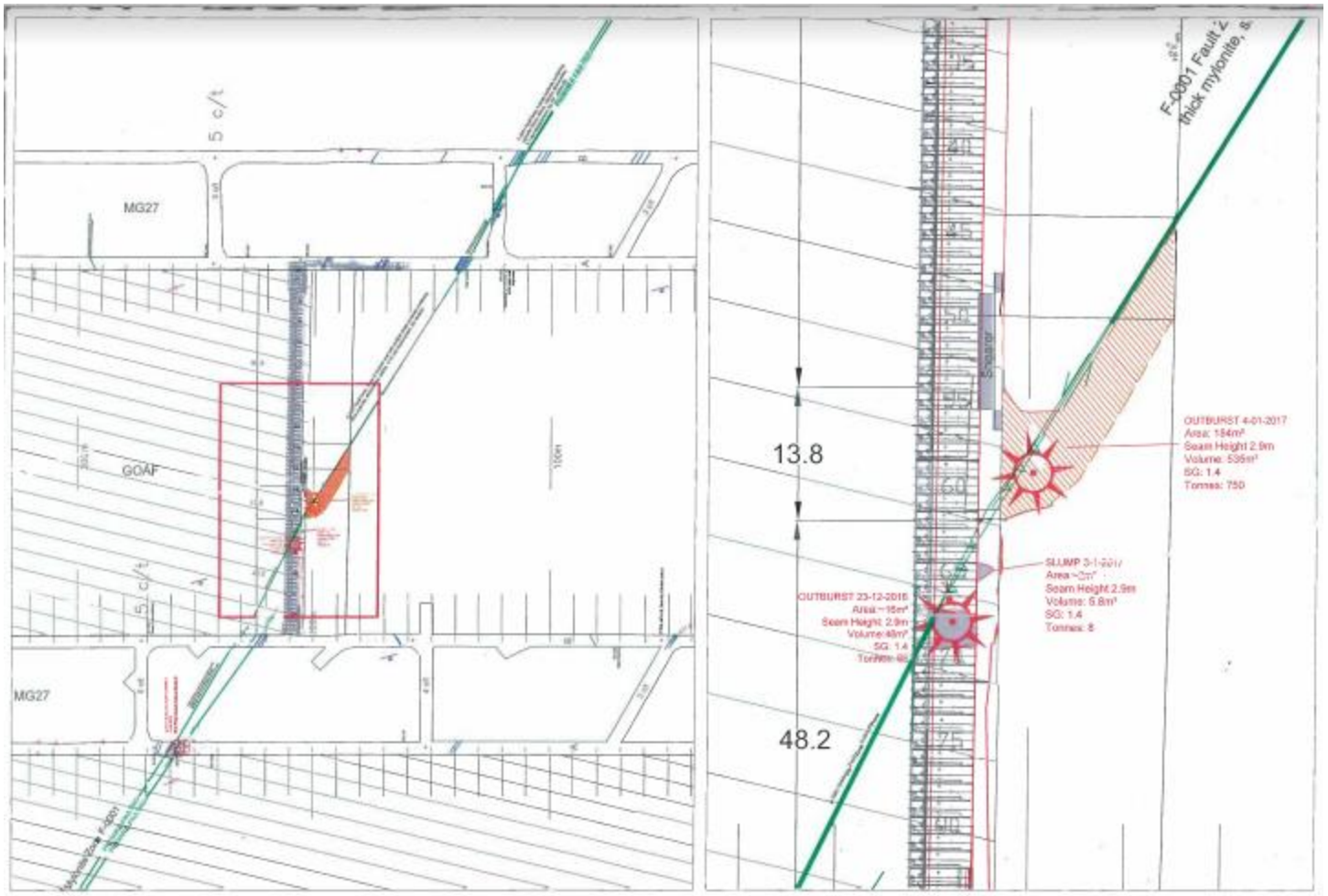
Metropolitan outburst event



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Metropolitan outburst event

Metropolitan outburst event

Metropolitan outburst event

- Contributing factors
  - ✓ This was a known outburst prone structure
  - ✓ Outbursts had occurred in the development panel adjacent to the longwall – under controlled mining procedures
  - ✓ Lack of gas drainage holes in the vicinity
  - ✓ The gas content was not verified
  - ✓ Complex geological structure – high stress environment

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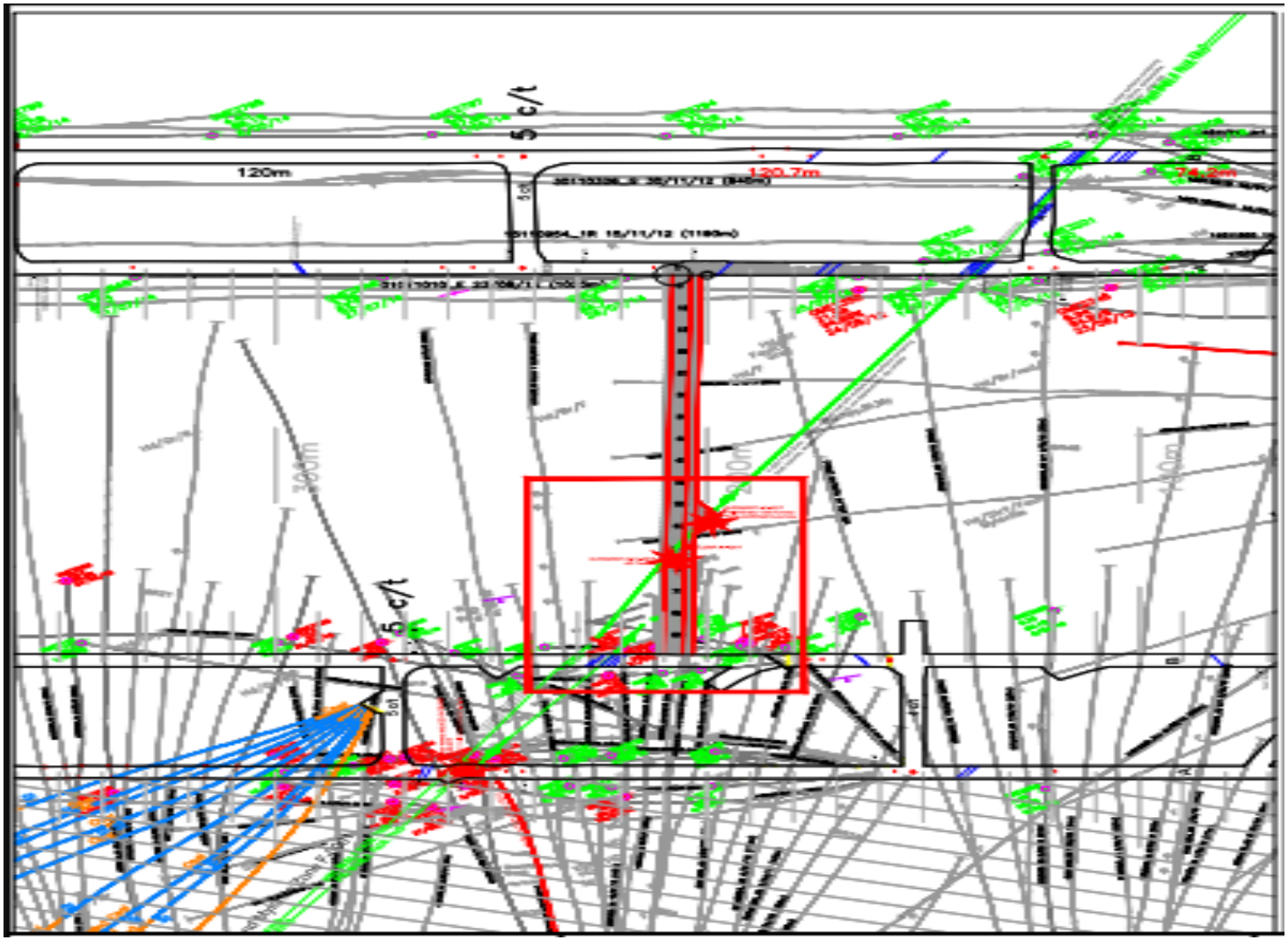
Metropolitan outburst event



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Current Industry practice & mindset

- No verification of gas content in longwall block
- Large areas of coal not drained
- Authority to mine for LW does not consider outburst criteria
- Front abutment/ stress relief considered as a control

General view is that outbursts are not considered as a risk on the longwall face

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History of fatal outbursts

COLLIERY	DATE	No. KILLED	SIZE (tonnes)	GAS	STRUCTURE
Metropolitan	10 June 1896	3	Unknown	CH_4 (firedamp)	Dyke and soft fault zone
Metropolitan	27 July 1926	2	140	CO_2	Fault with 5m throw
Metropolitan	2 December 1954	2	90	CO_2	Normal fault with 0.3m throw
Tahmoor	24 June 1985	1	400	CO_2	Behind a dyke associated with strike slip movement
South Bulli	25 July 1991	3	300	CO_2 & CH_4	Thrust fault with 35 cm of mylonitic coal; very high gas pressure.
West Cliff	25 January 1994	1	350	CO_2	Intersection of 2 strike slip structures; 30 cm of mylonitic coal.

Comments taken from outcomes of a LW outburst at West cliff April 1998

- Area not adequately covered by gas drainage – 21m3/t
- No apparent structure identified
- High localised stress
- Extremely low permeability coal (Piper, 1998; Walsh 1999)

Action taken by the mine

Updated the OMP to ensure that *LW panels are effectively pre-drained*

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Challenge our thinking

- Our thinking behind our methodology is over 20 years old, based on a small group of outburst pioneers
- The system has been quite successful, however…….
- Research work has continued & shared with industry
- MDG1004 Outburst Guideline published in 1995

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Regulator Activity

Safety Alert

- ✓ Geological assessment
- ✓ Gas content of LW blocks
- ✓ Effectiveness of gas drainage methods – below threshold limits
- ✓ Remote mining methods where threshold limits are unable to be met

SAFETY ALERT

Gas outburst on longwall face

INCIDENT

Two gas outbursts occurred on the longwall face at Metropolitan Colliery, south of Sydney, on 23 December 2016 and again on 4 January 2017. The first event resulted in the release of a volume of carbon dioxide, and evidence of a small gas outburst cavity high in the longwall face.

The second event resulted in the release of a large volume of carbon dioxide and the violent ejection of coal from the longwall face resulting in the obstruction of the passage across the face.

No injuries were reported in either incident.

Figure 1: Maingate view of gas outburst. Supplied by Metropolitan Colliery.

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Outburst activity 2017

- Program of work started in March 2017
  - ✓ Focussed on LW mining only
  - ✓ Bowtie analysis completed
  - ✓ Internal workshop completed
  - ✓ Preliminary investigation at outburst prone mines completed

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Outburst activity 2017

- Outburst targeted intervention program commencing July 2017
  - ✓ Appin
  - ✓ Tahmoor
  - ✓ Metropolitan
  - ✓ Narrabri

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Outburst activity 2017

- Shared early learnings with industry
  - ✓ reports published on website
  - ✓ Seminar presentation
- Commence update of MDG 1004
- International outburst conference Q4 2017

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