



CENTENNIAL COAL

Applying a Self Escape Emergency System 2007

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Centennial Coal



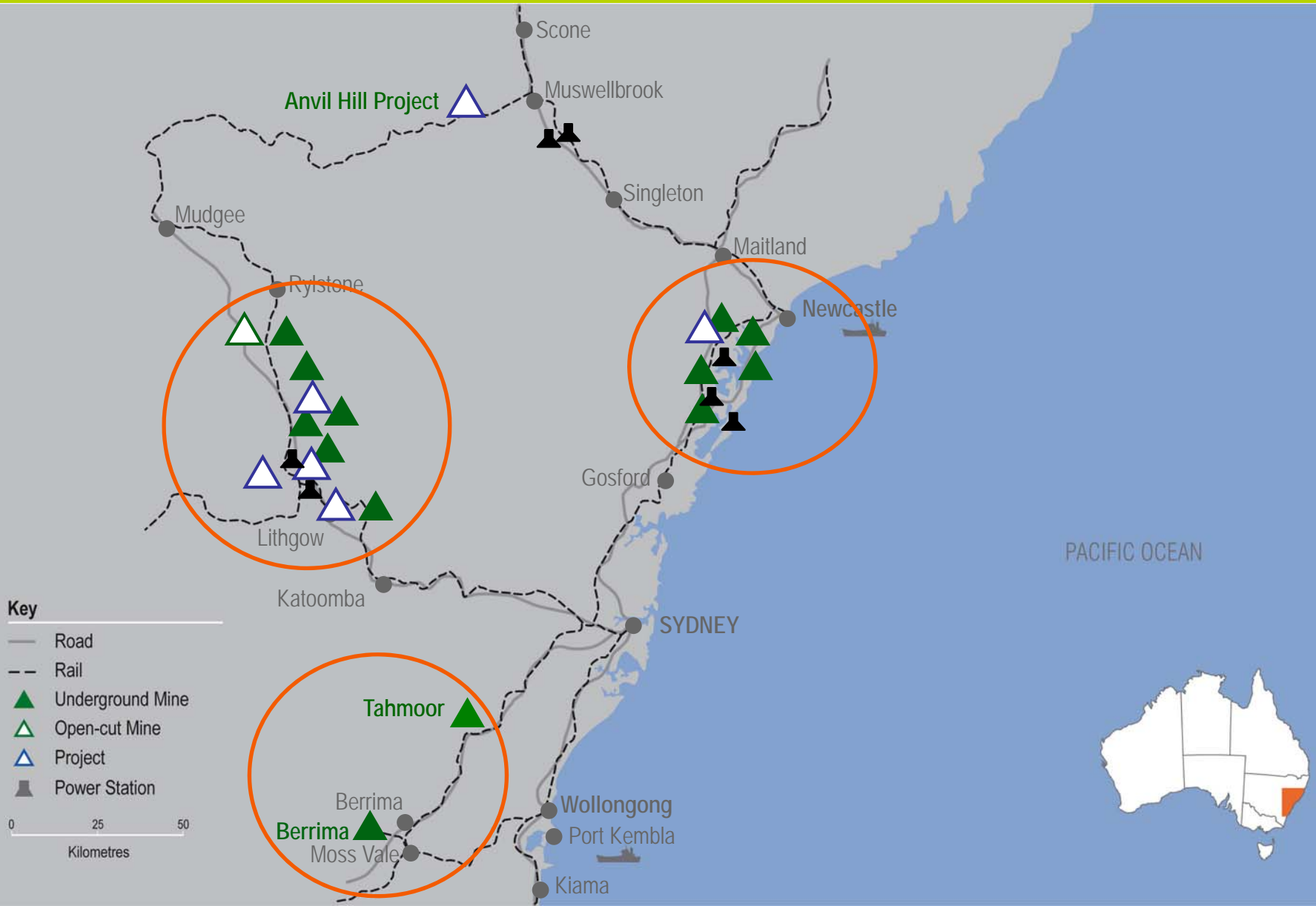
Centennial Coal – proud coal miners



- > Has 13 coal operations in NSW with approx 2,000 employees
- > Supplies thermal and coking coal to the domestic and export market; 20 mtpa
- > Supplies approx 47% of NSW coal fuelled electricity generators
- > One third of production into the export market



Centennial Coal operations



Background to Self Escape Principles

- > **Capability of traditional mines rescue in a fire / explosion scenario challenged at Ulan 1991, Moura #2 1994 and Endeavour 1995**
- > **CMH&S Regulations implemented Dec 2006 included Escape provisions**
- > **External assistance unlikely unless risk to Rescuers can be demonstrated to be acceptable (low). Risk based 'Duty of Care' increased reluctance to approve mines rescue operations.**
- > **Delay in external support is variable from 90 – 120 minutes. Actions best triggered from personnel in seam at the time of incident.**
- > **Self Escape preferred in Australian coal mine culture**

Background to Self Escape Principles

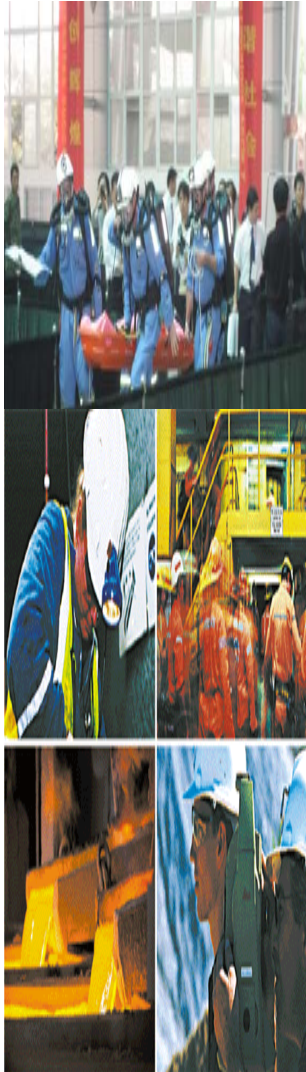
- > **Escape apparatus** – Filter Self Rescuers, Self Contained Self Rescuers, Compressed Air Breathing Apparatus
- > **Tagging systems** – manual and electronic, to control number of people in and out of the mine and or U/G Districts
- > **Mine environment monitoring** – early warning of gas / fire potential; not forgetting a skilled workforce ability to detect changes
- > **Rapid Communication in Emergency** – Personal Emergency Device (PED) one way communication
- > **Multiple Escape ways-** primary, secondary & tertiary; transport
- > **Guidance infrastructure** – tactile lines to a place of safety, ‘blind man’ sticks, smoke goggles, reflective signage,
- > **Training** – simulations / instruction employees, contractors, visitor

CABA Quickfill Technology



- > New CABA Quickfill technology allowed for emergence of long duration CABA apparatus. Carbon fibre cylinders 2 X 6.8 l cylinders @ 300Bar provide 4080 litres air, 90 minutes to 50 Bar with a breathing rate of 40 litres / minute.
- > Refill Station design (reservoir or cascade types) allowed for rapid fill of CABA without removing the apparatus (ie breaking seal).
- > CABA introduced into Centennial Coal mines from 2001
- > Intensive initial training programs involving Mines Rescue Service established for all employees and contractors
- > Approx. 3,800 Contractors retrained each year, at their company's expense

Centennial CABA Implementation



- Seven Centennial mines with CABA Self Escape
- Average of 117 CABA suits per mine, Total of 821 CABA suits across seven mines
- Total of 61 Refill Stations across 7 mines
- Ability to service CABA on site by trained mine personnel
- Also use (4) service providers for CABA maintenance as required
- Cost of establishing a CABA system at a 2mtpa, 200 employee mine would be approx \$A800,000
- Approx 15 year apparatus life cycle

Escape Apparatus Currently in Use (Based on Risk Assessment Evaluation)

Queensland

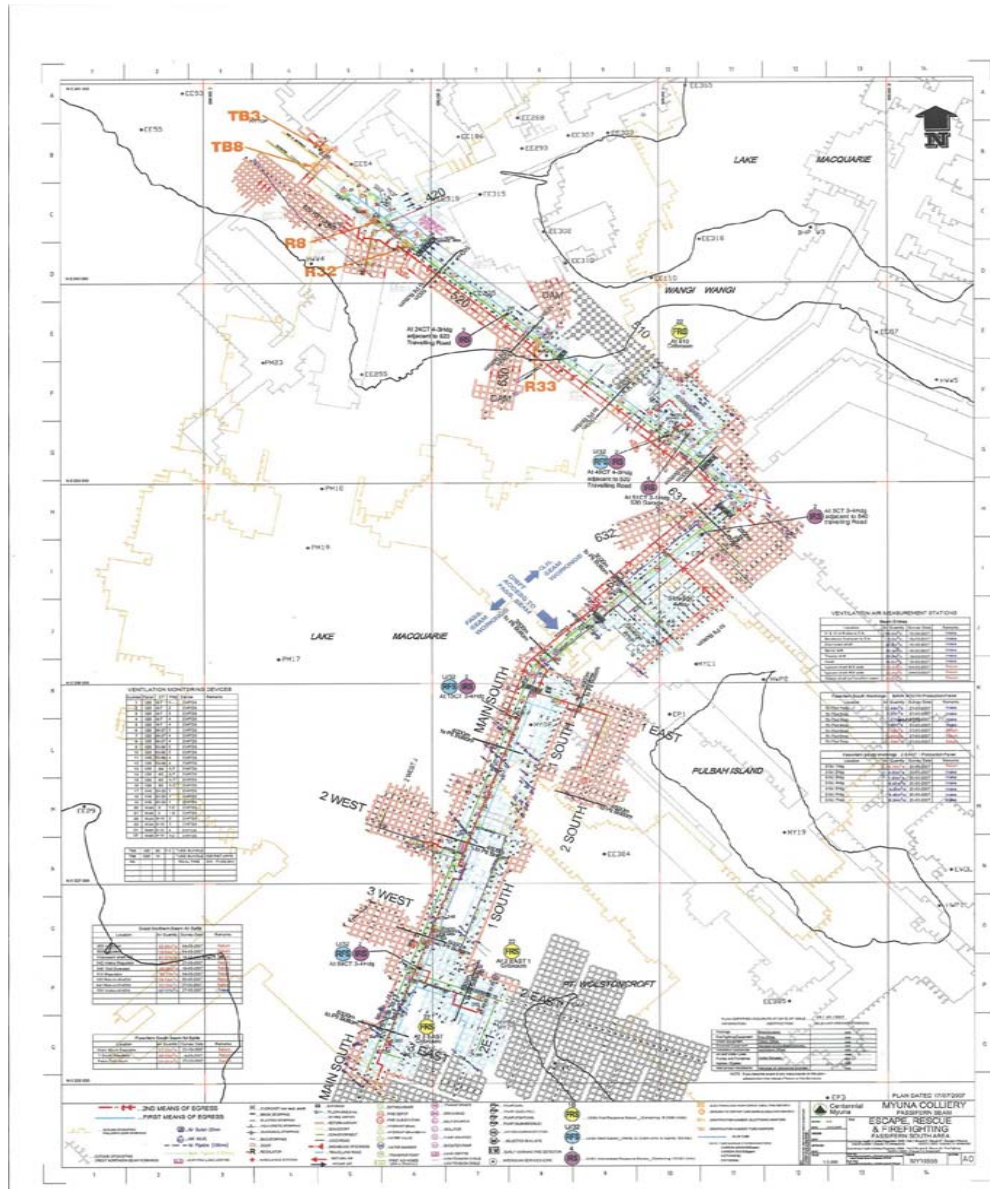
- > 14 U/G coal mines
- > Oxygen Self Rescuers mandated
- > All persons U/G provided with SCSRs
- > Approx 6 mines also have CABA

New South Wales

- > 31 U/G coal mines
- > Oxygen Self Rescuers not mandated
- > 5 with FSR only
- > 6 with SCSR only
- > 8 with FSR & CABA
- > 11 with SCSR & CABA
- > 62% with CABA
- > 89% have SCSR / CABA cover



Mine CABA Infrastructure – Self Escape



Mine CABA Training – Self Escape



Implementation Issues – Self Escape

- > Training quality variable – initial & ongoing for all employees and contractors, needs to be high quality
- > CABA Refill Station initial design problems - leaks, beer tap fractures, changeover valve failures
- > Fungi Control – CMRA Section 63 notice – Cryovac bag
- > Mines Rescue Working Group formation. Tripartite input – companies, inspectorate & workforce. It works!
- > Development of “In Seam Response” Guidelines (where lives at risk)
- > Mine recovery after an event; efficient re-establishment of Self Escape System

Implementation Issues – Fungi Control





Self Escape – where to from here?



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Self Escape - Where to from Here?



- > **Computer based Tracking systems (Tagging) – MST “Tracker” in use @ Springvale, Dartbrook, United, Newlands, Oakey North; NLT in use @ Carborough Downs & Grasstree; MST & CSIRO project**
- > **Transports for variable mine atmospheres; on board breathable air supply, guidance sensors – ACARP Project**
- > **Virtual Reality Competency Based Training – CSPC Health & Safety Trust Project – MRS facilities – have Escape module**
- > **Mine Environment Monitoring improvements – gas, smoke, thermal imaging equipment, video monitoring**
- > **Two Way Communications – USA “Wireless Integrated Technology System”; “Mine Site Technology’s” Two Way PED**
- > **Improved escape apparatus – duration / wearability / cost**
- > **Remote Assistance – ventilation structure remote control, video, remote deluge systems**



CABA Self Escape – What the men think



Questions Please ?



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