Resources Regulator
Department of Regional NSW

Final report

Mine workers injured during pipe installation work

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Table of Contents

Introduction

Two workers at the Centennial Mandalong Mine were seriously injured while installing service pipes about 11am on 17 May 2022.

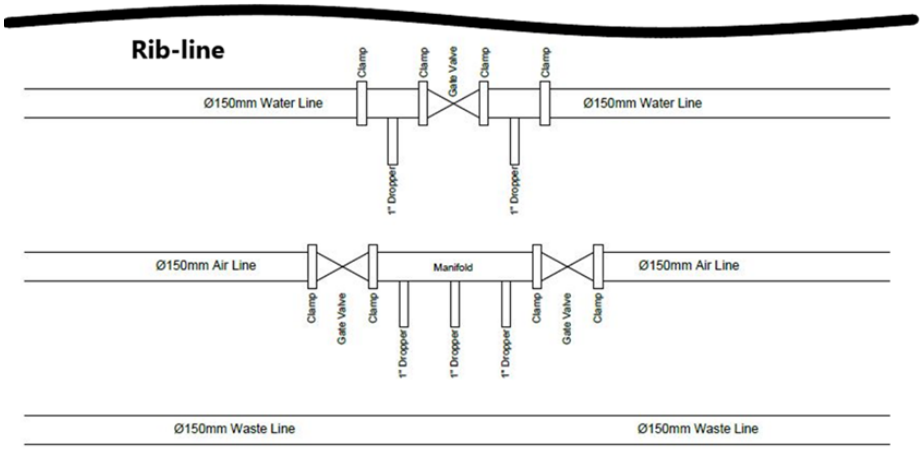
The mine

Centennial Mandalong Pty Limited is the operator of the Mandalong mine located near Morisset. The mine is an underground longwall thermal coal mine which provides coal to both the Vales Point and Eraring Power Stations. The mine produces up to 6 million tonnes of coal annually.

The incident

Service pipes at Mandalong were installed in the same configuration throughout the mine. The water pipe was located adjacent to the rib, the air pipe in the centre, followed by the waste pipe.

Figure 1: How the service pipes were installed at Centennial Mandalong Mine



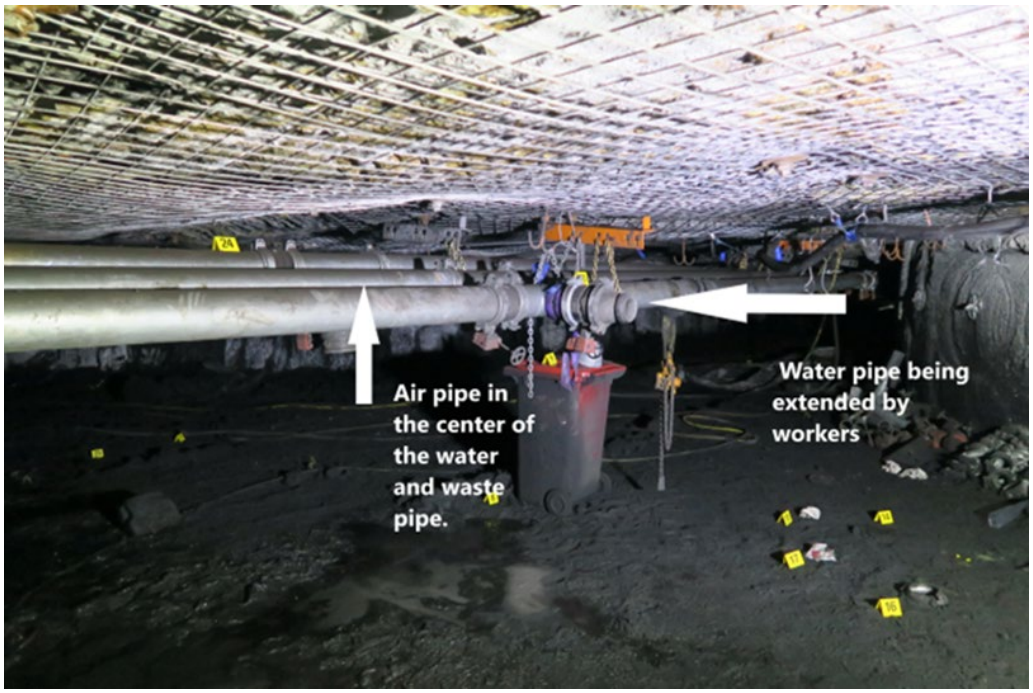
On the date of the incident, 3 workers were extending a water pipe to a new panel. The water pipe was installed in February 2022 (about 3 months before the incident). During this time the service pipes appeared to have operated as designed.

Before commencing work on 17 May 2022, workers isolated the water pipe and dissipated the remaining energy before the work of extending the pipe commenced.

Workers used an air-powered rattle gun while working on the water pipe. The work included loosening clamps, rotating a T-piece, retightening the clamps and adding a reducer and valve.

After fitting these parts, one worker walked outbye to re-energise the water pipe while 2 other workers remained near the work area.

Figure 2: Where the workers were located at the time of the incident



A short time later, an end cap fitted to a T-piece on the airpipe came free and was ejected in the vicinity of 2 remaining workers.

This caused compressed air (750 kPa) to escape and created an instantaneous blackout of the work environment and workers lost their footing. The end cap was later found about 35 metres away.

Figure 3: The T-piece on the airpipe

Figure 4: The end cap found 35 metres away

Figure 5: 150mm shouldered galvanised coupling

Figure 6: 150mm shouldered galvanised tee

Investigation

The NSW Resource Regulator's Major Safety Investigation Unit investigated the incident with a view to determining its cause and circumstances.

The investigation considered (among other things):

- the design, manufacture and supply of the pipe work and associated items
- the installation and commissioning of the pipe work
- human and organisational factors
- the isolation procedure
- potential equipment failure.

After a thorough investigation, including the assessment of manufacturing specifications, hydrostatic pressure testing and magnetic particle inspection (MPI) of the plant involved, the Regulator determined there was no evidence to establish the failure of plant to be causally related to the incident. The investigation also considered human factors but was unable to establish, with any certainty, any causal link to the incident.

Accordingly, the following recommendations are directed generally to ensuring hazards associated with service pipes, in the absence of elimination, are managed to reduce risks as far as reasonably practicable and **should not** be interpreted as addressing causal factors related to the incident (which remain unknown).

The Regulator published an investigation information release in June 2022.

Recommendations:

Mine operators should:

- review site isolation procedures to ensure systems that run in parallel or are interconnected can be confidently isolated and energy dissipated before work is carried out
- provide appropriate instructions to workers, in particular, when normal work tasks are modified. This may be achieved by:
  - ensuring all workers are present for pre-shift/pre task briefings

  - providing workers with written daily task instructions
  - encouraging supervisors to confirm worker's knowledge and understanding of instructions, in particular, when a work task is modified.
- provide appropriate supervision of workers. This may be achieved by:
  - ensuring the ratio of supervisors to workers is appropriate
  - considering a worker's competence, experience, skills and the complexity of tasks when determining the appropriate level of supervision
  - that supervisors have conversations with workers to ensure they have knowledge of procedures relevant to a task including appropriate isolation processes
  - that supervisors continually reinforcing the importance of workers completing personal risk assessments
  - that supervisors check the quality of personal risks assessments, in particular, to ensure known hazards are being identified and appropriate controls are implemented.
- verify hazards associated with confusing different service pipes are adequately assessed and, if risks cannot be eliminated, they are to be minimised as far as reasonably practicable. This may include clearly demarcating pipes to ensure workers can distinguish different service pipes (e.g. water and air) by:
  - colour coding service pipes
  - fixing colour-coded tags or stickers to pipes
  - installing different clamping systems for each energy source
  - installing different pipe diameters.

Workers should:

- comply, so far as they are reasonably able to, with reasonable instructions including:
  - ensuring they are familiar with procedures relevant to work tasks
  - never commencing a task they have not been appropriately instructed in
  - seeking additional instruction from a supervisor if unsure about or need a task clarified
  - ensuring personal risk assessments are completed in accordance with requirements.
- ensure personal risk assessments include effective methods of communication. This may be achieved by:
  - discussing the task with other workers
  - ensuring all workers are familiar with the task to be performed
  - requesting and referring to relevant procedures to clarify work tasks

    considering any limitations or modifications to normal work practices and what additional controls may be required.