

SA17-08, July 2017

## Lack of pillar support - underground opal mines

This safety alert provides information on a serious safety issue and safety advice for the NSW mining industry.

### Background

The Resources Regulator recently undertook a series of planned inspections at various mines in Lightning Ridge to assess hazards associated with fall of ground. The inspections assessed if the mine operator had identified fall of ground hazards, carried out an appropriate risk assessment for the hazards, and identified and implemented the risk controls to ensure the safety of workers. The inspection also looked at the systems in place to maintain the identified risk controls. Mine operators have an obligation to have a safety management system that sets out the systems, procedures, plans and other control measures that will be used to control any risks to health and safety associated with ground or strata failure.

### Circumstances

In early May 2017, inspectors from the regulator carried out a planned inspection that identified insufficient primary support and no secondary support in large sections of an underground mining site in Lightning Ridge. The operator consequently restricted an area with insufficient roof support from workers. The area was taped off with orange barrier tape creating a 'no entry' zone. The area had mining equipment in it.

### Investigation

The inspectors concluded that the mine had insufficient pillar support in certain areas due to an unexpected level of pillar extraction with no secondary support as recommended in the regulator's guidance material NSW Opal Mining safety guidelines. An improvement notice and a prohibition notice were issued to the mine operator. The improvement notice directed the mine operator to install secondary support. The prohibition notice prohibited any person from going into the restricted area unless it was for the purpose of installing secondary support.

Figure 1: Some secondary support included.

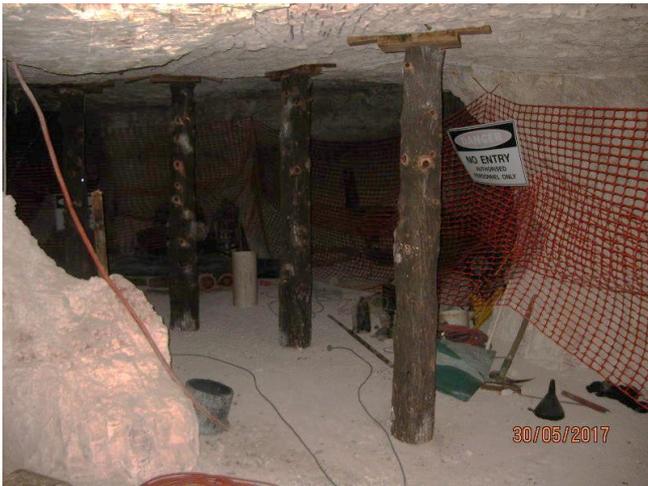


Figure 2: Combination of minimal secondary support and reduced primary support.

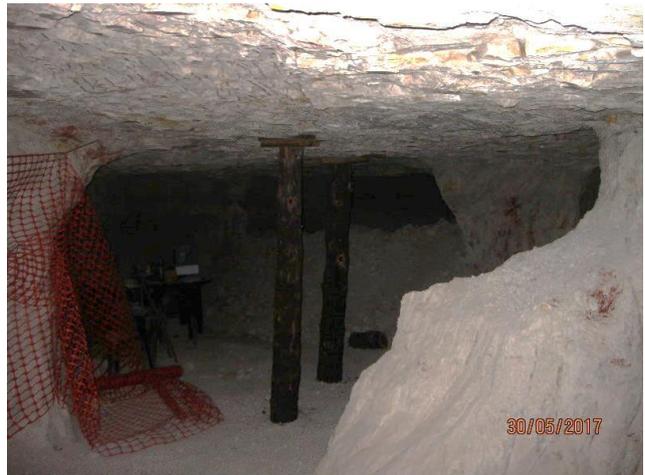


Figure 3: No secondary support.

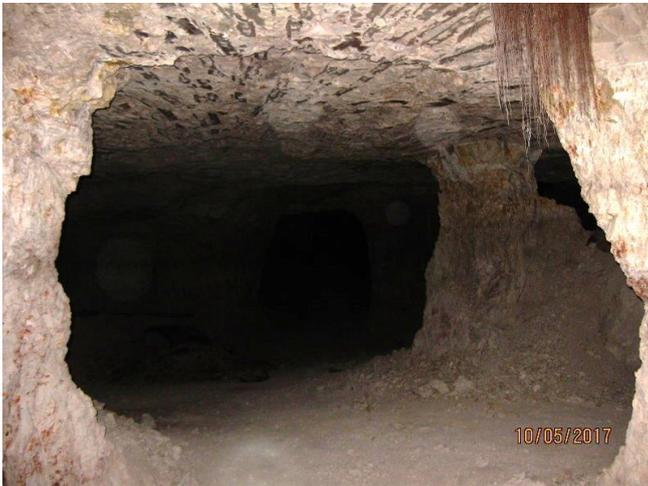


Figure 4: Inadequate secondary. No primary support.



Figure 5: No secondary support installed.

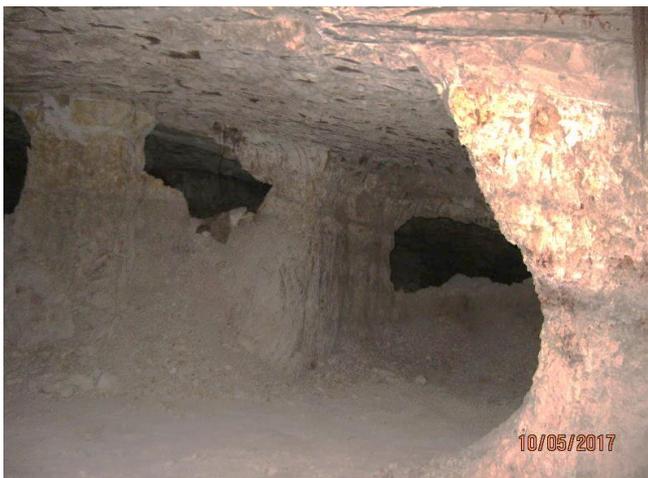
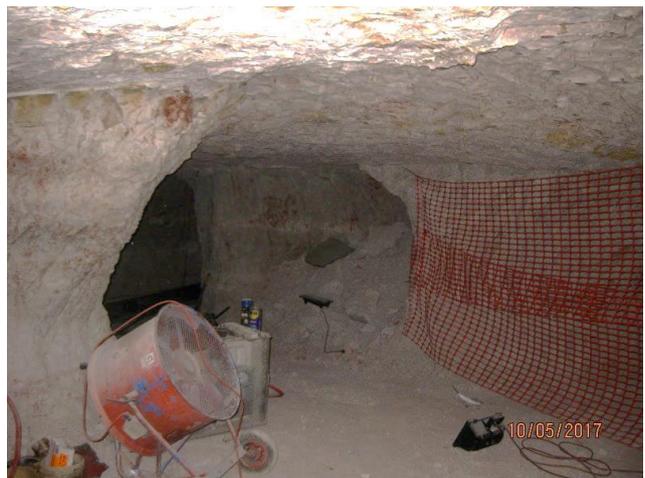


Figure 6: Primary support meshing installed.



Primary support is the support required to hold up the mass of ground between the underground mine workings and the surface. Only pillars are capable of providing primary support. Secondary support is the support required to hold up the roof, which is within the distressed zone between the primary supports. Secondary support is required when rock is not strong enough to support its own weight. If secondary support is inadequate rockfalls will occur.

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Props and rock bolts are the two most practical methods of secondary support for the Lightning Ridge region.

## Recommendations

Ensure that there is adequate support, both primary and secondary at the shaft bottom. This is the primary means of escape and it must remain secure.

Before excavating a drive, it is essential to conduct checks with adjoining mining leases to assess if any other excavation work will affect your roof and wall stability. Consideration will then need to be given as to the type and amount of support needed.

Secondary support should be installed at the time an opening is created, such as a drive.

Drive widths are generally a maximum of 1.8 m. A drive wider than this will require secondary support. In narrower drives secondary support will be essential if rock strength is affected by rock material, discontinuities and nearby workings.

Regular checks must be carried out to assess the condition of roofs, walls and supports. Fretting of pillars indicates that the pillar is taking weight or is drying out, and should be meshed and made secure. Props need to be checked for looseness, rot and damage, and additional supports installed where needed.

Further reference material regarding safety can be found in the Lightning Ridge Opal Mining safety guidelines, which can be obtained by contacting NSW Department of Planning and Environment's Lightning Ridge office on 6829 9200 or via email [LightningRidge.Office@industry.nsw.gov.au](mailto:LightningRidge.Office@industry.nsw.gov.au).

**NOTE:** Please ensure all relevant people in your organisation receive a copy of this safety alert, and are informed of its content and recommendations. This safety alert should be processed in a systematic manner through the mine's information and communication process. It should also be placed on the mine's notice board.

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### Disclaimer

The information contained in this publication is based on knowledge and understanding at the time of writing. However, because of advances in knowledge, users are reminded of the need to ensure that information on which they rely is up to date and to check the currency of the information with the appropriate officer of NSW Department of Planning and Environment or the user's independent advisor.

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