NSW GOVERNMENT

NSW Resources Regulator

INVESTIGATION INFORMATION RELEASE

DATE: SEPTEMBER 2021

Worker suffers serious injuries after falling into conveyor chute

Incident date: 10 August 2021

Event: Dangerous incident at an open cut mineral mine

Location: Thuddungra Mine, Young NSW

Overview

A worker was standing on loose rocks and dirt which had built up next to a conveyor chute. He was inspecting a suspected blockage in the chute when he slipped and fell into it. Rock fed from an adjacent hopper almost entirely covered the worker. Two workers responded and were able to extract him from the chute by digging with their hands and a pick. The worker sustained rib fractures and internal injuries.

Figure 1: Direction of worker's fall

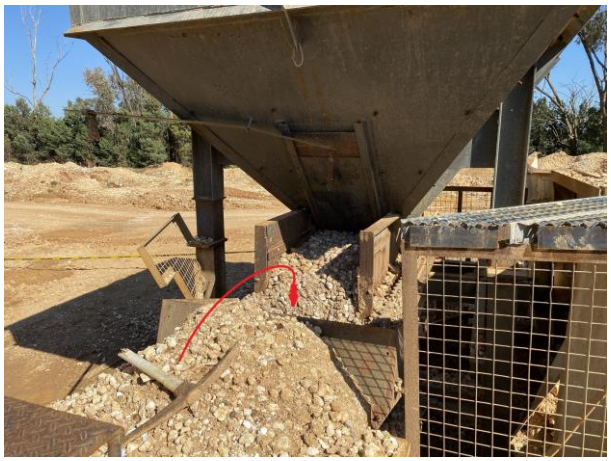
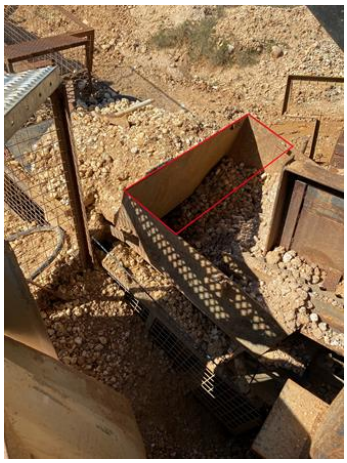


Figure 2: Chute where worker became buried



The mine

Thuddungra Mine is an open cut magnesite mine owned and operated by Young Mining Company Pty Limited. It is located about 30 kilometres northwest of Young, NSW. Mined material is initially processed onsite, before being transported by road to Young where further processing takes place.

The incident

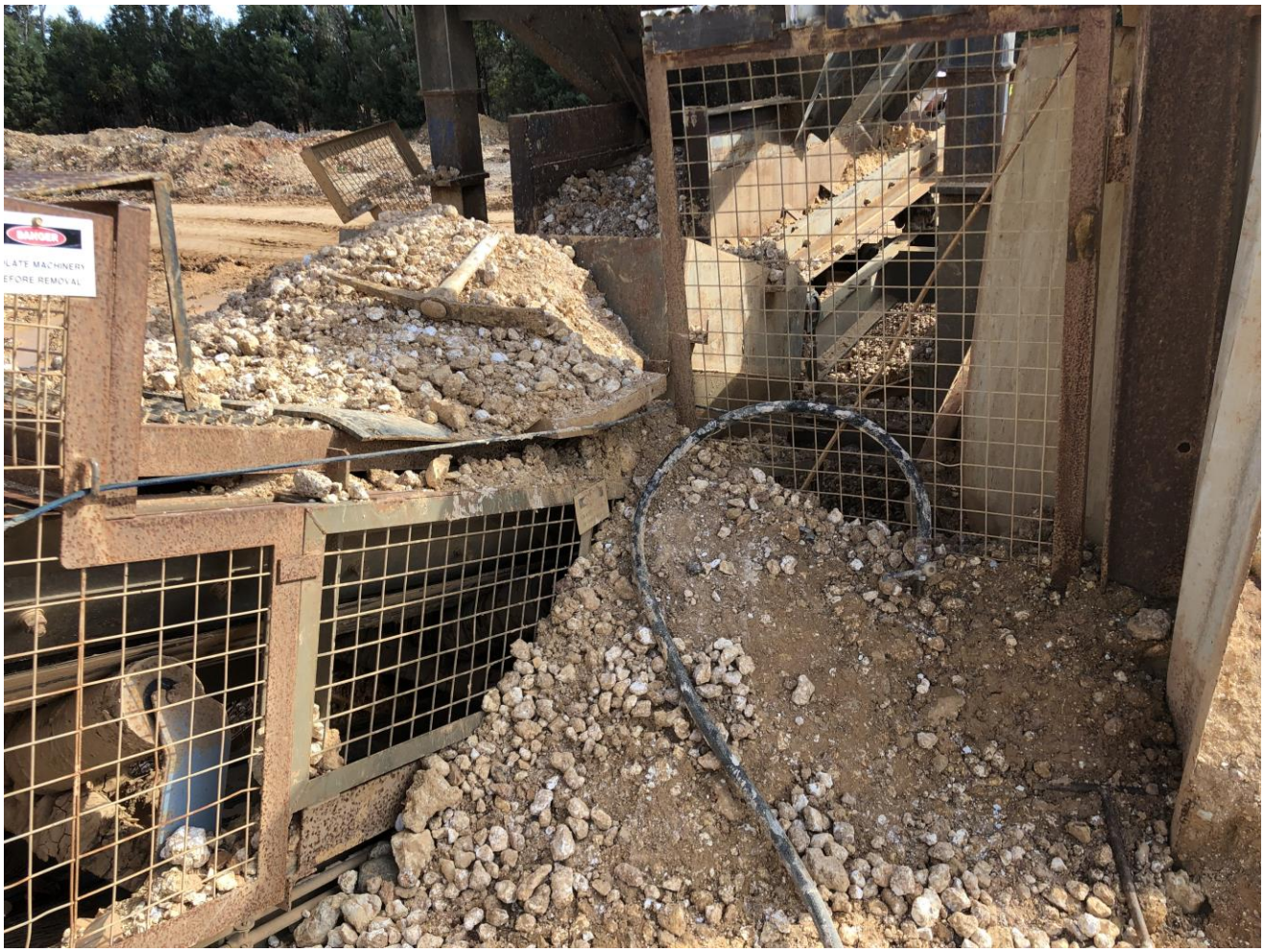
The incident occurred in the mine's photometric plant, which consists of a series of interconnected conveyors, scrubbers and crushers. The plant had not operated the week before the incident as repairs to the PS7 conveyor were required. Parts were ordered for these repairs to be carried out and they arrived shortly before the incident.

About 2pm on 10 August 2021, the acting quarry manager requested an operator at the mine to complete the repairs to the PS7 conveyor. The operator completed the task with the assistance of a contractor. When the repairs were completed, a decision was made to test the plant. This required rock product to be fed into the system and a series of connected conveyors to be operated. They included the PS25 conveyor and PS24 reciprocating feeder. The reciprocating feeder is a plate that moves forward and back to carry material from the hopper into the conveyor chute.

The worker had not expected the plant to be operated that day. No pre-start inspections of the area were conducted. When the plant was started, the worker formed the view that the belt of the PS25 conveyor was not moving because the chute between it and the PS24 reciprocating feeder was blocked. Blockages at this location were common. The worker usually cleared such blockages by using a hose to apply water at high pressure into the chute.

The operator used a Caterpillar 966 loader to collect some rock from a nearby stockpile to load into the hopper. The contractor remained at the PS7 conveyor. The worker obtained a hose and began walking toward the blocked chute to clear it. The operator and the contractor lost sight of the worker as he approached the chute. The worker walked up on some built up product at the side of the PS25 conveyor guard. He then stood on a pile of material located on the top of the PS25 conveyor guard. Around this time, product was loaded into the hopper above by the operator who was unaware of the precise location of the worker or any issues affecting conveyor PS25.

Figure 3: Build-up of material next to the PS25 conveyor which allowed the worker to access the top of the conveyor guard



The worker slipped on the material he was standing on and fell forward into the chute. The worker attempted to stand up in the chute but, as he did, the reciprocating feeder struck him and knocked him down. The worker landed on his back in the chute and was covered in a large amount of rock, which continued to be fed from the hopper.

The operator heard the worker's screams and rendered assistance. When he arrived at the chute, the worker was fully buried except for his head and hands. The operator pulled the emergency lanyard at the side of the conveyor, but it did not have any effect on the reciprocating feeder which continued to operate and feed product onto the worker. The operator went to a nearby isolation point and switched off the feeder. The operator and the contractor dug the worker out by hand, which took about 15 to 20 minutes.

The worker was subsequently admitted to hospital suffering from rib fractures and internal injuries.

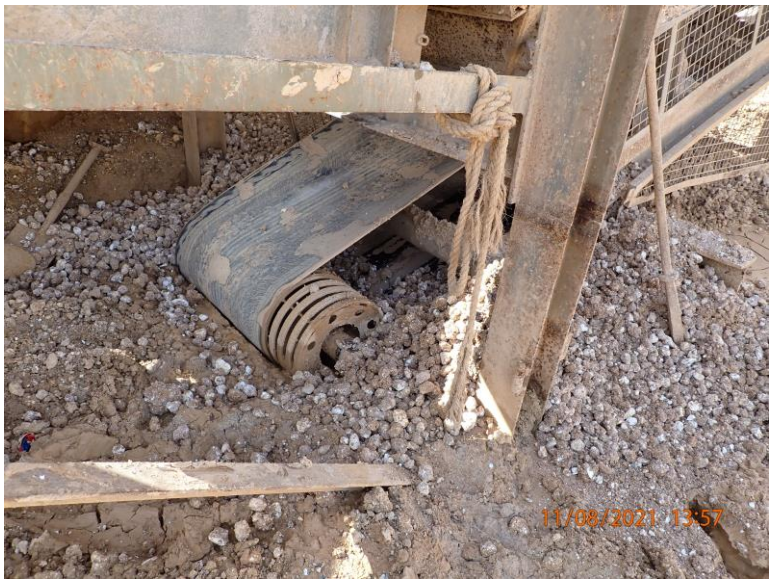
The investigation

The NSW Resources Regulator has commenced an investigation to determine the cause and circumstances of the incident. The investigation will, among other things, consider the design of the equipment, instruction, training and supervision of the workers involved, as well as the adequacy of policies and procedures relevant to the incident.

The Regulator's initial inquiries have indicated that:

- A sensor designed to detect issues with the conveyor's belt speed was not programmed into the plant's programmable logic controller (PLC). This meant that the conveyor motor and reciprocating feeder continued to operate while the conveyor belt was not moving.
- Housekeeping was not maintained. There was a large build-up of loose rock and other material on and around the conveyor, and the tail pulley was buried. Workers were required to remove guarding to dig out buried tail pulleys. This led to a situation where conveyors at the mine were regularly being operated without effective guarding in place.
- The emergency lanyard on the PS25 conveyor was not sufficiently tensioned. When the lanyard was pulled by a responding worker, it did not have any effect on the operation of the reciprocating feeder.
- There had been increased rain activity at the mine in the preceding months and the drainage was ineffective. The ground around the PS25 conveyor was wet and muddy at the time of the incident.

Figure 4: Unguarded tail pulley which was partially buried in loose material



Safety observations

Mine operators are reminded of their duty to identify hazards and manage risks to health and safety in accordance with the provisions of the *Work Health and Safety Act 2011* and *Work Health and Safety (Mines and Petroleum Sites) Act 2013* and regulations.

Mine operators should:

- Ensure that they have identified and assessed all hazards associated with the use of conveyor systems.
- Review its mechanical principal control plans to ensure that risks associated with the use of conveyor systems are eliminated wherever possible, or minimised if the risks cannot be eliminated.
- Ensure that the PLC on conveyor systems are configured to control connected or related plant in an emergency situation.
- Ensure that fixed guarding is in place on conveyors to prevent access to, and contact with, moving parts. Guarding should comply with AS/NZS 4024.1 Safety of machinery series.
- Ensure that emergency stop devices are maintained and tested regularly.
- Ensure that the areas around conveyor systems are well maintained and effectively drained.
- Provide adequate information, training and instructions to protect workers from risk while working near conveyor systems.
- Effectively supervise workers when working near dangerous equipment such as conveyors and reciprocating feeders.
- Regularly consult with workers to identify if dangerous practices are being used.

Workers should:

- Ensure that guarded equipment is fully isolated before guards are opened or removed.
- Never climb on or near conveyor systems.
- Ensure that positive communication is maintained whenever dangerous tasks are being undertaken.
- Always maintain situational awareness when working near moving mining equipment and fixed plant.

Further information

Please refer to the following guidance materials:

- Code of Practice -Managing the risks of plant in the workplace
- Report into the serious injury of a worker at Appin North Mine

About this information release

The Regulator has issued this information to draw attention to the occurrence of a serious incident in the mining industry. Further information may be published as it becomes available.

Visit our website to:

- Learn more about our work on causal investigations and emergency response.
- View our publications on other causal investigations.

DOCUMENT CONTROL	
CM9 reference	DOC21/800084
Mine safety reference	IIR21-11
Date published	15 September 2021
Authorised by	Chief Investigator, Major Safety Investigations