Significant Incident Report No. 269

Subject: Structural failure of a corrugated steel water tank

Date: 12 November 2018

Summary of incident

Note: The Department of Mines, Industry Regulation and Safety's investigation is ongoing. The information contained in this significant incident report is based on materials received, knowledge and understanding at the time of writing.

In May 2018, a 600,000 litre raw water tank failed. It was a rubber-lined steel construction. At the time of failure, the tank was near full capacity. The outrush of water affected an operational area of 24,000m², displacing pumping infrastructure, ladders and associated debris.

There were no personnel in the vicinity at the time of failure.

Water tank that failed

Corroded steel wall of tank

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Direct causes

- The structural integrity of the water tank had deteriorated substantially due to corrosion.

Contributory causes

- Inadequate inspection and maintenance management of the water tank.
- Failure to ensure the condition of the structure remains within the design limits.
- Failure to assess the structural integrity of the tank by a competent person with appropriate training and experience.

Actions required

The following actions are recommended to manage the structural integrity of tank structures according to relevant Australian Standards and having regard to the designer's specifications.

- Ensure tanks are only used in applications consistent with the original design intent.
- Use the tank manufacturer's guidelines, or a risk-based approach, to determine the nature and timing of inspections and monitoring that will periodically assess all tanks on-site to confirm structural integrity and provide advice on any remedial measures necessary.
- Ensure the structure and its components are maintained in a safe and stable condition.
- Ensure any repairs are undertaken by competent persons with appropriate training and experience.
- Rank all remedial measures based on risk and prioritise them.

Further information

- Mines Safety Bulletin No. 43 Structural safety of buildings and plant

  www.dmp.wa.gov.au/Documents/Safety/MSH_SB_043.pdf

- Mines Safety Bulletin No. 124 Structural safety of buildings, plant and other structures

  www.dmp.wa.gov.au/Documents/Safety/MSH_SB_124.pdf

- Toolbox presentations from the *2015 Structural Integrity Forum*

  www.dmp.wa.gov.au/Safety/Toolbox-presentations-16177.aspx

This Significant Incident Report was approved for release by the State Mining Engineer on 12 November 2018