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www.dmp.wa.gov.au/ResourcesSafety

Revised and reissued June 2011

This publication is available on request in other formats for people with special needs.

NRS: 13 36 77

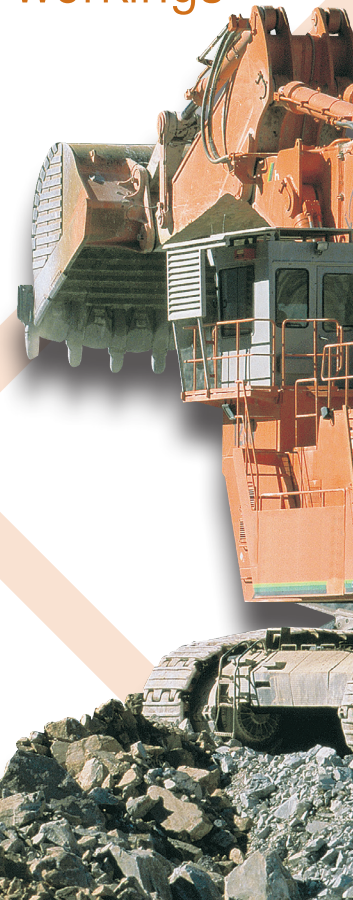
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The advice provided in this pamphlet is basic safety and health information. Ensure you are familiar with your site procedures and, if uncertain, discuss this information with your supervisor and safety and health representative.

Mine safety matters

Openpit mining over old workings



THE HAZARDS

Old and current underground mine workings beneath openpit mining operations may include large stope voids and an extensive network of tunnels that pose a ground collapse potential.

Voids may have been previously mined close to the new pit floor, leaving only a small pillar that has fretted away over time, significantly enlarging the void. This may lead to unforeseen crown failure.

Rocks can fret away from stope walls and backs. Gradual attrition can result in voids becoming significantly larger over time. Of particular concern is the potential for voids to migrate vertically and break through to the pit floor. Openpit blasting and vibration from heavy hauling operations can accelerate this process.

During openpit mining, a relatively thin pillar of rock may be left between the unfilled void and the pit floor or road as the pit is developed. This pillar may eventually give way into the empty void below, or heavy equipment or blasting may cause the pillar to collapse.

WHAT CAN HAPPEN

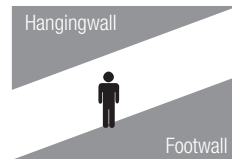
Serious injury or death can result when equipment and people fall into the holes or the ground collapses beneath them.

SAFE WORK PRACTICES

- Make use of existing mines survey drawings when planning
- Undertake systematic probe drilling of the openpit floor. Geophysical or electronic methods may also be used to locate, and if possible outline, old mine workings
- Thoroughly check the location of old mine workings on old survey or development plans against their plotted (or suspected) position on

current survey plans. Take nothing for granted as very old plans may not be accurate. The void may have changed in size or shape since the last survey

- Report and investigate any differences between the survey plans
- Clearly mark all areas of the working bench that may be over old workings and ensure access is controlled by specific site procedures
- The marked area should provide a margin of safety to allow for the lack of certainty of the exact position and size of voids below. This is particularly important on the hangingwall side of any stope void



- All markings must be clearly visible by day and by normal lighting systems at night (reflective). Marking must be maintained at all times

- Only people authorised and instructed to do so should enter the marked zone to carry out probe drilling or other activities
- Follow the site safety procedures for probe drilling
- Apply all site safety precautions when working around marked areas, including use of fall-arrest equipment
- Start probe drilling from known solid ground, clear of suspected old mine workings and preferably on the footwall side, and work progressively toward the suspected old mine workings
- Record details such as the hole number, break-through depth, whether the void has been backfilled, unusual drilling conditions, colour of cuttings and loss of circulation for each hole drilled
- Discuss any concerns you may have with your supervisor
- Recheck all marked areas after rain or water build up on any bench, and after each primary blast

- Immediately report any changes such as loss of water, cracking or holing in the surface over voids, and any noises or other indication of rock falling into voids. On a cold morning, a localised patch of fog could indicate moist air escaping from a newly opening void
- Do not approach open holes. Keep others well away from the area until barriers have been erected by authorised persons
- Investigate then prepare and backfill open holes as soon as possible
- Only use equipment appropriate to the task when working close to old workings. It may be necessary to use specialised equipment such as remote control probe drilling rigs, long reach excavators or engineered bridges to cross over potential void areas

- Secure the site appropriately so that the general public or visitors cannot access these areas

For further advice, refer to regulation 13.8(3) — Geotechnical Considerations of the Mines Safety and Inspection Regulations 1995, the *Geotechnical Considerations in Openpit Mines* and *Openpit Mining Through Underground Workings* guidelines and *Mines Survey* code of practice available at www.dmp.wa.gov.au/ResourcesSafety.

Resources Safety holds tens of thousands of mine plans dating back to the 1800s. To assist in locating old workings, tenement holders and Registered Managers may contact rsdmineplans@dmp.wa.gov.au to request access to the plans submitted for their mine site.

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