

Managing and validating diamond drilling around complex historic workings

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ABSTRACT

Historic mine workings complicate exploration and mining activities throughout the entire life of a project. This paper focuses on the first stages of data acquisition, from planning drillholes and drilling core through to logging, and first pass interpretation with regards to historic stope wireframe adjustment as used for mine planning and resource depletion.

The near-mine drilling activities in Waihi in OceanaGold's Martha Underground (MUG) are undertaken around often complex and extensive historic workings as well as modern development and presents numerous technical and safety-related considerations that must be managed and monitored.

From start to finish there are procedures, checks and balances in place to ensure the highest levels of safety for personnel, regulatory compliance and accuracy of data collected. Historic data is utilized and complements modern data as a resource towards interpretation.

Complexity presents itself early on during the drillhole planning process, and the designing geologist must ensure that the hole will deliver the required information while pre-empting possible deviation and core recovery issues.

The drill contractor, Alton Drilling Ltd. had to develop techniques to bridge wide open voids while protecting their people and equipment and ensure a fit for purpose product - oriented diamond core.

Once the core is on the logging benches geotechnical and geological data is gathered and interpreted against historic data (mining notes, maps, and digitized records) to assist with determining the status of the historic working, for example if there is an open void, collapse, historic fill or something in between. When logging and results are validated, it is imported to databases from which more experienced geologists will adjust the current set of historic workings wireframes to be issued in conjunction with the geological model and resource estimation.

It takes a concerted effort across multiple departments to successfully drill out a resource around extensive complex historical workings, however with a robust method, excellent communication, and teamwork it can be achieved to a high standard.