

Problem roadways in an underground decline solved through the application of Roller Compacted Concrete (RCC)

D Bruce¹, D Cox²

1. Senior Mine Projects Engineer, Oz Minerals, Adelaide South Australia 5022, daniel.bruce@ozminerals.com
2. Senior Geotechnical Engineer, Oz Minerals, Gold Coast Queensland 4567, david.cox@ozminerals.com

The main access decline at Carrapateena mine was excavated through two different underground aquifers. In these areas of decline, pressurised water finds the path of least resistance through the rock and into the excavation. In some locations the ground water would upwell underneath the roadway resulting in rapid deterioration of the running surface.

The deterioration of the road was so prolific that the two areas of decline required significant roadworks every single shift or it would become impassable by mine traffic. With a full fleet of underground trucks hauling to the surface, managing these sections of roadway was impractical and unproductive.

The site team resolved this issue by installing Roller Compacted Concrete (RCC) to the affected sections of decline. RCC is a specialist concrete product that is delivered to the site near dry and is installed using a grader and roller similar to road base. This product can be installed quickly and be trafficked within hours of installation, making it ideal for mines with single access declines and unfavourable road conditions.

RCC roadways were successfully installed at Carrapateena mine in conjunction with under-road drainage. These roadways have proved to be a very effective solution which requires minimal maintenance and are resistant to water ingress from the aquifer. This paper discusses the technical aspects of the RCC, as well as the practical implementation of the solution as a whole.