Grinkle Beck Culvert Repairs

The brief from the client, ICL Limited, at Boulby Potash mine, was to repair the collapsed culvert and ensure it would remain operational and maintenance free for years to come. The proposed engineered solution would be in two stages. The first stage was to strengthen and repair 85m of stone lined tunnel using stainless steel asset structure and 1560kgs of grout pumped to the back of the new lining.

The second stage was to reinstate the culvert between 100m and 200m, known locally as "Bob's Hole". This section of tunnel was constructed of sandstone arched blockwork and square steel sections. At approximately 135m the tunnel had completely failed, resulting in a fall of ground immediately above this area causing a void which migrated to the surface.

Given the difficulty and high level of risk to access the collapsed area, the method of repair could not be done from within the culvert. The solution was to excavate the 100m of tunnel in its entirety from the surface using the step dig excavation method removing both the stone arched blockwork and square steel support work. This area was then replaced with new 2.5m diameter precast concrete pipe sections, each weighing almost 10 tonnes and surrounding them with heavily reinforced concrete designed to accept loads generated by the 13m of soil cover. The works were completed on time and within the contract budget.

Gallery










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