Dry Stacking Sand Tailings with a Mobile Cyclone

M. Shannon¹, W. Ludlow² and W. Bosch³ (initials and surnames only)

1. TSF and Water Management Co-ordinator, South 32 GEMCO, Groote Eylandt, NT, 0885 Email: michael.shannon@south32.net

2. Senior Process Engineer, South 32 GEMCO, Groote Eylandt, NT, 0885 Email: billy.bosch@south32.net

3. Principal Engineer, Red Earth Engineering, Brisbane QLD Postcode 4000. Email: wade@redearthengineering.com.au

ABSTRACT

Conventional slurry tailings storage facilities often have beach slopes and post deposition consolidation timelines that provide inefficient use of the total storage available. For example, steeper beach slopes of say 2 to 3% leave a void space that isn’t filled towards the centre of the TSF and self weight consolidation of tailings can take years before additional storage can be realised.

This paper presents an overview of a sand tailings dry stacking program undertaken at a Northern Territory mine to cyclone sand tailings within the TSF and dry stack it to enable more efficient filling of the remaining void space. This project is planned to reduce the need for future TSFs at the site as the dry stacked tailings can be stored within the existing TSFs to better fill the TSF void space and progressively establish a closure landform by reshaping the tailings surface as part of the dry stacking deposition. Furthermore, the cyclone is fitted to mobile equipment to aid the stacking process and is planned to be used on older, inactive TSFs to provide a capping layer and final closure landform that is completed during operational deposition. This paper presents the key technical details of the sand stacking project and key operational learnings and improvements for the sand stacking process. Finally, a summary of high level cost savings associated with the sand stacking process and operational closure deposition are presented.