

# Solid/Liquid Separation CASE STUDY HIGH-RATE CLARIFIER

The treatment of process- and mining streams to achieve clarified water within specification: a robust and energy-efficient process.

Before the implementation of the Watercare Mining (WM) High-rate clarifiers, this specific gold mining operation was water-constrained, as the demand for water could only be met by using water from boreholes and upstream river water. During the dry season, water constraints impacted production, as limited water was available for the mining process.

The introduction of the Wi High-rate clarifier units took the pressure off the demand for water and its management issues, with the following consequent benefits:

- Improved mine call factor due to the gold recovery plant being supplemented by the sludge from the clarifier underflow
- The re-use water was within specification for use on hydro-power equipment
- The excess water from underground, which was to be discharged to the environment, adhered to the recommended standards



## Applications:

	Application 1	Application 2
Description	<p>Treatment of mine-return water from underground operations.</p> <p>The clarified water is then re-used in mining operations, and the sludge containing gold-bearing ore is pumped to the processing plant.</p>	<p>Treatment of disc filter filtrate and process spillage from the backfill plant.</p> <p>The clarified water is then re-used in the mining operations, and the sludge is used to supplement the backfill material that is pumped underground.</p>
WM High-rate clarifier module type	HRS-100	HRS-100
Quantity installed	1	1
Design capacity	75 l/s	50 l/s
Operating capacity	104 l/s	106 l/s
Feed solids concentration	600 – 1500 mg/l	3000 – 9000 mg/l
Max. rise rate achieved	40 m <sup>3</sup> /m <sup>2</sup> / hour	40 m <sup>3</sup> /m <sup>2</sup> / hour
Overflow turbidity	<15 mg/L (target <25 mg/L)	<20 mg/L (target <25 mg/L)
Year completed	2017	2015





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