

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

Acid mine drainage (AMD) is the discharge of acidic water from mining operations, mainly in the coal and metals industries. The acid component and precipitated metals are often removed by neutralising the acidic water. After clarifying this treated AMD water, it is then safely discharged into the environment. The clarification is not only done to successfully meet water quality requirements, it is also done in a cost-effective and energy-efficient manner, using the Watercare Innovations High-Rate Clarifier.

How the process works:

AMD water is pumped from an unused mining shaft to the surface, to be treated in a neutralisation plant. The water is aerated for the oxidation of manganese, and then neutralised with hydrated lime in a series of concrete reactors. The neutralised stream is then pumped to the WCM High Rate Clarifier, from which the clear water overflow stream is discharged to the environment, and the underflow is discharged to an old opencast mining pit. (See Figure 1)



HIGH RATE CLARIFIER

Industry Comparison:

Product Application	Watercare Mining High Rate Clarifier Neutralised acid-mine drainage stream	Conventional Industry Clarifier Neutralised acid-mine drainage stream
Design capacity	830 m ³ / hour	1830 m ³ / hour
Operating Capacity	670 m ³ / hour	1290 m ³ / hour
Diameter	7 m	43 m
Overflow Turbidity	<20 NTU (target <30 NTU)	< 10 NTU (target <30 NTU)
Rise Rate	21.65 m ³ / m ² / hour	1.26 m ³ / m ² / hour

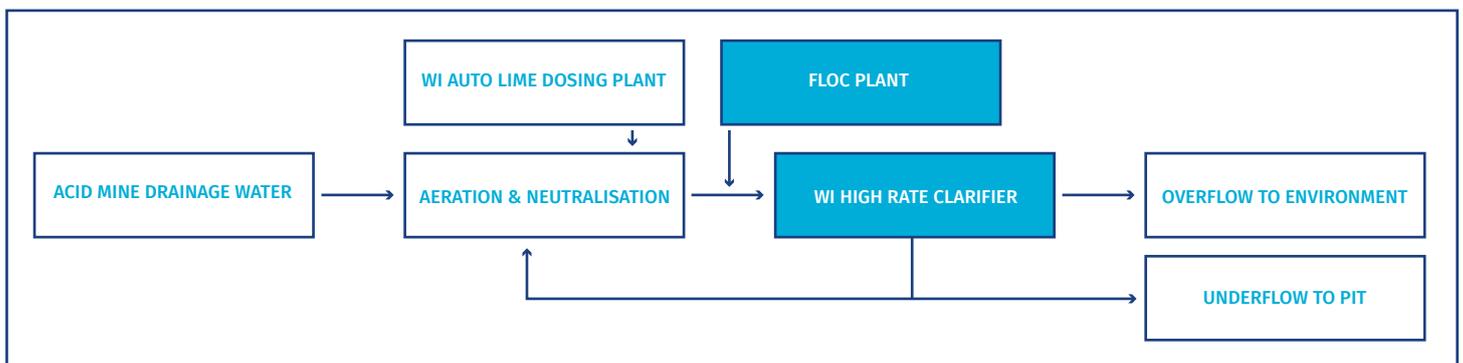


FIGURE 1



WATERCARE MINING