



GEOFABRICS CASE STUDY



GABION SYSTEM ENHANCES WASTEWATER TREATMENT

PRODUCTS USED

Gabion Basket

- Constructed with double-twisted steel wire mesh to create flexible, permeable, and continuous structures, ideal for gravity retaining walls, erosion control, channel linings, revetments, and hydraulic structures.
- Manufactured for an expected working life of up to 120 years, ensuring long-term durability and performance
- High-grade polymer coating provides exceptional corrosion resistance and structural strength

Rock Mattress

- Made with double-twisted steel wire mesh filled with rock to form thin, flexible cages designed to resist movement in high-flow conditions
- Proven to be over 50% more effective than rip-rap in high shear stress conditions
- Permanent solution for hydraulic applications such as weirs, riverbank scour protection, and embankment stability in channel linings

Similar Products

Geofabrics® Geobox™ Gabion Basket
Geofabrics® Geomattress™ Rock Mattress

PROJECT DESCRIPTION

The District Council of Mount Barker, located approximately 35 kilometres east of Adelaide, upgraded its wastewater treatment plant to improve the reuse of treated effluent in local gardens and agriculture. The consulting engineers were engaged to design and manage the works, which included a major redesign of the existing aeration lagoon.

A key challenge in the upgrade was the implementation of a baffle system within the lagoon, measuring 200 metres long, 130 metres wide, and 3.5 metres deep to improve water treatment efficiency. Baffles are structures placed in water to slow and direct flow, helping solids settle and enhancing the treatment process. Traditional options such as fabric curtains or fence systems were deemed unsuitable due to wind and wave loadings, as well as the need to maximise usable lagoon volume. Earth embankments were also ruled out due to space limitations and unfavourable foundation conditions.

OUR SOLUTION

To overcome these challenges, four freestanding gabion walls, each approximately 90 metres long and 3.5 metres high, were designed and constructed to act as submerged baffles. This system provided a durable, cost-effective, and space-efficient solution capable of withstanding significant wind and wave forces within the lagoon. To address concerns about long-term corrosion and structural integrity, the gabion baskets and rock mattresses were specified with a zinc-aluminium alloy and polymer coating, offering enhanced durability in the aggressive wastewater environment.

The initial design included an impermeable clay membrane between dual gabion baskets to prevent short-circuiting of wastewater through the porous structure. This was later reconsidered following flow analysis, which indicated that the majority of the effluent would follow the intended lagoon pathway, with minimal movement through the gabions. Over time, sludge build-up within the gabion voids was also expected to further reduce permeability.



Maximising
lagoon efficiency



Engineered
for harsh conditions



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