**Bundamba Advanced WTP**

**Western Corridor Project, QLD**

Wastewater reuse by power stations

### Needs

- The Western Corridor Project is part of the Queensland Government’s $9 billion South East Queensland Water Grid, which is the largest urban drought response in Australia.
- The objective of the Western Corridor Recycled Water Project is to enhance the security of water supply in South East Queensland through increasing available water supplies that are less dependent on climate trends, providing a system to supply purified recycled water to power stations, industry and agriculture and to replenish drinking water reserves.
- The Bundamba Advanced Water Treatment Plant is part of the project, located in Ipswich, QLD and will produce up to 66 ML/day of treated water upon completion.

### Our Solution (15.5 ML/day)

- Veolia Water Solutions & Technologies, with subsidiary AnoxKaldnes, was awarded the contract for the Biological Nitrification System for Bundamba Advanced Water Treatment Plant Stage 1B.
- Veolia Water Solutions & Technologies have the contract for the design, equipment supply, testing and commissioning of a Moving Bed Biofilm Reactor (MBBR™) nitrification process for treatment of the reverse osmosis concentrate (ROC).
- This treats water for use by Swanbank and Tarong Power Stations.
- The innovative MBBR™ treatment process will give a very high removal efficiency for ammonia, producing an effluent ammonia < 0.9 mg/L.
  - Design Flow = 15,500 m³/day
  - MBBR Influent BOD₅ < 20 mg/L
  - MBBR Influent TSS < 5 mg/L
  - MBBR Influent NH₃-N = 6 mg/L (93 kg/d at design flows)
  - MBBR Effluent Soluble BOD₅ < 5 mg/L
  - MBBR Effluent NH₃-N < 0.9 mg/L
  - MBBR Influent TDS = 2,700 – 6,700 mg/L
  - Wastewater temperature = 18 – 30 degrees
The **Moving Bed™ biofilm technology** be used at Bundamba has been used for over 20 years for greenfield wastewater treatment plants as well as augmenting existing plants.

The Moving Bed Biofilm Reactor (MBBR™) System is specifically designed as a nitrification system for the reverse osmosis concentrate (ROC) at the Bundamba AWTP.

The process is a stand alone process without a need for backwashing, returning sludge, or recycling wastewater.

The design is based on using media to supply surface area for the nitrifying bacteria that will then oxidise the ammonia in the ROC to nitrite/nitrate.

**Natrix™ biofilm process:** The principle behind the Natrix™ biofilm process is to have a continuously operating, non-cloggable biofilm reactor with no need for backwashing, low head loss and high specific biofilm surface area.

This is achieved by growing biofilm on small carrier elements that move along with air and water in the reactor.

The movement is caused by the aeration in the reactor. The carrier element is made of polyethylene or polypropylene with a density of slightly less than water and shaped like small cylinders or discs about 9-64 mm in diameter, depending on the application.

The filling rate of carriers in the reactor may vary between 10% and 65%, depending on the application.

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**Process scheme**

- Tank 1A
- Tank 1B
- Tank 2
- Effluent
- Influent (50% each inlet)