

Shoalhaven Starches

Fact Sheet

Wastewater Treatment

Background

The Shoalhaven Starches facility on Bolong Road produces starch, ethanol, syrups and gluten. The production process at the factory currently produces up to 5.0 million litres of waste water per day. Historically, wastewater was discharged into the Shoalhaven River. In 1984 the company installed a spray irrigation system on its environmental farm to the north of the factory site, and began using wastewater to irrigate the pasture. In 1992 two holding ponds were constructed on the farm, allowing the company to stop discharging to the River.

Over time a number of additional holding ponds were constructed on the farm site. Today, six ponds have a combined storage capacity of 925 million litres. Wet weather storage pond no. 7, currently under construction, will bring wet weather effluent storage capacity to over 1000 million litres.

The wastewater stream contains organic material left over from the production process. It is these organic solids that under certain conditions can cause odours when the water is sprayed onto the pasture, or stored in ponds.

The Waste Water Management Strategy

In 2003 the NSW Minister for Planning issued consent for Shoalhaven Starches Pollution Reduction Program Number 7, enabling the Company to implement its Wastewater Management Strategy. This strategy sought to remove solids from the wastewater stream, and required the construction of additional decanters, dryers and evaporators. Much of this plant has been installed and commissioned.

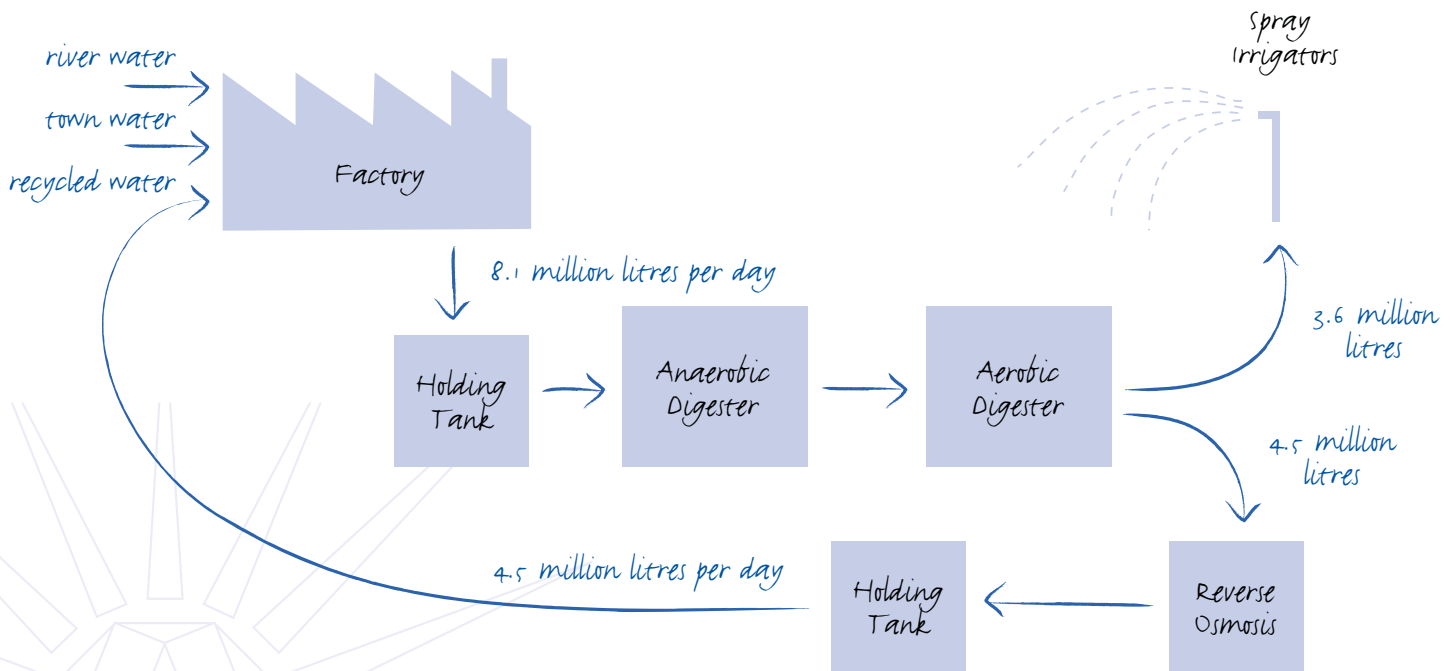


Wet weather storage pond currently under construction

While much of the suspended and dissolved solids have been removed from the waste stream, small amounts of fats, soluble sugars and proteins from the flour are still present. Whilst odours have been reduced, the environmental farm remains a potential source of odours.

The Proposal

As part of its plans to upgrade ethanol production, Shoalhaven Starches will generate 8.1 million litres of waste water per day. The company is therefore proposing to install a comprehensive wastewater treatment process that will treat up to 4.5 million litres every day to a better than tap water standard, and pipe it back to the plant for re-use. The remaining 3.6 million litres used every day will be treated to a high standard so that it won't produce odours when sprayed on the farm. The result will be to reduce the volume and improve the quality of wastewater that will need to be irrigated onto the farm.



Odour Control Strategies for the Environmental Farm

As part of the upgrade to the ethanol production capacity odours will be reduced by the installation of a sophisticated multi-stage wastewater treatment facility on the farm that will treat wastewater to a high quality. This proposal will involve the conversion of the wet weather storage pond No. 7 (currently under construction).

There are two key components of the wastewater treatment system designed to control odour:

Anaerobic digester: This large pond will be completely sealed off from the atmosphere to allow anaerobic (low oxygen) conditions to prevail. Inside, micro-organisms that thrive in these conditions will digest the bulk of the organic compounds responsible for causing odours. The byproduct will be methane that will be captured under the airtight seal and piped back to the factory as fuel for the boilers. Water from the factory will be piped into this pond where it will remain on average for a period of 10 days before being released for further treatment by the aerobic digester.

Aerobic digester: This second treatment phase operates in a “batch digester” that supplies oxygen to a different range of micro-organisms. In the aerobic (oxygenated) conditions, the “sludge” from the anaerobic treatment will be digested.

After a period to allow settling, the resulting clean water will be sprayed on the farm.

Treating water to drinkable standards

In order for water to be re-used in the production process it must be at least as clean and contaminant free as the drinking water supplied by Shoalhaven City Council. The 4.5 million litres of water to be reused every day will be treated to a better than tap water standard by reverse osmosis. This high-tech process forces the treated wastewater through a membrane to remove all impurities. A reverse osmosis plant, will be constructed on the Farm. From this plant the purified water will be sent to a holding tank, from where it will be piped back to the factory for use in the production process.

The treatment and re-use of 4.5 million litres of wastewater every day has a number of benefits. It reduces the volume of water to be disposed of on the Environmental Farm and it reduces the volume of water Shoalhaven Starches must purchase from Council, and extract from the town’s water supply. It will also reduce the amount of wastewater that will need to be spray irrigated onto the Company’s Environmental farm and the potential of odours being generated from the farm activities as a result.

