

SNAPSHOT

SUSTAINABLE MANAGEMENT OF WASTE AND WASTEWATER STREAMS AT V&V WALSH

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Project Description

V&V Walsh is continuously improving their operations, with strong focus on environmental compliance. Currently the Wastewater Treatment Ponds are going through an upgrade, aiming to reduce the nutrients loads and also improving the quality of the biosolids for composting or other beneficial uses. Producing a high-quality effluent is key for environmental compliance and for ensuring the quality of turf farm irrigated with the treated water. This project will investigate alternatives to both produce a better-quality treated water and at the same time benefit from the use of the sludge, nutrients and energy. For that, three main areas of study were as follows:

- // Optimise the removal of TSS in the DAF, by optimising the use of Tanfloc and recirculation rates both in bench scale and full operation
- // Assess the potential of producing biogas from the solids produced in the Abattoir, including the sludge from the DAF and other solid streams (paunch, tallow, etc.)
- // Polishing of the final effluent: Jar-Tests for immobilising N and P using a modified mineral zeolite (adsorption) in combination with Tanfloc. This can potentially produce a soil conditioner that can be traded with the forestry industry

Project Content

This study identified several opportunities for the more sustainable management of waste streams at V&V Walsh, including improved performance in the DAF in terms of TSS removal, high quality biosolids from DAF (no metals), and potential of recovery of biogas from the biosolids, immobilisation of nitrogen and phosphorous in a clay material for nutrient recovery at treatment ponds. This would bring V&V Walsh closer to the Circular Economy concept, where the by products currently considered as waste are being converted in products (fertiliser, energy, treated water).

The results are summarised in an integrated manner, including a revised water and nutrients balance in the plant, quantifying the potential benefits of the better management of the waste/ wastewater streams. The main outcome is

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improving sustainability at V&V Walsh while bringing financial returns from waste streams.

Project Outcome

In this context, the study conducted for V&V Walsh Abattoir in Bunbury (WA) explored initiatives towards improving the sustainability of waste streams management, including:

- // Replacing metallic coagulant use in pre-treatment with an organic, carbon negative natural coagulant (Tanfloc).
- // Reducing the load of suspended solids entering the wastewater treatment system, reducing the potential of methane emission to the atmosphere by sludge degradation in the ponds.
- // Assess the use of the sludges and solid streams to produce biogas.
- // Recover N and P from the polishing ponds using zeolites and coagulation.

Benefit for Industry

The high load of nutrients in the wastewater has been historically a challenge for the meat industry. The main paradigm shift in the past few years concerning anaerobic digestion (AD) is that the technology is no longer seen as a “waste treatment” technology. Instead it is seen as a fundamental enabler of the envisaged circular economy through resource recovery, including energy, safe water and nutrients, from valuable by-products from industries, municipalities and agro-industrial settings. AD gives a “second-life” to materials that would otherwise be considered as waste, i.e. giving them value when they would have had none. The result of using this previously unwanted waste /wastewater provides a source of renewable energy in the form of biogas and organic fertiliser made from a veritable non-fossil-fuelled production method. In order to allow anaerobic digestion to meet its full potential, we must have a process which encourages the redirection from waste to landfill to waste to re-use. Resource recovery, and circular economy approach are common practises in Europe (Tessele and van Lier, 2020), and the Australian meat Industry is heading towards the same direction. More conscious consumers, demanding green practices, and also board executives and financiers, wanting so see proactivity in these areas. By leading by example, V&V could influence their counterparties in the meat industry to aim for more sustainable operations, improving the image of meat consumption amongst more environmentally conscious consumers. Also, recovering nutrients and biogas will bring source of income and decrease the carbon footprint of the operations, in line with global trends in the food processing industry. That can unfold into improved branding of meat products, and increased aggregated value both in local and international markets. By adopting a circular economy framework, the environmental impacts can be significantly reduced, and resources can be recovered.

