

# SNAPSHOT

## OIL AND GREASE VALUE ASSESSMENT TOOL

Project Report Reference: 2018-1023

Date: 1 August 2018

### Project Description

Oil and grease (O&G) in meat processing wastewater has long been considered a difficult contaminant that must be separated in the primary wastewater treatment system, usually using a Dissolved Air Flotation (DAF) system, and trucked off-site to landfill and/or treated in open anaerobic ponds. In recent years, there has been growing interest by processors in resource recovery or reuse, particularly with regards to the O&G. There have been a number of options available to processors, including the following:

- Rendering of the recovered O&G into second grade-tallow (low and high temperature rendering).
- Processing of the DAF float to second grade-tallow using a tricanter system.
- Anaerobic digestion of the O&G into biogas using a Covered Anaerobic Lagoon (or similar).
- Burning DAF float rich in O&G with paunch in boilers. (This option was excluded from the calculator).

As the most suitable option for a particular processor is highly depended on site-specific variables, there is no one definitive option that is the best. For this reason, a calculator has been developed in Microsoft Excel for use by Australian meat processors through this project.

### Project Content

The calculator investigates the beneficial use of O&G within a facility to produce additional revenue by conversion into a saleable product, or reduced expenditure on fossil fuels via electricity, steam or hot water generation.

The calculator enables processors to consider the available options and assess decisions regarding the capture and processing of the O&G in their wastewater. The calculator has been designed with functionality to allow processors to input site-specific variables, which greatly impact the outputs. It generates an

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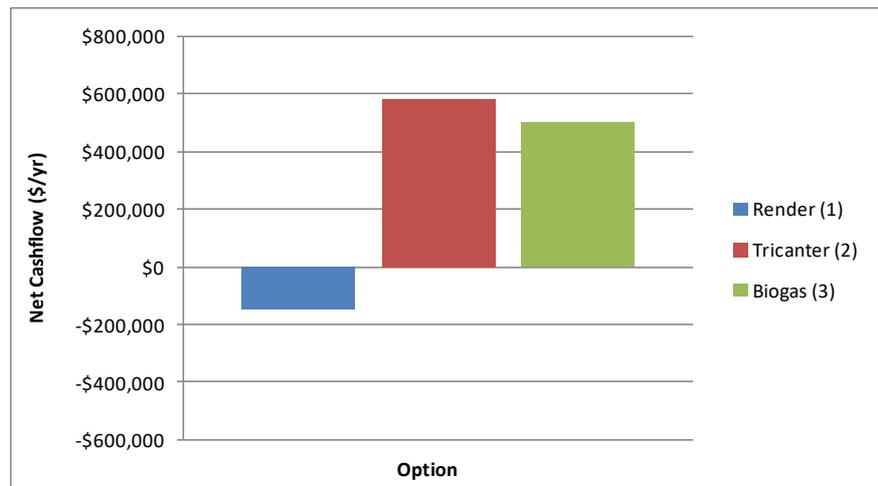
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estimate of revenue/savings as well as costs for each option, on an annualised basis. To help ensure that the calculator is not simply a GIGO (Garbage In, Garbage Out), typical ranges of values have been provided to guide the appropriate selection of input information.

Note that capital and maintenance costs are not included in the calculator, since these will vary significantly from site to site and depend on many factors not easily included in a calculator. However, they can be readily obtained from vendors, or from in-house knowledge and combined with the outcomes of the calculator to inform a feasibility analysis.

Some simple sensitivity analyses were performed using the calculator. These reveal the surprising sensitivity of the outcomes to site-specific issues. Wastewater flow and composition, the type of fuel used for steam generation and its cost, solids disposal costs and spare CAL capacity are some of the factors that have a large impact on the calculator outcomes.

The graph below is an example of a calculator output for a particular processor.



For this processor, the calculator is suggesting that rendering of the O&G is not likely to be cost effective. However, the production of tallow through the use of a tricanter or the generation of biogas via anaerobic digestion is likely to yield positive cashflow.

However, there are a number of critical assumptions embedded in the calculator (listed on a separate sheet) that the user of the calculator must

carefully consider before evaluating the applicability of the calculator outcomes. Some of these assumptions include:

- Capital costs have not been considered as part of this analysis. It is assumed that the processor already owns the necessary equipment. If they do not, they can use the outputs from this calculator in an additional time-step CBA which considers capital equipment costs.
- Costs associated with maintenance of equipment have not been considered.
- It is assumed that the processor has spare capacity in their rendering system or wastewater system to handle the additional loading from the DAF float O&G.

It is recommended that this calculator be taken as a guide and used in conjunction with professional advice.

#### **Project Outcome**

The calculator generated from this project is able to compare three options for processing O&G recovered from DAF float into useful product. A site has the ability to customize the calculator to its specific circumstances and provide a comparison of the relative benefits of the three options. A sensitivity analysis can be readily performed with the impact easily seen graphically in the summary sheet.

#### **Benefit for Industry**

With this calculator, processors have the ability to examine the sensitivity and feasibility of the various options for processing O&G with respect to a large range of site-specific variables for their facility, making it a powerful tool for informing future decisions.

[Download the tool here](#)

