TAURANGA WASTEWATER - ENERGY AND CARBON FOOTPRINTNG

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ABSTRACT

Council wastewater treatment infrastructure tends to be developed over many years, with guidance for future development developed through a master planning process. While the main driver for future development is typically population growth and discharge treatment quality, it is important to consider energy consumption as part of this process. Internationally, many water and wastewater utilities have adopted goals of “energy neutral” or “nett energy positive” for their facilities in order to reduce operating costs and be more sustainable. In New Zealand, Watercare has announced an ambitious target to see its two major wastewater treatment plants become electricity neutral by 2025, and other Councils are likely to follow.

Considering the energy production and consumption of existing assets and future developments facilitates decisions which allow for an ongoing improvement in energy consumption for the facilities over time. This can also be a first step towards evaluating the carbon footprint of wastewater treatment options. This is particularly relevant with the New Zealand Government currently developing a Carbon Zero Bill which may have implications for wastewater treatment operations.

This paper will discuss how an energy and carbon study can assist wastewater asset owners and their engineering advisors in identifying the impacts of upgrade and expansion actions on the energy consumption and carbon footprint of wastewater assets. The outcomes of such a study can also assist in maintaining or improving energy efficiency over time through the design of new assets and the modification or replacement of existing assets.

A recent study carried out by CH2M Beca for Tauranga City Council’s two wastewater treatment plants (Chapel Street and Te Maunga) will be used as a case study for this discussion. The study, which was co-funded by the Energy Efficiency and Conservation Agency (EECA), identified the baseline energy use and carbon emissions of the existing facilities, developed a measurement process for undertaking annual reviews, and identified significant potential annual energy cost savings. The study’s final output is a pathway for the incremental improvement in net energy consumption and carbon emissions reduction for the TCC wastewater treatment infrastructure over time.

KEYWORDS

Wastewater plants, energy use, energy conservation, carbon footprint, carbon emissions