5 MINUTE GUIDE

Understanding water, sewage and trade waste bills

This 5 Minute Guide examines water, sewage and trade waste bills and discusses how this important information can be used to assist in developing water savings initiatives. By understanding water bills and making use of this information, improvements in water efficiency and reductions in the cost of water can be made across the company.

So often the water bill is sent straight to the accounts department where it is paid and then filed. It is important that key people in the company know how to read the water, sewage and trade waste bills as they indicate a company's efficiency or inefficiency, as well as providing baselines for targets, monitoring and improvements. It is a lost opportunity to not use the collated valuable information provided in these bills.

Water supply

Historically, water, sewerage and trade waste costs have been ignored due to the relatively low costs for supply and disposal. However, with drought, climate change and community concern about 'water wasters', many companies have become increasingly aware of its scarcity and value, going beyond the payback price of water to implement water savings initiatives. As a part of this, a growing number of companies monitor water use and calculate productivity on volume used per unit of product manufactured.

Reviewing water use can assist in **identifying times where water is being wasted** or **where leaks may be present**

The following case study illustrates the value of looking at water bills.

Case Study

Company Q was receiving a water audit on their site. They had advised that their estimated water use was 1.3ML/yr, and supplied the consultant with two years of water bills. In the past, the accounts department had paid the water bills but never shared the information on volumes with the operations team. In fact, their water bills showed their water use was more than 4 times their estimate, at 6.6ML/yr on average (and their sewage and trade waste costs were also higher).

Such a change could be due to increases in production, leaks or inefficient equipment and can result in a lot of good water wasted. Steps to rectifying wasteful practices can only be taken when all the information is on hand.

Reviewing water bills

Reviewing water use can assist is identifying times where water is being wasted or where leaks may be present. Comparisons can also be made with industry best practice and data used to support the evaluation of potential water saving measures. ➲

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Here are a few steps to help analyse water use from bills:

Gather water bills for the past 2-3 years, spreadsheet and/or graph the volumes used for each bill (can be done with sewage and trade waste)

1. Note the period in which the bill applies, including the number of days over which the bill is calculated.
2. Use this information to calculate water use per day, week or month in a number that is most useful, e.g. kL/day, L/s or ML/month.
3. Once daily water use is calculated (trade waste and sewage), graph the trends over the past years. It is important to note times where production was significantly different to normal, e.g. shutdowns or new product lines being started up.
4. Also note seasonal variations that may be appropriate, e.g. greater water use during summer due to higher cooling tower demands.
5. Analyse the data and see if there are any anomalies or unusual water trends that may be a result of a leak, malfunctioning equipment or other.

More detailed information on setting baselines can be found in the 5 Minute Guide to Establishing a water baseline and measuring success.

Sewage

Sewage is the wastewater generated from domestic facilities and amenities onsite. This does not include wastewater flows from trade waste which is charged separately in accordance with the company's trade waste agreement (see Trade Waste opposite).

Sewage is generally unmetered due to the complexity in doing this and an assumption is made of the volume discharged. Generally this figure can be 70-90% of water use (which is metered). This assumption is applicable to residential flows, but for many companies water ends up in the final product or lost via evaporation and very little waste water ends up as sewage and any waste water that is discharged falls under the trade waste agreement. The result is inaccurate sewage bills.

Local water authorities can provide temporary meters to more accurately assess usage, but this will likely come at a fee so weigh up the cost of the metering and the saving. Also have a talk to the local water authority if there are concerns with the current sewage volumes being billed.

Fig.1

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Fig.2 Wastewater treatment plant

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Trade Waste

Trade waste is the wastewater discharged from the processes onsite, not contributed by staff amenities. Trade waste charges include fees based on the total volume and the various pollutants present. The fees charged for each pollutant are set by the water authority and can differ across the state; however in Victoria changes are currently underway with a new pricing and agreement framework from the Essential Services Commission.

There is now a growing recognition that trade waste can be an indicator of an efficient or inefficient company. This can be reflected in the 'pollutants' and/or the volume.

'Pollutants' such as minerals, complex chemicals and particles in the trade waste stream are valuable and time consuming to produce, and could be retrieved and put back into product, or even sold, rather than disposed as a costly 'waste' to the sewer.

Likewise, improving water efficiency reduces water use. This can have a flow on effect, e.g. a reduction in the volume of water needing to be treated for the cooling towers, and subsequently the amount of treatment chemicals making its way to trade waste will be reduced. Further, reducing water use and trade waste volume can also save energy (hence reduce carbon emissions) and costs for pumping and storage.

Understanding of water, sewage and trade waste bills can be a window into the efficiency of the company.

Fig.3 Wastewater drain

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A typical trade waste fee is detailed in Table 1 below. Note that pollutants and charges can vary between water authorities.

Table 1. Example Trade Waste fee calculation

Description	Mean Concentration mg/L	$/kg/1000	$/kL	Volume kL	Total $
Total Nitrogen	75	1.2655	0.0949125	2771	$263.00
Total Dissolved Solids	4568	0.0130	0.059384	2771	$164.55
Suspended solids	640	0.3555	0.22752	2771	$630.46
Biochemical Oxygen Demand	1110	0.6576	0.729936	2771	$2022.65
Trade Waste Volume	—	—	0.656700	2771	$1819.72
Total – Trade Waste Volume Charges					$4900.38

If this company took action to reduce trade waste volume by 25% by reusing a clean water stream from within the plant (e.g. not contributing to any of the contaminant loads), then resulting trade waste bill might change to this overleaf.

Table 2. Reduced trade waste volume fee calculation

Description	Mean Concentration mg/L	$/kg/1000	$/kL	Volume kL	Total $
Total Nitrogen	100	1.2655	0.0949125	2078.25	$263.00
Total Dissolved Solids	6091	0.0130	0.059384	2078.25	$164.55
Suspended solids	853	0.3555	0.22752	2078.25	$630.46
Biochemical Oxygen Demand	1480	0.6576	0.729936	2078.25	$2022.65
Trade Waste Volume	—	—	0.656700	2078.25	$1364.79
Total – Trade Waste Volume Charges					$4445.45

Here the volume of trade waste falls, due to the reduced water volume being discharged, while the contaminant load is unchanged and therefore the associated charges remain constant. Overall, the cost for trade waste volume alone is reduced and represents a cost savings of around 10% per billing period. This would result in a similar reduction in water use and the potable water component of the bill.

Monitoring the concentrations of each pollutant can be a very useful step in identifying changes in processes, equipment operation or malfunction and water use – often things that go unseen.

Another vital benefit to this closer scrutiny is that many companies are charged on fixed pollutant loads, assumed or calculated every year. However, if processes vary over the year trade waste bills and charges may not reflect reality. Independent tests of the trade waste quality can confirm the appropriate pollutant loads and charges, and assist in negotiations with the local water authority.

5 MINUTE GUIDE SERIES

There are 9 titles in the 5 Minute Guide series. See also:

- How to improve boilers and steam efficiencies
- The new frontiers in water efficiency and conservation
- Establishing a water baseline and measuring success
- Matching water and purpose
- Top 10 Water Saving Actions
- Rainwater Harvesting
- Reducing your trade waste impact
- How to reduce the water use of Cooling Towers and Chillers

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