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FACTSHEET

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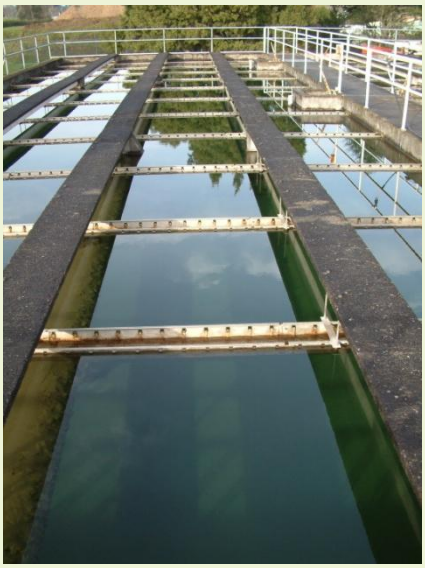
Factsheet: WASTEWATER TREATMENT

For online information on Hamilton's wastewater treatment system view Wastewater.

Wastewater is the liquid that drains from showers, baths, sinks, washing machines, toilets and commercial/industrial premises. So, where does all of this wastewater go after it disappears down the drain?

The wastewater is carried through a network of pipes and pump stations to the Hamilton City Council Wastewater Treatment Plant located in Pukete Road, where it is treated to a high standard prior to being discharged into the Waikato River. An average of 50 million litres of wastewater is treated daily.



Because this water is now contaminated, it is called wastewater or sewage. Wastewater consists of 99.9% water and less than 0.1% waste solids. These solids include dissolved detergents, chemicals, food scraps, dirt, oil, grease, human waste, sand and other small pieces of rubbish. It also includes bacteria and viruses that can make people ill.

The wastewater undergoes a complex and costly three stage treatment process, resulting in water clean enough to return into the Waikato River.

THE TREATMENT PROCESS

The first stage of treatment (primary) removes large objects like rags, food scraps, twigs and small heavy particles like sand and gravel. This material is taken to landfill.

The wastewater flows to large primary sedimentation tanks. Heavy solids, scum and grease are separated from the wastewater and pumped into large heated tanks called digesters. The naturally occurring bacteria in this sludge help to break down some of the solids. This digested 'sludge' becomes less smelly and many disease causing organisms are destroyed. The sludge is then dewatered and taken to landfill. The methane produced in the digestion process is used to generate energy to power.

The remaining wastewater (primary effluent) flows to aeration tanks for secondary treatment. This process removes most of the nutrient nitrogen found in wastewater. Excess nitrogen in the river can stimulate the growth of nuisance plants and algae, which leads to reduced water quality. The wastewater treatment plant removes most of the nitrogen from effluent, reducing the amount of nitrogen entering the river.

The activated sludge is then settled out in large open-air tanks called clarifiers and is returned to the aeration tanks to re-populate them with bacteria. The clear 'secondary effluent' flows on for tertiary treatment. The tertiary treatment stage is the final step in cleansing Hamilton city's wastewater. The effluent is exposed to high doses of ultraviolet radiation to disinfect the water and to stop the spread of diseases. The high quality final effluent, a clear liquid low in solids and bacteria, is discharged back into the Waikato River.

SIMPLE ACTIONS YOU CAN TAKE TO REDUCE WASTEWATER

- Avoid excessive use of detergents and cleaning products.
- Oil-based paints and solvents used for cleaning painting equipment must not go down the stormwater or the wastewater system. Materials such as solvents, oils, oil-based paints, paint thinners and herbicides can block pumps and damage pipes both within and outside of the treatment plant. They can also kill the bacteria and other organisms required to treat wastewater, or contain toxic chemicals which cannot be removed by treatment processes. (Keep it clean).
- Make sure the downpipes from your roof and other outside drains are connected to the stormwater system, not the wastewater network. During heavy rain, stormwater that gets into your gully trap (wastewater drain) can flood the sewers and cause untreated wastewater to flow onto properties and into waterways.
- When purchasing appliances, ask the sales staff how much water the appliance uses. A water efficient appliance is cheaper to run and places less volume into the wastewater system.
- Take engine oil to the refuse transfer station recycling shop, and let paint harden and dispose of it in your rubbish.
- Repair leaking taps and fittings.

WASTEWATER TREATMENT

Bathroom

- Never tip unwanted drugs or antibiotics down sinks or toilets as they can kill the naturally occurring bacteria the treatment plant uses to clean wastewater. Return medicines to your chemist.
- Do not leave the hand basin tap running while you brush your teeth or shave.
- When wanting hot water, turn the hot tap on full to get the hot water to come through faster.
- Take shorter showers. If you want to soak, a partially filled bath uses less water than a long duration shower.
- If the kids spend a long time in the shower, get them a waterproof timer set to 5 minutes.
- Single lever mixer taps save water by giving much better control.
- Aerators fitted to taps reduce volumes by mixing the water with air.
- Test your shower flow. If your shower uses more than 10 litres per minute, you should consider installing a low flow shower head or restrictor available at your local plumbing or hardware store.

Toilet

- Do not use the toilet as a rubbish bin. All the solids that go into the toilet have to come out again at the wastewater treatment plant. Keep a small waste bin in the bathroom for sanitary waste and cotton buds, etc.
- Do not flush thoughtlessly or needlessly. Use the reduced flush facility if present.
- With a single flush cistern, place a brick or 1 litre plastic milk bottle filled with water in the cistern to reduce the amount of water used for each flush. With a ballcock cistern, bending the ballcock arm down lowers the filling level.

To find out whether your toilet is leaking water, try this test:
Add a few drops of food colouring in the toilet cistern. If the colour appears in the toilet bowl without flushing, the cistern components will require repair.

Laundry

- Use your washing machine for full loads only.
- Changing from a 2.5 star water efficiency labeled washing machine to a 4 star machine will provide a 39% saving in water used to wash clothes. If you are buying a new washing machine, consider buying a water saving frontload washer.

Kitchen

- Make sure your dishwasher is full before starting it.
- Rinse or wash vegetables in a plugged sink or bowl.
- Store drinking water in the fridge instead of running the tap until the water is cold.
- Single lever mixer taps save water by giving much better control.
- Aerators fitted to taps reduce volumes by mixing the water with air.

THINGS TO CONSIDER WHEN RENOVATING OR BUILDING

Plan your plumbing system to use water efficiently. For example the location of the hot water system is important. By minimising the distance between the source and the point of use, less water and time is wasted waiting for the water to reach the desired temperature. The efficient use of hot water will not only reduce water consumption but will have a corresponding reduction in your energy cost to heat the water.

Other considerations should include:

- Install dual flush toilets. This allows you to use only as much water as needed. Some older toilets only have full flush systems which can use 11 litres per flush. New toilets use as little as 3.5 litres! The effect of changing from full flush 11 litres to a water saving toilet of 3.5 litres represents a 68% saving of water.
- Other options include cisterns which fill through a spout where you wash your hands, giving the water coming into the toilet cistern a second use.
- Buy new fixtures with built-in flow restricting devices rather than buying a standard fixture and adding a flow restrictor.
- Low pressure systems are cheaper and use less water.
- Specify flow rates and maximum levels of fluctuation for fixtures.
- Appliance and fittings Water Efficiency Labeling. Launched in April 2010, the Water efficiency Labeling Scheme requires all products in New Zealand to display their water efficiency rating by April 2011. For more information visit Labeling requirements and process [Ministry for the Environment]

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Hamilton City Council
Te kaunihera o Kirikiriroa