The water's journey through Kungsängen's wastewater treatment plant.

Approximately 50 million litres of wastewater is treated at Kungsängen WTW every day. In addition to Kungsängen WTW, Vallda, there are also four smaller treatment plants in Skutara, Kulla, Kricksta and Dimska. These two set meet- line will be shut down in the next few years. The wastewater from these two will be pumped to Kungsängen instead.

Kungsängen WTW was put into operation in 1988 and has been expanded in several stages. In 1989, the plant was equipped with a combined sludge treatment plant, which was put into operation in 1992. In 1996, an activated sludge plant was added and in 2002, chemical sludge precipitation started to be used for phosphorus removal. A new pumping station was built for the incoming wastewater in order to reduce odor emissions from the plant. The air from all of this built-in components of the plant is filtered before it is released into the air. In 2003, the biological treatment stage was updated and expanded with the addition of nitrogen reduction. This has led to reduced emissions of nitrous oxide to Lake Mälaren.

**Wastewater - a resource**

District heating, district cooling, soil improvement agents and desludgers are some examples of what can be produced from treated wastewater. The wastewater generates a large annual revenue in the form of energy benefits as well as or as fuel for buses and cars. In Vallda, there are 2 centrally located desludgers that are owned by Växtkraft.

The sludge that is left over after treatment contains many nutrients that can be used as fertilizer. After the sludge has been treated, it can be used as a soil improvement agent in energy forestry in the production of compost and for landfill protection. The required conditions for this to work are that it does not contain too high a level of heavy metals and any poisonous organic contaminants. Before the treated wastewater reaches Lake Mälaren again, it travels through a landscape, producing district heating and cooling.

**Key ratios**

- Reduction of pollution: 95% (Phosphorus), 92% (BOD), 85% (Nitrogen)
- Nitrogen: 70-75% /15 mg/l guideline value
- Nitrogen and phosphorus are removed through the biological treatment processes that take place in the sludge handling section.
- Sludge handling
  - Strength: Capacity: 40-45 kg/m³
  - The sludge is transported from the source to the digesters.
- Heat pump (District heating/District cooling)
  - The heat pump produces heating and cooling from the treated wastewater.
- Odour reduction filter
  - The ventilating air from the covered buildings where the wastewater and sludge are treated goes to a biological odour reduction filter.

**Odour reduction filter**

The ventilating air from the covered buildings where the wastewater and sludge are treated goes to a biological odour reduction filter. In case of a shutdown, the biogas produced is incinerated in the torch at Kungsängsverket.

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On average, 2.2 million litres of wastewater flow into Kungsängsängen WWTP every hour from the inhabitants of Västerås.

The water is pumped to a building where a process of preliminary treatment occurs. Large screens catch objects, such as plastic bags, sanitary towels, cotton buds, collections of hair etc, which should never have been flushed away with the wastewater.

The water is carried on and put into deep basins - the sand trap. Air streams keep the water in motion, while the sand is sucked up from the bottom.

Next, the water flows to pre-sedimentation basins. Sludge gets collected up on the bottom and taken to a digestion chamber. On the way, it passes through screens, which catch hair, among other things.

The biological treatment area is known as the heart of the plant. Organic material and nitrogen is separated here by bacteria - microorganisms.

The post-sedimentation phase is the water’s last step before it is sent out into Lake Mälaren.

On its way out towards Lake Mälaren, the treated water passes one last control station, which continuously checks for phosphorus and nitrogen, among other things.

Not only is the treated water returned to the cycle after the journey through the treatment plant, but the sludge is used on farmland, in topsoil production and as a material for landfill cover, for example.

We obtain our energy, our heat and our water from the nature. Protecting Mälaren Valley and our common habitat is therefore one of our most obvious missions.

We have over 100 years of experience in providing people with a more comfortable way of life. This is something we want to build on, through innovative technology and sustainable solutions. We stand firmly on our secure foundations, are straightforward and can be trusted by our customers.