

Birkerød Water works – short presentation



General information

Birkerød Waterworks (BWW) is a consumer-owned private waterworks serving ca. 6000 households with 1.1 Mio. m³ per year. Our mission is:

- We deliver fresh, safe, and reliable drinking water from clean groundwater using simple and sustainable water treatment without chlorination.
- We deliver drinking water in which consumers have confidence.
- We work with authorities and politicians to prevent groundwater contamination.

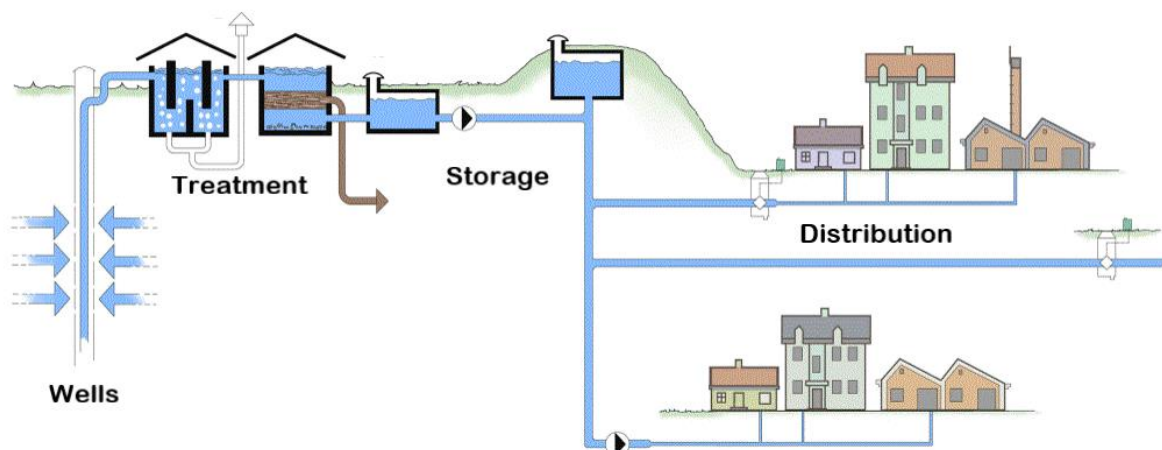
Key figures for BWW are shown in the Table below.

- Production: 1,1 Mio. m³/år.
- Staff: 7 persons
- Board of directors: 5 persons
- Water production costs: 9 DKK/m³
- Costs are 15% of the total: water, wastewater, and taxes
- Water tower: 2000 m³
- Clean water tank: 1250 m³
- Water loss (leaks): 8%
- Energy consumption: 0,41 KWh/m³.
- 9 wells in the chalk at a depth of 60-90 m
- Water hardness: 19 °dH

Once a year, there is a general assembly, where the board of directors presents a status report on the operation and the economy, and new board members are elected. The direction of the management is set by a strategic plan and an action plan updated yearly by the board of directors. The Danish Water Regulatory Authority set our economic frame. The consumers are updated with information through a user-friendly home page, two yearly newsletters, and the general assembly.

The water works construction

The water supply system is shown schematically in the Figure below. It illustrates the Danish concept of sustainable and straightforward groundwater treatment by aeration/stripping and biofiltration to drinking water quality. Before distributing the treated water to the consumers, it is treated by UV as an additional hygienic barrier. The filter backwash water is reused by membrane filtration.

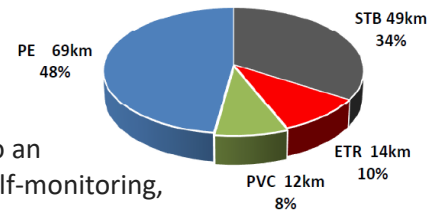


Length of the distribution

The length of the distribution system in BWV is 144 km. Initially, the pipes were made of cast iron 49 km, later of asbestos cement 14 km and PVC 12 km, but today all new pipes are made of PE 49 km. The system contains 14 regional flowmeters. In addition, electronic flowmeters for all consumers are being installed. The electronic flowmeters have built-in acoustic sensors that can detect leaks.

Water quality monitoring and water safety plans

An independent external laboratory checks the groundwater and the drinking water quality from BWV and within the distribution system to an extent far exceeding the EU Water directive. In addition, BWV does self-monitoring, for example, microbial control after pipe repair and installation of new pipes. BWV has a small laboratory with equipment for fast testing for Coliforms, E. Coli, bacterial activity, and a range of standard water quality parameters.



Many potential pollution sources exist in the water supply system. A “classical” one, however, not in our system, has been cracks in the subsurface concrete clean water tank leading to bacterial contamination. As a result, BWV has implemented the concept of Water Safety Plans (WSP), also called HACCP, to prevent contamination from all sources from the wells to the consumers. In addition, cybersecurity in BWV is a new and vital aspect of the operation to secure consumers.

Groundwater resources and pollution sources

The groundwater resources are below the central part of Birkerød city and below areas with nature and agriculture in the neighboring municipality Allerød.

Potential groundwater pollution sources in the Birkerød city area are chemical waste sites (solvents), gardens/parks (pesticides), sewage pipes with leaks (chemicals), deep thermal wells (chemicals), etc. In addition, the agricultural areas may contribute to pesticides.

Birkerød groundwater park

Birkerød Water Supply has introduced a new concept for groundwater protection for future generations called *Ground Water Parks (GWP)*. Geographically, a GWP is defined by the water abstraction (catchment) area. No use or release of groundwater-threatening chemicals is allowed within the park area, and waste sites are removed. In addition, areas within the GWPs may be used for ecological farming and nature development, including new forests and recreational areas for the population.

Prevention of pollution by GWP is sustainable and cheaper than advanced water treatment once groundwater pollution has happened. However, Birkerød GWP is not yet implemented, but BWV is trying to convince authorities and politicians to implement the concept.



Birkerød Vandforsyning

