



Sydvatten AB – Southern Sweden Water Supply



# Sydvatten – collaborating for public welfare

Sydvatten AB is a municipally owned company producing drinking water for 1 million inhabitants in the region of Skåne. The Company was founded in 1966 and is today one of Sweden’s largest producers of drinking water.

The mission of the company is to process and distribute drinking water of a high and consistent quality. Sydvatten supplies drinking water to 17 joint owner municipalities in Skåne.

### Sydvatten agreements

Sydvatten is managed by a board made up of representatives of the 17 municipalities of Bjuv, Burlöv, Båstad, Eslöv, Helsingborg, Höganäs, Kävlinge, Landskrona, Lomma, Lund, Malmö, Skurup, Staffanstorp, Svalöv, Svedala, Vellinge and Ängelholm. The company’s terms and conditions are regulated by a consortium agreement. Its regulations stated in its Corporation Charter.

As a corporation solely owned by the municipalities, Sydvatten believes that working together as an organisation for the benefit of common public welfare, is fundamental. The corporation’s aim is to promote and benefit the growth of the public water sector and to contribute towards the further-development of the municipalities involved. The aim is not to maximise profit but rather to ultimately benefit public welfare.

Sydvatten works constantly to ensure the supply of drinking water to its municipalities. Working with climate analysis and raw water strategy for Skåne are important future issues for Sydvatten in order to secure the municipalities’ water supplies, from a long-term and sustainable perspective. Sydvatten works to establish water protection areas in order to increase the protection of raw water sources. The establishing of redundancy of both raw water and drinking water in the whole of Sydvatten’s supply system, is an ongoing process. The two water treatment plants Ringsjö and Vomb are currently provided water from Lake Bolmen

and Lake Vombsjön respectively. Ringsjö water treatment plant has a reserve raw water source in Lake Ringsjön. In order to reach a sustainable supply of water in the future, it has been decided that water from Lake Bolmen shall be utilised at the Vomb water treatment plant; a decision of great strategic importance.

### Investing in development

Interaction in a regional company creates prerequisites for long-term commitment and strategic development.

Sydvatten has taken the initiative to create a research company, Sweden Water Research, in order to meet future demands. Sweden Water Research combines expertise from the R&D departments from Sydvatten and the two regional water distributors NSVA and VA SYD. Combined R&D enable the management of skills support, long-term operational development and quality objectives. Sweden Water Research, among many other things, ensure the prospect of sustainable and emission-free drinking-water production. Its R&D and innovation entities aim to expand in combination with other stakeholders, but also to actively implement its development plans within its own organisation. The research is integrated with national and international stakeholders, organisations and associations.

Sydvatten is a member of the European Benchmarking Co-operation, a forum where water and wastewater companies annually report relevant key figures regarding parameters relating to the industry. Members meet annually to discuss results, share experiences and get updates on current topics within water and wastewater issues.

The regulatory document for Sydvatten AB states that the company shall further enhance public welfare by promoting communication about tap water and by emphasising the value and high quality of Swedish tap water. As a result the scale and nature of the Drink Tap Water project that Sydvatten is conducting, is unparalleled in Sweden. Drink Tap Water is a project aimed at pupils aged between 12 and 16.



Think H<sub>2</sub>O! results from collaboration with the University of Lund and aims to promote knowledge of the value of water among young people, as well as increase young people’s awareness, knowledge and understanding of the challenges surrounding water. With this project Sydvatten also aims to ensure competence in the water industry for the future.

Think H<sub>2</sub>O! is a course about water and water issues for teachers and their upper secondary school students aged between 17–19. Sydvatten offers a scholarship for a two-day stay at Lake Bolmen with a mix of course activities – workshops, lectures, role-play, experiments and outdoor cooking, all activities focus on water. Think H<sub>2</sub>O! started up in May 2014 and educates 900 students a year.

### The rights to use the lake water

All drinking water produced by Sydvatten is taken from Lake Bolmen in Småland and Lake Vombsjön in Skåne. Should a problem arise regarding water supplies, it is possible for one of the water treatment plants to use water from a reserve supply from Lake Ringsjön in Skåne. The water-rights regulations for each respective lake determine the maximum quantity of water that may be drawn. The quantities drawn by Sydvatten are far below the specified limits.

### Two modern, top quality Water Works

Sydvatten owns and operates the Bolmen Tunnel (an 80 km long tunnel between Lake Bolmen and Äktaboden, see map), the Ringsjö and Vomb water treatment plants, as well as the water mains system for the distribution of drinking water.

### Our business concept

Sydvatten guarantees safe and high quality drinking water supplies to its owner municipalities and other municipalities.

By coordinating strategic perspectives, competence levels and financial resources, together with a strong emphasis on our responsibilities as owners and towards the inhabitants, we benefit the general greater public good.

### Production objectives

Sydvatten’s joint-owner municipalities and customers are to receive a reliable supply of consistently safe, high-quality drinking water, and should never need to be affected by unscheduled stoppages.

The water mains network is comprised to a large extent of dual pipes, this ensures a high level of delivery reliability.

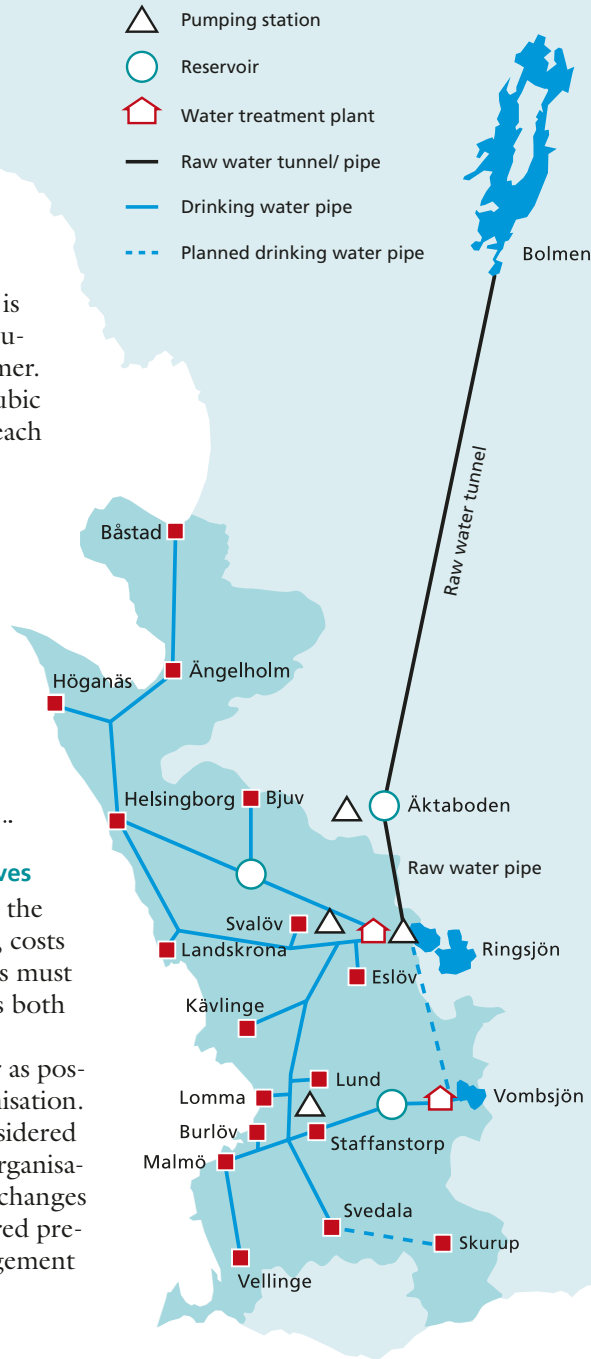
Water from the water treatment plants is supplied to connection points in each municipality. The municipality is then responsible for the distribution of water to the end customer.

Approximately 78 million cubic metres of water are produced each year – corresponding to about 2,500 litres per second. The drinking water fulfils all quality requirements by a very wide margin, thus ensuring Sydvatten can maintain a high level of safety for water delivery and accessibility.

### Economic and financial objectives

Based on the prerequisites and the level of quality of organisation, costs set for the owner municipalities must be calculated at a level which is both reasonable and substantiated.

Changes in costs must as far as possible be offset within the organisation. Cost adjustments must be considered as part of the running of the organisation and therefore justified by changes within the company or by altered prerequisites as regards the management of the organisation.



### Technical specifications

Water catchments km <sup>2</sup>	Catchment area km <sup>2</sup>	Lake surface	Water drawing rights - litres/sec
Lake Bolmen	1,650	184	6,000
Lake Ringsjön	400	41	2,000
Lake Vombsjön	450	12	1,500

### Raw water distribution system

Bolmen Tunnel: length 80 km, area 9 m<sup>2</sup>  
Pipes: diameter 900–1400 mm, 60 km

Sydvatten has a total of 109 employees.

### Water purification

Plants	Processing	Capacity
Vomb	Artificial infiltration and water softening	1,800 litres/sec
Ringsjö	Chemical precipitation and slow sand filters	2,400 litres/sec

### Drinking water mains

Mains: diameter 800–1400 mm, 185 km  
Branch water mains: diameter 150–700 mm, 140 km

### Average price of water to the municipalities

4,43 SEK/m<sup>3</sup>, 0,39 EURO/m<sup>3</sup>

### Contact details

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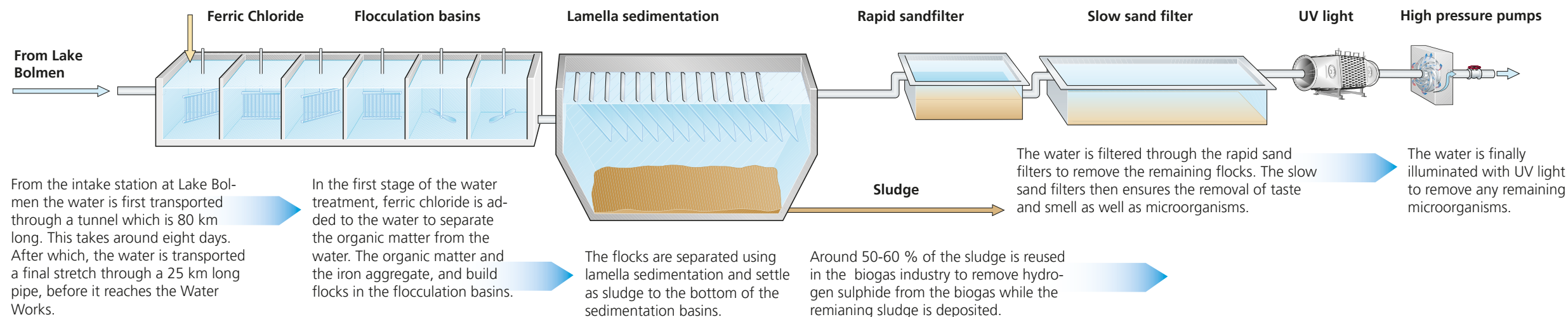
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Water of high quality is taken from Lake Bolmen more than 100 kilometers away from Ringsjö water treatment plant.

## This is how we produce drinking water at the **Ringsjö water treatment plant**



From the intake station at Lake Bolmen the water is first transported through a tunnel which is 80 km long. This takes around eight days. After which, the water is transported a final stretch through a 25 km long pipe, before it reaches the Water Works.

In the first stage of the water treatment, ferric chloride is added to the water to separate the organic matter from the water. The organic matter and the iron aggregate, and build flocks in the flocculation basins.

The flocks are separated using lamella sedimentation and settle as sludge to the bottom of the sedimentation basins.

Around 50-60 % of the sludge is reused in the biogas industry to remove hydrogen sulphide from the biogas while the remaining sludge is deposited.

The water is filtered through the rapid sand filters to remove the remaining flocks. The slow sand filters then ensures the removal of taste and smell as well as microorganisms.

The water is finally illuminated with UV light to remove any remaining microorganisms.

### **1,500 litres per second**

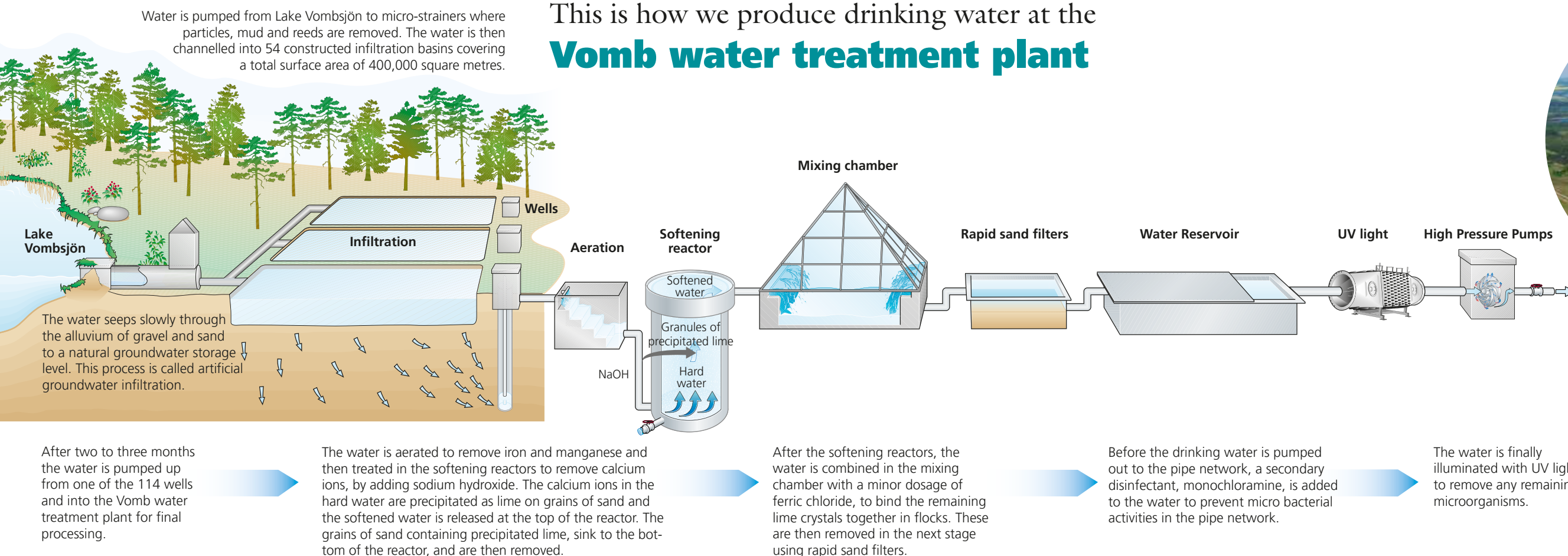
The Ringsjö water treatment plant produces on average 1,500 litres drinking water per second. The drinking water is pumped to several cities in Skåne such as Bjur, Eslöv, Helsingborg, Höganäs, Kävlinge, Landskrona, Lomma, Lund, Malmö, Staffanstorp and Svalöv.

In Sydsvattens laboratories continuous tests are carried out for analyses of water according to Sweden's National Food Administration norms for good drinking water. Furthermore regular water samples are taken for testing by independent, accredited laboratories.

Besides the process steps shown above the water at Ringsjö water treatment plant is also adjusted in pH and alkaline levels (using limewater and carbonic acid) a small amount of disinfecting agent is added, before the finalised drinking water is pumped out to households and industry.

Lake Bolmen water is very soft. This means it requires less washing powder and less detergent. Which is a bonus for the environment and one's budget.

## This is how we produce drinking water at the **Vomb water treatment plant**



After two to three months the water is pumped up from one of the 114 wells and into the Vomb water treatment plant for final processing.

The water is aerated to remove iron and manganese and then treated in the softening reactors to remove calcium ions, by adding sodium hydroxide. The calcium ions in the hard water are precipitated as lime on grains of sand and the softened water is released at the top of the reactor. The grains of sand containing precipitated lime, sink to the bottom of the reactor, and are then removed.

After the softening reactors, the water is combined in the mixing chamber with a minor dosage of ferric chloride, to bind the remaining lime crystals together in flocks. These are then removed in the next stage using rapid sand filters.

Before the drinking water is pumped out to the pipe network, a secondary disinfectant, monochloramine, is added to the water to prevent micro bacterial activities in the pipe network.

The water is finally illuminated with UV light to remove any remaining microorganisms.

### **1,100 litres per second**

The Vomb water treatment plant produces on average 1,100 litres drinking water per second. The drinking water is pumped to several cities in Skåne such as Burlöv, Lund, Eslöv, Malmö, Staffanstorp, Svedala and Vellinge.

In Sydsvattens laboratories continuous tests are carried out for analyses of water according to Sweden's National Food Administration norms for good drinking water. Furthermore regular water samples are taken for testing by independent, accredited laboratories.

Lime from the softening process is collected, sent for recycling and used as an additive to improve the water quality of lakes and forests.

The softening of the water makes it possible to use reduced amounts of washing powder and detergents. Furthermore limescale deposits are reduced in pipes and household appliances. The softening plant at the Vomb water treatment plant is Sweden's largest.