

# Recovery and utilisation of nutrients for low impact fertiliser



## Demonstration site fact sheet - Helsingborg

### Helsingborg: 'Oceanhamnen'



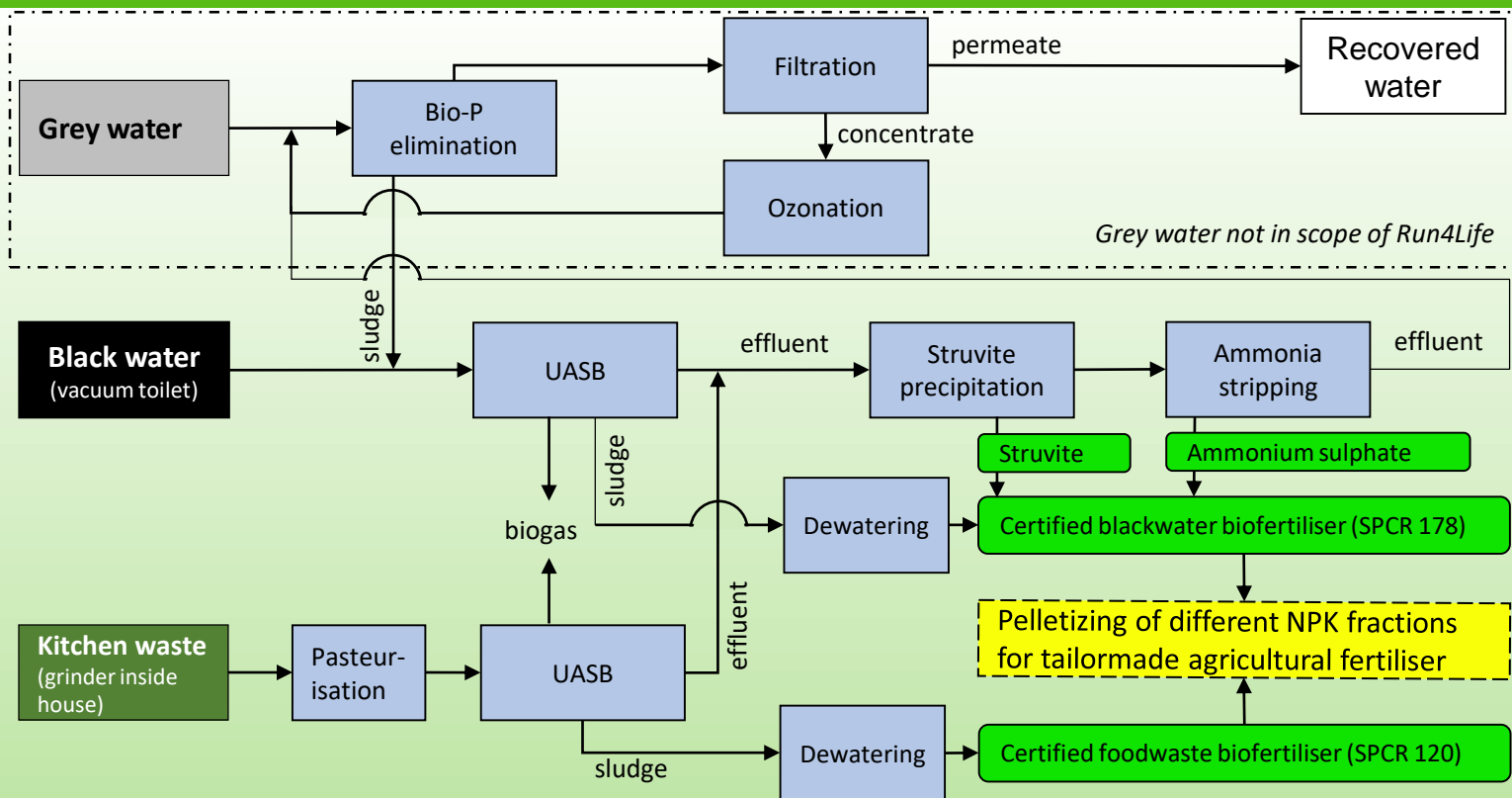
#### **'Three pipes out': optimal treatment and recovery with three flows**

Helsingborg recently launched a urban renewal project called H+ to link existing city districts with the city center and to modernize the city by 2035. The district 'Oceanhamnen' (The Ocean Harbour) is located in the H+ area and is currently being built to accommodate an innovative source separation system for around 320 apartments, amounting to 1800 people equivalents. The H+ treatment system is located at the existing Helsingborg sewage plant and managed by project partner NSVA. The goal of the separate waste collection system is optimal treatment and nutrient recovery of each waste stream; organic kitchen waste, black water (from toilets), and grey water (from bathroom and kitchen). The new residences and office buildings in the district will be equipped with vacuum toilets and kitchen grinders (mounted in the kitchen sink) to collect black water and organic food waste through two separate pipes. A third gravity sewer handles grey water. The new treatment plant is a recovery laboratory (Reco Lab) that takes care of the waste from the new sewage system and will be a meeting-place for research and development within the whole treatment chain. It will perform activities ranging from the collection and treatment of waste streams to the communication with the end-users. The Reco Lab is a development plant, testbed and showroom in one. Offering superb opportunities for visualization and education along with public communication that supports rising awareness amongst citizens for a sustainable sanitation system with three pipes.



This project has received funding from the European Union's Horizon 2020 research and innovation programme under grant agreement no 730285.

<https://run4life-project.eu>



## Tailor made fertiliser products for agriculture

Within the Run4Life project of Oceanhamnen, the kitchen waste (KW) and concentrated black water (BW) will be transported via a vacuum pressure system to separate UASB reactors for anaerobic treatment. The separated processing of BW and KW is implemented for optimised nutrient and biogas recovery. The produced biogas from the anaerobic digestion is connected and transported to the cities gas network.

The liquid effluents of both reactors will be mixed and employed for struvite precipitation and ammonia stripping in order to extract phosphorus (P) and nitrogen (N) that can be used in a wide range of fertiliser products for agricultural applications. P is recovered as struvite and N is recovered as ammonium sulphate. Struvite and/or ammonium sulphate will be mixed in different ratios with hygienised sludge from KW or BW digestion to get tailor made fertilisers. In Sweden, the use of fertiliser products originating from KW and BW is legally possible due to EU end-of-waste and national sludge certifications. The final effluent from the ammonia stripping will be polished, together with reject water from the dewatering, in order to remove excess nutrients and organic micro-pollutants.

### Key features of Helsingborg demo-site:

- ✓ Separate collection of GW, BW and KW in three pipes
- ✓ Production of tailor made fertiliser products from organic wastes
- ✓ EU end-of-waste and national sludge certifications make use of fertilizer from KW and BW possible
- ✓ Certification system increases economic value

