Holistic assessment of a secondary water supply for a new development in Copenhagen, Denmark - DTU Orbit (08/08/2016)

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Nordhavn, a former industrial harbour area is under development into an integrated part of Copenhagen City. All infrastructures will be updated to accommodate 40,000 inhabitants and 40,000 jobs in the future. Our project assesses the potential for establishing a secondary water supply to relieve the pressure on the primary and conventional groundwater based drinking water supply. Four alternative water resources for a secondary water supply have been considered: 1) polluted groundwater for use in toilets and laundry, 2) desalinated brackish water for use in toilets, laundry, and dishwashers, 3) desalinated brackish water for all uses including drinking water and 4) local reclamation of rain and grey water for use in toilets and laundry. The project has been conducted by multiple stakeholders, including the municipality, landowners, the water utility, consultants, technology providers and research institutions. The concepts have been evaluated for their technical feasibility, economy, health risks, and public acceptance. Also, the concepts' environmental sustainability has been assessed using lifecycle assessment and state-of-the-art freshwater use impact methods. The main outcome is both a holistic assessment method for use in alternative water supplies and an evaluation of the four suggested concepts for alternative water supply in Copenhagen.

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