De-Salination
Symbiotic water supply and landscape regeneration, Dublin, Ireland

Main author
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Project data
Context: Landscape, urban design and infrastructure
Client: Not applicable
Background: Research project

Summary and appraisal by the jury

The project's starting point is the ongoing water-supply crisis in the Irish capital of Dublin. New water sources are needed to support the city's growing population. Abandoned landfill sites in industrial South Dublin Bay are surrounded by nature reserves, walking trails, and two power plants. The project's main concept is to reuse the warmed saline water rejected from power plants in a mixed-use infrastructure for low-cost desalination. Its own waste product, warm brine, discharges to establish a sustainable world garden around the buildings by releasing a brine aerosol microclimate. The garden extends the local nature reserve and hosts a new walkway. Salt water voters is designed to prevent the timber building from burning if properly used. The same water source warms a public bath pool on the roof top via heat exchangers.

The jury was highly impressed by the young architect's ability to translate a complex set of technical parameters into a series of architectural interventions, all represented by means of beautiful drawings. The proposed desalination systems transformed into a poetic artefact in the landscape, a "machine à émouvoir" that performs its functions, while touching the senses.

Sustainability concept

Like many urban centers with growing populations and water demand, Dublin's water supply systems are operating beyond capacity and lack redundancy which often results in service disruptions. Predicted future increases in consumption mean this issue has to be addressed with new infrastructure.

Dublin's water consumption is currently 50 ML/day while 50% of daily warmed salt water is released back to sea from two power plants in Poolbeg, the South side of the bay area. A portion of this heated water can be converted to potable water via low-temperature thermal desalination. In a depressurized container, the 10–20°C temperature difference between warmed and cold water bodies is used to separate fresh water and condense potable water. This water source warms a public bath pool on the rooftop via heat exchangers.

The waste product of the desalination process, brine, is discharged off the top of the structure to set up an environment of salt water aerosol. Water washing down the side of the structure transforms the surrounding landscape into a landscape of salt marsh garden which extends the habit of the nature reserve of the area. In close proximity to the structure New Zealand species of mangroves are planted, while further away from the structure, as the environment cools, native species are planted.

Durability of the timber structure is insured by the preservative environment of brine wash and aerosol, and the selection of locally available water tolerant species: alder, larch, elm and Douglas fir. Flooded into the building is introduced with biodiversity in the bracing, the use of varied sets of species, to schedule maintenance. This build-up is expected to last, based on self-preserving salt graduation tower presidents, well over 100 years, highlighting the effectiveness of building with timber in salty and wet environments.

Further authors

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