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For dissemination

Integral design for water management and landscape in Essenvelt, Middelburg

Introduction: what is ELC, SCAPE and LLD?

Essenvelt in Middelburg, as part of European cooperation project SCAPE, has been designed according to the principles of Landscape Led Design (LLD).

LLD builds on the European Landscape Convention (ELC). ELC is a call to respect the landscape, to recognize it in legislation and policy, and to use the landscape, together with stakeholders, as a valuable resource for tomorrow's society.

One of the principles of ELC is cooperation between countries and regions to exchange knowledge of and experience with the landscape. SCAPE (Shaping Climate change Adaptive PlacEs) is one such collaboration between governments in Belgium, the United Kingdom and the Netherlands with the aim of analyzing the threats of climate change and sea-level rise in coastal landscapes and developing strategies for water and land management in those landscapes, applying LLD principles.

Battle against the water

The ancestors of the Zeelanders originally lived on the higher sand ridges and dune zones. The lower land of fertile salt marshes was regularly flooded by the sea. Starting in the early Middle Ages, the Zeelanders built dikes that were increasingly able to keep out the sea water. The salt marshes were reclaimed for agriculture by digging drainage canals. The dewatering system was further perfected with legally established and professional water management, which regulated the water level and protection from sea water with dikes, watering, sluices and pumping stations. Thus, over the centuries an almost entirely man-made landscape of polders, dikes, ditches, canals laced with roads and scattered villages and towns emerged. It is in this landscape that we designed the new Essenvelt neighbourhood.

Working and building together with water

There is a general realization that Zeeland's landscape and water management are intertwined and that man must handle both very carefully. For if they are neglected, water problems and flooding in town and country threaten. All Dutch people are entitled to elect the water management board through a democratic system and pay a separate tax to maintain water management. Landscape is recognized as an interest in its own right in spatial planning. Landscape and water are planned and managed integrally at the national, regional and local levels.

With climate change and sea level rise, it has become clear that fighting against water ultimately does not work. The awareness has emerged that we must and want to work together with the forces of nature, with water. We want to use the forces of nature to protect us from the sea, we want to retain fresh water - as a source of life for plants, animals and people, we want to preserve the natural balance in the landscape, for example, for the benefit of biodiversity.



Landscape policy and local research for Essenvelt

The design for the new Essenvelt neighbourhood is based on starting points and preconditions arising from higher policy frameworks and local research.

Higher policy frameworks related to water management and landscape are national laws and guidelines. In addition, there are plans for the province of Zeeland, for example, the 2012-2018 Zeeland Environment Plan. The Essenvelt zoning plan summarizes these higher policy frameworks.

On-site research concerned the local situation of relief, geology, soil and water management. This research showed that Essenvelt lies on a partially eroded and higher and sandy "creek ridge" next to wet and clayey lows. From geo-hydrological research, it becomes clear that the area is highly susceptible to saline seepage, that infiltration of fresh rainwater to deeper layers is prevented by

occluding clay layers in the subsoil, and that raising the area with sand is necessary to provide a workable foundation for a sustainable residential area.



New landscape linked to water management

The new landscape of Essenvelt is strongly linked to the old landscape; the characteristic creek ridges are reflected in the new neighbourhood. Various alternatives for the stormwater system were examined for feasibility after which the most appropriate for the local situation was chosen. The resulting differences in height will be used to allow the rainwater to flow superficially to the surface water. Thus, no rainwater sewer is constructed; the landscape regulates the drainage. This will also ensure that fresh rainwater infiltrates where possible and stays in the area for as long as possible. The water system is designed to be highly visible; people see the water daily and thus become aware of its presence and function. Housing developers and also residents have been informed on how water management works in their new neighbourhood and what contribution is expected from them (rainwater harvesting on roofs, in gardens, rain barrels or basins, management of banks, etc.). The expectation is that they will understand, recognize and appreciate the uniqueness of their neighbourhood and home as something of value.

The designed system has been discussed with the water authority, Scheldestromen Water Board and with the various sections within the municipality. In particular, the coordination of all measures surrounding the urban landscape and water management of Essenvelt has been intensively discussed.

Innovative elements in Essenvelt

None of the designed landscape and water management measures are unique, as in not having been implemented elsewhere before. However, the combination of measures is a step forward for new residential areas in wet clay areas. The solution to apply "new creek ridges" can be called innovative; where local landscape solutions were used to cope with new climate challenges. The process of the

climate tests was new and bringing all those different experts and backgrounds together was certainly innovative and productive. The main conclusions of the climate test workshops were that a hydrological study of the neighbourhood's water system was necessary and that deciding on measures to limit the heat island effect could be postponed until later design phases. It was recommended to design the Essenvelt neighbourhood from large to small based on a vision for the existing water system, soil structure and green structures of Middelburg and the surrounding area.

