



## Case Study



## Water Management

### Stuttgart, Germany: Winnenden - Residential Community

**Problem to resolve:** Urban sprawl was threatening a balanced ecosystem in the region

**Response:** Decentralized Storm Water Management

#### Background.

This is a pilot project for the city of Winnenden near Stuttgart for decentralized storm water management adjacent to a river, and as a result the flood protection of the development was taken into account. At the same time, a flooding area was provided within the community to balance the impact of the new development of the existing river floodplain. Finally, the intention was to create a livable community with direct access to clean water; the new established lake on the site has a role for microclimate mitigation and flood retention while providing biodiversity and various ecosystems. One of the most picturesque landscape residential communities in Baden-Wuerttemberg which has been awarded with the 2003 Immobilien-Award, the highest honour given by the National German Real Estate Association.



*Water-Sensitive Urban Design for the Winnenden Project*



In the first decade of the new millennium, Western Europe is starting to see a trend in property development, away from mass quantity and towards quality and environmentally responsible construction. This is not through altruism on the part of development companies, but rather recognition of a market demand. Arkadien Asperg is an urban village nestled within the congested conurbation of Stuttgart, and responds to this increasing demand for high quality, individual living space. Commissioned by the property developer Strenger, the architectural concept was conceived by Eble Architects. As a harmonious compliment to the warm and consciously Mediterranean-style architecture, Ramboll Studio Dreiseitl designed an ensemble of outdoor spaces which significantly contribute to a healthy and pleasant living environment and the overall sustainability of the development.

The project design criteria called for unique architecture, user-friendliness and a high degree of innovation and cost-effectiveness. Environmental resource protection, like rainwater harvesting, was also high on the priority list. A vision of an „urban village“, where density and privacy can coexist, guided the design process. The community centre, the village square and fountain are the social centre of the site, located in the middle of the open space. Unity in design, as well as extensively planted green spaces, always in communication with the surrounding architecture, shapes this generous complex with a distinctly Mediterranean touch.

All the rainwater falling on the rooftops is collected in cisterns. This grey water is then used for irrigation, toilet-flushing and laundry. Paved channels deposit rainwater directly in the creek. The water in the main cistern, which can hold 60m<sup>3</sup> is mainly used to supply the creek. Cisterns of 4m<sup>3</sup> are spread around individual houses for private use.



*Situation before and after the project – the water body at the heart of the settlement*

A stream meanders through semi-private community spaces. It has a natural bank, and at more public points of play-elements: a stainless steel weir and Archimedes Screw. The stream is fed with rainwater and is an enjoyable highlight of the extensive storm water management system. Rainwater is also harvested from individual house roofs and collected in 14 decentralized cisterns. The water is recycled for irrigation, toilet flushing and washing machines. Other storm water run-off is collected in surface drainage details which contour roads and sidewalks. The planted dry stone walls, use of natural stone, wooden structures and generous informal planting accompany the storm water features throughout and are part of the vocabulary of green detailing which lends ‘garden city’ flair to the housing estate.



*Water Sensitive Urban Design in Winnenden*

*Eco Features incorporated in the Development*

## Credentials:

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All images Ramboll Studio Dreiseitl unless otherwise stated

## Sources

<sup>i</sup> [http://winnenden2.kdrs.de/site/Winnenden\\_Attraktives/get/params\\_E-1920853551/252523/Arkadien\\_3\\_Haase\\_965x235.jpg](http://winnenden2.kdrs.de/site/Winnenden_Attraktives/get/params_E-1920853551/252523/Arkadien_3_Haase_965x235.jpg)