project-info

ANALYSIS OF THE EFFECTS OF FLASH FLOODS ON THE URBAN AREA OF BENRATH AS A PART OF DÜSSELDORF CITY

Assignment

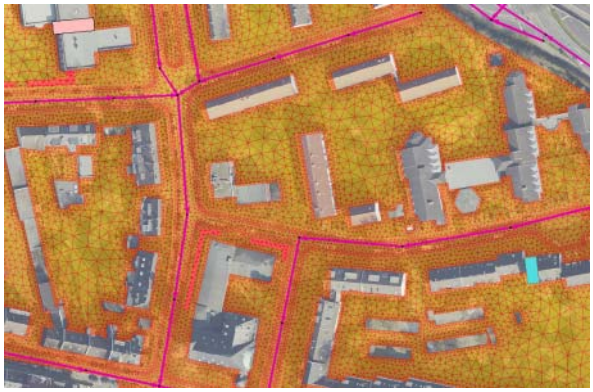
The flood risk is supposed to be analyzed for the urban area of Benrath.

First, provided elevation data is used to determine the topographic circumstances in the research area. A digital terrain model is set up to show sinks, hollows and potential flow paths. GIS is used for the analysis. Secondly, a simple 2D-model + surface is connected to a terrain model. The terrain model is not refined during this approach as it is a pre-analysis. Simulation results show particularly vulnerable areas.

For the identified vulnerable areas the terrain model is refined. Especially small walls, passage ways, etc. are defined in the elevation data. Necessary information is gathered during on-site inspections.

With a redefined model, with endangered areas being very detailed, the linked 2D-simulation "sewer system and surface" is repeated and the final analysis and conclusions are drawn.

Concluding, the flooding potential is overlapped with damage potential and displayed in a theme plan.



Surface model: triangular transformation

Scope

- Analysis of the topographic circumstances; showing sinks, hollows and potential flow paths
- General analysis and identification of endangered areas
- Detailed hydraulic simulation by combining hydrological rainfall runoff model with sewer calculations in areas with high risk potential
- Evaluation of the results and defining risk areas
- Analysis of urban development and land use to determine damage potential
- Location inspection to verify endangered property
- Developing a list of measures

Short description

Client City of Düsseldorf

Project period 2013-2014

Fee 105,000 € (net)

Characteristics

FOG 2D to develop a surface model

HYSTEM-EXTRAN 2D for linked simulation between sewer network and surface

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