



Insurance data as way to evaluate the performance of a sustainable urban drainage system (SUDS) in Augustenborg, Malmö

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Sustainable Urban Drainage Systems (SUDS) has been put forward as a concept to improve stormwater management in urban areas. The damage reduction due to reduced flooding and storm water detention during extreme events is one of many important features of SUDS. As extreme events are rare, few assessments have earlier been made to evaluate the risk reduction. So far, most assessments have been done by hydraulic modelling, rather than analyses based on data from real flood events. In 2014, Malmö was hit with an extreme rainfall event which led to severe flooding in most parts of the city. This event gave an opportunity to evaluate the efficiency of SUDS during extreme events. In this study, flood claim data were analysed to evaluate flood risk reduction by the SUDS system in Augustenborg. Flood claim data were collected from both an insurance company, as well as the water utility company of Malmö for 5 neighbourhoods in close proximity in Malmö. The study uses the Augustenborg neighbourhood as an example of a retrofitted neighbourhood with an open SUDS. Augustenborg (Malmö, Sweden) was retrofitted 15 years ago using a combination of hard infrastructure and naturebased solutions, to alleviate basement flooding, to reduce combined sewer overflows (CSO) and to increase the ecological and aesthetical values of the area. The introduction of ponds, channels and green roofs dramatically changed the appearance of the area and the more or less regular floods were stopped. Augustenborg and its sustainable drainage system was compared with five similar neighbourhoods nearby. The long-term development of reported insurance claims in the selected neighbourhoods showed a reduction of flooding in Augustenborg compared to the nearby areas. Pre- and post-installation data showed a direct effect of the refurbishment with SUDS. Even though a few properties were flooded in Augustenborg, it was shown that the SUDS performed successfully during the extreme storm event that was the most severe flooding in Malmö in modern history. In conclusion, the SUDS in Augustenborg, Malmö, has been efficient in flood reduction during minor as well as severe flood events.