



Future changes affecting hydraulic capacity of urban storm water systems

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ABSTRACT

Urban areas may develop and change its character over time, but the urban drainage system is often more constant in character – as the technical design life can be up to 100 years. The hydraulic capacity of an existing urban storm water system is affected by future changes, e.g. rate of imperviousness (urbanization), changes in the rainfall characteristics (e.g. by climate change) and system deterioration (pipes and other facilities). Recently the urban planning process in Sweden and elsewhere has become more appreciative of urban drainage issues, and the need to include these earlier in development processes. In this paper a small urban catchment is used to study how future factors affect the hydraulic capacity and the potential development of the area. Factors tested are scenarios of: (1) Urbanization; (2) Climate change and (3) Pipe system deterioration. The results show that each of these factors impact on the hydraulic capacity and that any sensitivity analysis should include all of them to understand future development potential for the area. This type of investigation can increase the understanding of the needs of the infrastructure provision in the area in a planning process context, and provide information about appropriate areas of development within the catchment.

KEYWORDS

Climate change, drainage, modeling, pipe deterioration, planning process, storm water,