

Using a mixed method approach to determine the multiple benefits provided by Sustainable Urban Drainage Systems

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(a) Purpose of study or research hypothesis

This research shows the importance of using a mixed method approach to determine the benefits of SUDS (Sustainable Urban Drainage Systems). SUDS are the urban drainage systems which are constructed in a natural way to reduce stormwater flooding at the downstream end of the catchment and to improve the water quality.

(b) Key issue(s) or problem(s) addressed

Three well established SUDS developments were selected as case study sites. The mixed method approach included both quantitative and qualitative analysis. This approach helped to identify the theoretical significance, methodological significance, applied significance and social significance of the research. The three case study sites were based in the UK (Ardler and Dunfermline in Scotland, and a test site in Waterloo, England).

(c) Methodology or approach used

An integrated methodology which consists of both physical and social science methods were used in this research to assess the cultural and regulating services associated with SUDS. This is achieved in three steps. First, field work to identify the ecosystem services in the case study sites. Second, a survey to assess the physical and social characteristics in the site. Third, development of a communication tool using the cultural and regulating benefits identified at the sites. The data in the study comprises results from; visual inspection of SUDS and greenspace, public perception survey, public participatory GIS (geographical information systems). The public participatory GIS provides social information about the community in addition to the spatial information. The visual inspection provided an insight into the physical and biological process in these systems.

(d) Results or conclusions derived from the project

Results from the mixed method approach were used to develop a communication tool, which identifies the ecosystem service benefits associated with SUDS. The tool identified the cultural (biodiversity, recreation, well-being etc) and regulating (water quality, water quantity etc) benefits provided by the SUDS systems. The outcome of the tool is an enhanced appreciation of the opportunities for maximising ecosystem service benefit from sustainable water management, it is hoped this will help landscape architects, engineers, planners and policy makers with their decision making with respect to the impact of the urban drainage systems and the community. It also gives an indication of the non-monetary evaluation of the multi-functional ecosystem services with respect to cultural services.

(e) Implications of the project relevant to congress themes

The research investigates the importance of urban water management methods and provides an evidence base on how to enhance communities with local nature, greenspaces and SUDS systems.

Keywords : Sustainable Urban Drainage Systems (SUDS), mixed method approach, multiple benefits,

cultural services