An investigation of motorway service stations as exemplar of issues surrounding the maintenance and potential for retrofitting of sustainable drainage technologies

Grant Application, RGS-IBG/EPSRC Geographical Research Grant 2006
Phil Jones, GEES, University of Birmingham

Research Context

Sustainable Drainage Systems (SuDS) is an umbrella term for a series of technologies which slow down the rate of surface water discharge and mitigate diffuse source pollution. These technologies have the potential to play an important role in implementing the European Union’s Water Framework Directive, reducing flood risk and pollution discharges as well as having certain aesthetic and ecological advantages.

Motorway service stations include very extensive paved areas, creating large run off flows during precipitation events and with an associated risk of diffuse source pollution (oil, petrol, rubber etc.) from the large number of motor vehicles which pass through them. These factors in combination with the spatial extent of such sites makes the service station an obvious target for those SuDS technologies such as ponds and reed beds which require large land areas and are considered problematic on constrained sites such as those of inner city regeneration projects.

Rationale

The rationale for this project is twofold. First, a major issue with SuDS is their requirement for more regular maintenance than conventional ‘hard’ drainage. Given that demonstration projects, such as that at Hopwood Park Services (designed by Bob Bray of RJB Associates) have been in operation for several years it is timely to investigate how successful those companies responsible for operating and managing these sites perceive these schemes to be. Second, systems such as that at Hopwood Park were integrated as part of a new development, but it is important to see the extent to which the operating companies are planning to retrofit SuDS into their older service stations. This has particular implications for the use of SuDS in an urban context where the need to retrofit into the existing infrastructure is clearly seen as a barrier to the wider implementation of sustainable drainage technologies.

This project builds on work funded by the Carnegie Trust carried out with Dr Neil Macdonald (University of Wales, Aberystwyth) investigating the use of SuDS in the redevelopment of Glasgow. This project raised two major issues – the question of responsibility for the longer-term maintenance of SuDS and the need, largely unrealised in Glasgow as yet, to retrofit SuDS into the pre-existing urban infrastructure. The investigation of motorway service stations as an exemplar of SuDS application thus seeks to address some of these questions.

Proposed methodology

The project will commence with a desk-based survey to identify the corporate policies toward SuDS of the UK’s two largest service station operators, Moto and Welcome Break. This will allow the identification of up to eight case study sites for more detailed investigation. The primary research phase of the project would involve undertaking approximately 20 semi-structured interviews with actors involved in the management of surface water drainage in service stations. Semi-structured interviewing, which can be described as a conversation with a purpose (Eyles & Smith 1988), allows the researcher to respond flexibly to the issues raised by interviewees which they consider to be of particular concern. It is therefore an extremely useful method when attempting to investigate the thought processes that inform decision making.
Interviews would be undertaken with corporate strategists for both chains, landscape and surface water consultants used by the firms and the managers of individual sites. Where possible these would be undertaken in person, with additional telephone interviews where necessary. The interviewing process would be combined with site visits to see the extent of SuDS systems in operation and, where absent, discuss the constraints on their application.

**Contributions to the research field**

Much of the existing literature on SuDS has predominantly focussed on the technical aspects of design and implementation (CIRIA 2000; Jefferies 2004; Astebøl, et al., 2004) or on hard scientific modelling of the use of SuDS in stormwater management (for instance Blanksby, et al. 2003). The work of Howe and White (2003, 2001) has addressed the potential usefulness of increased SuDS application, but does not investigate in detail the kinds of barriers that developers and other stakeholders perceive to the actual application of these technologies on the ground. This research would therefore help widen this debate investigating the decision making processes that underpin the installation of SuDS. Previous research has indicated maintenance as a significant factor needing further investigation. Similarly the difficulties faced in installing these systems on pre-existing sites is of particular significance given the potential need to retrofit SuDS into older urban infrastructures, highlighted by the Glasgow case study.

**Wider and public relevance of the work**

SuDS is being increasingly seen as a set of technologies that can help meet the requirements of the Water Framework Directive in terms of reducing flood risk and diffuse source pollution. An investigations of their use has obvious interest to planners and those concerned with water management. The issue of retrofitting is one of more general interest as it has the potential to have a significant impact on the relationship of the public with surface water drainage.

**References**


