

## Update of SuDS construction guidance

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### Summary

*A good SuDS design can be misinterpreted and let down by poor construction and detailing. This can affect performance and ultimately cause failure. With SuDS becoming more common place and the diversity of schemes and applications growing, it is now timely for this project to update and repackaging guidance on SuDS construction to ensure they are built as designed and provide the performance and benefits required.*

### Background

Over recent years SuDS delivery in the UK has steadily increased. This has improved knowledge and experience particularly around the construction of SuDS. In some cases the construction can be affected by a lack of understanding the SuDS principles, misinterpretation of specifications and construction drawings. This can lead to inefficiencies and failures that negatively impact on overall SuDS performance and the reputation of those involved in SuDS delivery. These problems can often be overcome by improved and timely communication and easy to use guidance.

These challenges are likely to become more frequent and critical as SuDS delivery becomes more common place. Since the production of guidance on the construction of SuDS in 2007 our knowledge and experiences have increased. There is now greater diversity in the application and scale of SuDS as well as a better understanding of procurement models used for SuDS delivery, eg design and build.

Construction guidance is available (CIRIA publication C698) and within the SuDS manual which is currently being updated (publication due in September 2015). This information will be repackaged (and where necessary updated and augmented) to improve contractors' understanding of SuDS, firstly as a concept and secondly as a functional system requiring good practice construction techniques. Appropriate construction methodologies are available to ensure what gets built adequately reflects the original design concept, specification and detailed design criteria. However, these are not widely understood and applied to the SuDS construction process and this needs to be rectified to support high quality SuDS delivery.

The proposed guidance on the construction of SuDS will cover the delivery of a range of SuDS components including soft, vegetated, proprietary and more engineered systems. This will include surface, subsurface and below ground SuDS components covering pervious surfaces and proprietary products. A well designed SuDS component or scheme can fail due in part to poor construction and implementation.

### Justification

This guidance will cover a number of applications, particularly around new build and retrofit situations. SuDS construction is different (rather than difficult) in comparison to traditional drainage infrastructure, requiring a combination of understood landscape construction and civil engineering skills to be appropriately applied to specific SuDS projects. Like with any new practices there are some challenges the guidance will help overcome in regard to SuDS construction, these include:

- **Communication** – Communication, particularly the initial briefing from the SuDS designer to those supervising or managing the construction of SuDS needs to explain both the concept

and detailed design functionality of components, key considerations and potential construction risks for all stages of projects.

- **Appropriate supervision** – It is important to ensure that there is appropriate supervision (at key milestones or critical project stages) and inspection of the SuDS construction process (eg to check levels, non-approved changes to design and mitigate any potential problems).
- **Construction programming** – Getting the sequence and programming for SuDS construction correct and developing approaches for quality control and any necessary rehabilitation is important to ensure that the SuDS components function as designed.
- **Understanding of components** – Understanding how components function and operate in terms of overall SuDS performance is important as this should reduce the risk of mistakes.
- **Improved workmanship (tolerances and attention to detail)** – Robust installation of engineered components and accurate groundwork profiles, construction and levels are vital for the flow and management of surface water. A matter of centimetres can inadvertently restrict or divert flows, alter the amount of storage previously designed, reduce performance or cause failure.
- **Construction processes** – Successful SuDS are dependent on reducing the risk of soil compaction, erosion and siltation of components. Guidance is required to minimise these risks during construction.

The guidance will be developed with experience and knowledge on SuDS delivery reflecting any potential changes in practices and applications. In recent years, retrofitting SuDS has become more common and in some circumstances this can complicate the construction process with greater consideration given to working environments, space and underground services.

Stakeholders that will benefit from the project include clients (developers, local authorities, sewerage undertakers), contractors, consultants, practitioners and others with an interest in construction sites, i.e. clerk of works, resident engineers. The expected benefits of this project are to:

- Formalise the inclusion of a simple briefing/pre-construction pack and advice on setting out.
- Reduce the gap in knowledge and expertise in the construction of good SuDS schemes.
- Reduce the risk of failure, problems and faults with SuDS construction.
- Improve the resource and time efficiency of SuDS construction.
- Support the delivery of SuDS components and schemes that are in accordance with good practice and standards.
- Improve the communication between the designers and contractors.
- Augment and repackage guidance, knowledge and experiences on SuDS construction.
- Ensure that the guidance is relevant to the target users and the SuDS schemes and components being delivered.
- Create better links with standard specifications and prescribed processes / work plans (e.g. Specification for Reinstatements of Opening in the Highway, NBS, and BSI)
- Widely disseminate good practice on SuDS construction.
- Reduce reputational risks for SuDS and those involved in their design and construction.

## Objectives

The aim of this project is to update and augment guidance on the construction of SuDS by improving robustness and cost effectiveness of construction and reducing the risks of faults and/or poor performance. Specific objectives are to:

1. Undertake consultation to understand common SuDS construction challenges and approaches to overcome them.
2. Undertake consultation to understand the most useful format of guidance and support for those constructing SuDS.
3. Update and improve existing guidance to improve the robustness of SuDS construction.
4. Disseminate the guidance widely
5. Develop appropriate training material and courses and potentially collaborate with appropriate organisations. (Funding dependent)

## Outputs

The target audience for the guidance is primarily those supervising and undertaking the construction of SuDS components and schemes on site. However, within the guidance there will also be specific sections for SuDS designers and approval/adopting bodies as they have vital interactions with the construction process and need to engage with the construction team (but potentially different focuses).

The guidance outputs will be easy to use, simple and concise guidance with plenty of checklists and images to reduce text and ensure ease of use on site. Images that present good and bad practice and effective approaches to reduce text will be required. (Wordy documents will not be used). Where possible outputs will be consistent with CIRIA guidance on SuDS, potential formats are listed below; depending on available budget and priorities of the Project Steering Group (PSG) these can be combined.

- Guidance document(s)
- Concise site pocket handbook
- Posters
- PowerPoint presentations (with notes)
- Tool-box/Table-top talks
- Table-top talks
- Animations and videos for YouTube\*
- Smartphone or tablet apps\*
- Training course for contractors\*

\* dependent on funds raised.

CIRIA and PSG will also liaise with other organisations involved in the specification of construction processes to ensure compatibility and encourage inclusion of good practice related to SuDS construction in their outputs.

## Approach and methodology

The extensive contacts of CIRIA and the project team will be used to exploit synergies with other initiatives and organisations to produce consensus based guidance, tools and disseminate outputs. The project will be managed to foster collaboration and consensus as well as utilise extensive links and momentum with related initiatives and others in the industry.

The project will utilise a variety of consultation approaches and work with a PSG to secure input from diverse disciplines such as SuDS practitioners, engineers, landscape architects, contractors, consultants to ensure that the outputs are informative and efficiently targeted.

The project will involve the following work stages:

1. **Consultation** – This will be undertaken with SuDS practitioners and contractors (likely to be undertaken by electronic survey) to determine what aspects of the current guidance need updating, and whether there are any new challenges and good practice related to the delivery of SuDS on new and retrofit developments. The consultation will also be used to seek feedback on the most appropriate format of guidance (although responding to this will be dependent on funds raised). Images and case studies will also be sought from industry.
2. **Scoping** – Following the consultation a scoping document with recommendations on the objectives, content and format of the outputs will be developed. The scoping report will also highlight key areas of potential content that need to be augmentation based on a consultation and review of guidance (CIRIA's SuDS manual and others). Content is likely to include:
  - Construction practice
  - Construction planning (different sites/applications)
  - Pollution control
  - Pollution sources and prevention
  - Contractor's method statements

- Communication
  - Supervision
  - Programming
  - Erosion control
  - Sedimentation
  - Construction of different SuDS components
  - Handover inspection
  - Checklists
3. **Drafting and development of guidance** – this is primarily going to be an update of the existing guidance to reflect the requirements of the consultation and deliver the recommendations in the scoping report. Two complete drafts of the outputs will be reviewed by the PSG before final production of the outputs.
  4. **Dissemination** – CIRIA will use susdrain, its other outputs and relationships to disseminate the outputs. This will include three webinars and a susdrain workshop to disseminate the guidance to a wide audience.

### Key requirements of the project team

The project team will be selected through a competitive tendering process and managed under a lump-sum contract by CIRIA. Key requirements and skills of the project team include:

- **Practical SuDS experience** – The successful team should have proven experience in SuDS design (with named examples) and include sufficient input from contractors that are delivering SuDS projects (with named examples).
- **Experience of writing guidance** – The successful team should have experience in producing guidance for the target audiences and demonstrate consideration of where and how the outputs will be used. Resources and skills within the team should demonstrate consideration of presentation of information in an imaginative, graphical and useful way. This could include illustrations, animations, high impact presentations and videos – simple word based documents alone are unlikely to have the desired impact.

### Project information

It is anticipated that the project will last for 18 months, and the overall project cost including contributions in kind is £130,000.

### Benefits of involvement

Funding the project provides an opportunity for your organisation to be represented on the Project Steering Group. This provides early access to good practice emerging from the project and enables you to influence and steer the independently chaired group. Involvement in the PSG also provides an opportunity to network with peers and raise your profile and promote your organisation's commitment to good practice amongst peers and construction clients (through inclusion of logo on outputs).

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