



# Robert Bray Associates

SUSTAINABLE DRAINAGE CONSULTANTS

Fairfield, Coronation Road, Rodborough, Stroud, Gloucestershire GL5 3SB England

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## SUSTAINABLE DRAINAGE VS CONVENTIONAL DRAINAGE

Sustainable Drainage offers:

- cost effective solutions
- easily managed
- attractive
- resilient in use.

Conventional Drainage causes:

- pollution
- flooding
- prevents groundwater recharge
- damages wildlife.

The Environmental Agency recognises the damage conventional drainage does and advocates an approach that replicates natural systems.

Sustainable Drainage techniques have been developed to collect, store and clean runoff before release to the environment.

### **Robert Bray Associates**

is an Environmental Design Practice with unique experience in the planning, design and implementation of Sustainable Drainage Systems. A full Landscape Architectural service is available to clients.



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## BENEFITS OF SUSTAINABLE DRAINAGE

The Environment Agency:

- prevents pollution;
- controls flooding;
- recharges groundwater;
- enhances the environment.

The Community:

- visual amenity;
- Agenda 21 and biodiversity objectives;
- social opportunity for wetland appreciation and understanding of how drainage works.

Planning:

- planning objectives - sustainability targets and demands of statutory consultees are met;
- new 'greenfield runoff rate' requirements of the EA are more easily achieved.

Capital costs:

- construction costs are reduced by 10% - 50%;
- expensive connection to storm sewers is often;
- environmental engineering on the surface is cheaper than drainage structures below ground.

Management:

- maintenance of SUDS is simple and cheap.

### **Robert Bray Associates**

understands the reasons for sustainable drainage and has the experience to offer robust and easily maintained systems which offer all the potential benefits to the client and the community.



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## MAINTENANCE OF SUSTAINABLE DRAINAGE

The care of SUDS schemes is:

- simple and easily understood by site managers;
- undertaken by landscape contractors or site personnel;
- resilient to use and abuse.

Maintenance costs are reduced as SUDS schemes can be managed as part of normal landscape care and avoids the need for expensive specialist contractors.

SUDS eliminates the need for expensive cleaning of gullies and interceptors avoiding the catastrophic failure of pipe drainage and allowing time for remedial action.

Maintenance of SUDS is obvious and simple!

**Robert Bray Associates**  
has developed a clear maintenance package for  
SUDS designs which is easy to follow and offers  
benefits to private clients and local authority  
managers.



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## WHAT IS SUSTAINABLE DRAINAGE?

It is a new approach to managing rainfall in development that replicates natural drainage.

It aims to:

- prevent pollution
- control flooding
- recharge groundwater
- enhance the environment

Runoff is collected and stored to allow natural cleaning to occur prior to infiltration or controlled release to watercourses.

SUDS techniques allow natural drainage processes to function in the landscape surrounding development.

SUDS techniques include:

- filter strips and swales
- filter drains and permeable surfaces
- infiltration devices
- basins and ponds

### **Robert Bray Associates**

has worked with engineers to develop a design approach which offers the most practical and cost effective solutions to drainage.



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### WHY IS SUSTAINABLE DRAINAGE BEING PROMOTED BY THE ENVIRONMENT AGENCY AND PLANNING AUTHORITIES?

Human development has caused damage to the 'water environment' for centuries by using inappropriate methods of drainage.

At present, rain from road, car parks and other hard surfaces is collected in gullies and pipes.

It can cause:

- flooding - because rain is piped to watercourses before it has a chance to soak into the ground, all water arrives in streams and rivers at the same time;
- pollution - because silt, oils and other pollutants are carried straight to streams and rivers before they can be trapped, removed and broken down naturally. Watercourses are severely damaged.

The Environment Agency recognises the damage conventional drainage to the environment and now advocates a new approach to managing rainfall that replicates natural systems; it is called Sustainable Drainage or SUDS.

### **Robert Bray Associates**

has been involved in the development of Sustainable  
Drainage Policy and Guidance:

- Advice to CIRIA Research Project 555 design manuals for Sustainable Drainage;
- Consultants to South Gloucestershire Council Sustainable Drainage Systems Policy.



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## THE SUSTAINABLE DRAINAGE CONSULTANCY

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### Personal Profile

Robert Bray is a Landscape Architect with extensive experience in commercial and environmental design having been in Private Practice since 1978. The complex needs of housing and rigour of business park and office campus design have ensured a commercial edge to the Practice. An increasing awareness of the benefits of sustainable design and site management has been refined to meet the new focus of modern development.

### Practice Profile

Since 1996, and the early promotion of Sustainable Drainage by the Environment Agency, Robert Bray Associates have developed an environmental approach to this new way of dealing with rainwater run-off which delivers both cost effective solutions for clients and maximum benefit to the community.

### How to use the Sustainable Drainage approach & the Robert Bray Associates Consultancy.

- Initial consultancy – indicates the most effective way to develop a site and gain maximum benefit from SUDS. It identifies constraints and criteria for drainage design and informs the client of advantages and responsibilities.
- Outline drainage proposals – offers an overview of the SUDS approach and which techniques will be employed to integrate drainage design into the landscape with an estimate of land required for different design options.
- Drainage design, consultation and management – provides detailed drainage design in consultation with all interested parties, a landscape design and maintenance package to ensure a cost-effective, long term solution to the needs of rainfall management.

SUDS is a multi-disciplinary approach to drainage.

Robert Bray Associates works with selected specialists who are committed to this new approach to drainage design.

- Engineering support and partnership
- Ecologist expertise with an understanding of SUDS
- A CAD drawing facility
- Graphics and presentation skills
- Management resources

The advantage of this approach to drainage design is that it allows innovative ideas and lateral thinking to solve old problems in new and cost-effective ways. Robert Bray Associates works within the recent guidelines set out by the Environment Agency to meet the challenges of sustainable drainage in the 21st century.

**Robert Bray Associates**  
- expert, cost-effective and comprehensive service