

# North Somerset Levels Internal Drainage Board

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## Policy Regarding Sustainable Drainage Systems (SuDS)

### 1. Introduction

- 1.1 The purpose of this document is to set out the Policy of the North Somerset Internal Drainage Board concerning the design and construction of Sustainable Drainage Systems (SuDS) within its Drainage District.

### 2. Reasons for the Policy

- 2.1 The Board recognises the potential benefits of the SuDS approach to drainage in reducing flood risk, minimising diffuse pollution, maintaining or restoring natural flow regimes, improving water resources and enhancing amenity. The Board will, as a part of its duty to exercise a general supervision over all matters relating to the drainage of land within its Drainage District, promote the use of SuDS techniques, in all appropriate situations, to sustainably manage surface water run-off.
- 2.2 The Board recognises the potential benefits of the SuDS approach to drainage in:
- Reducing the likelihood of flooding by attenuating peak rates of surface water run-off;
  - Maintaining, restoring or enhancing natural flow regimes;
  - Providing floodwater storage capacity;
  - Enhancing the amenity value of the development;
  - Mitigating against the loss of environmental features and wildlife habitats as a result of development;
  - Minimising the detrimental effects of diffuse pollution.

### 3. Legal Requirements

- 3.1 The legislation covering surface water and land drainage in England and Wales is complex and, because it pre-dates the concepts of sustainability, does not specifically address SuDS issues. Whilst this does not pose particular legal difficulties, it does mean that responsibilities for provision, operation and maintenance are not clearly defined. These issues will therefore need to be addressed on a 'site-specific' basis.
- 3.2 Within the North Somerset Levels IDB Drainage District the relevant legislation with which the Board is primarily concerned are the Land Drainage Acts 1991 and 1994. The Board's own Land Drainage Byelaws (1995) and made under the 1991 Act will also be relevant.
- In particular it should be noted that Land Drainage Byelaw 3 requires, *inter alia*, that any proposal to increase the flow or volume of water in any watercourse within the Drainage District shall be subject to Consent by the Board.
- 3.3 In determining any application for Consent, the Board will have regard not only for the wishes of the applicant, but also of its own environmental duties and responsibilities under statute. Applicants should also be aware that Land Drainage Consents may be Conditional and any Conditions may include a requirement to for appropriate mitigation works to be undertaken.
- 3.4 Applicants should note that a Land Drainage Consent does not over-ride an adjacent landowners' rights, does not give right of entry onto third party land and does not permit interference with legally protected wildlife habitats.

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### 4. Planning Considerations

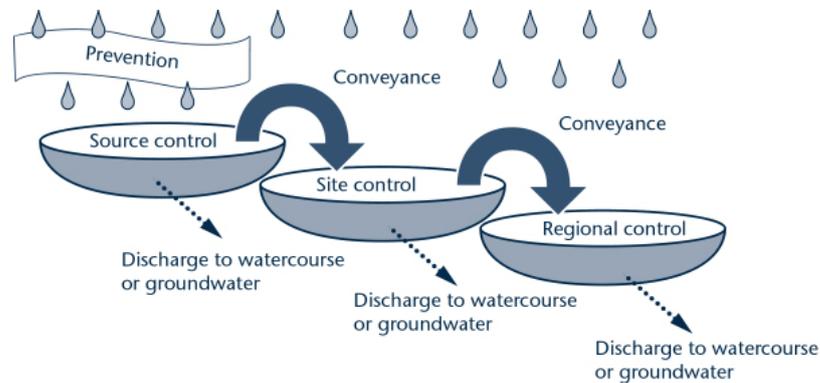
- 4.1 Drainage issues concerning new development sites are specifically addressed in Planning Policy Guidance Note 25 (PPG25) 'Development and Flood Risk'. This sets out Government Policy on flood risk with respect to potential development sites and promotes the concept of SuDS, in order to mitigate this risk and to reduce the impact of development proposals on downstream watercourses.
- 4.2 For individual development sites the implementation of SuDS proposals will, in many instances, involve the provision of grass swales, open watercourses, floodable areas and/or balancing ponds for flood attenuation. Such features will form an integral part of the overall development and the Board will work closely with developers, the planning authority, the Environment Agency and Wessex Water as sewerage undertaker, to ensure that SuDS objectives are attained and that responsibilities for future operation and maintenance are clearly defined and agreed.
- 4.3 The planning system is used to co-ordinate consultation between the approving authorities but Consents (and licences where needed) have to be applied for separately. Land Drainage Consents are not granted automatically when a planning application is approved and may be subject to Conditions.

### 5. Sustainable Drainage Systems (SuDS) Techniques

- 5.1 SuDS are designed with three principle objectives in mind:
- To control, and where possible, to limit the quantity of surface water run-off discharged from development sites;
  - To improve the quality of the run-off, in order to reduce the risk of pollution to the receiving watercourse;
  - To enhance the environment and biodiversity of the development, and to improve the amenity value of the site and its surroundings;
- 5.2 SuDS design uses the same principles of hydrology and hydraulics that would be used in the design of a conventional drainage system, but applies them differently, taking account of environmental issues and amenity provision. The selection of the most appropriate SuDS solution will require careful consideration of design criteria including the standard of flood protection, requirements for flow attenuation, hydraulic characteristics of the conveyance system, maintenance requirements, water quality, land use and planning, landscape and amenity, and health and safety.
- 5.3 Agreement with the relevant authorities, including the Board, on design standards and strategies is required before an appropriate SuDS technique (or suite of complimentary techniques) can be selected to guide the detailed design. Selection should be based upon the 'Surface Water Management Train', which guides designers through the overall design process in accordance with the following basic principles:
- Drainage techniques should be used in series to meet the design criteria
  - Drainage techniques at the head of the management train [drainage system] are generally to be preferred (ground conditions permitting) to those used further downstream
  - There is seldom a single 'correct' solution - a satisfactory design requires balanced judgement and the subjective assessment of all relevant factors
  - The resulting design should, where possible, replicate the natural pattern of drainage

It is essential that whatever SuDS technique, or suite of complimentary techniques, is selected for the detailed design - a clear audit trail of decision-making is documented.

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Surface Water Management Train

### 5.4 Source Control

Source Control, is the first consideration and is to be preferred over controls elsewhere in the management train, as it follows the natural drainage pattern of allowing rainwater run-off to soak into the ground and assigns the management of surface water to those responsible for the initial run-off. This may be achieved through the use of soakaways, filter drains or permeable surfaces.

Where the groundwater table is seasonally high, or the sub-soil less permeable, linked soakaways with an overflow outlet, have been shown to be effective in reducing the rate and volume of run-off discharged to the receiving watercourse.

### 5.5 Site Control

Should source control measures be insufficient for the scale of development proposed, the next consideration should be on-site control through the use of appropriate detention and attenuation devices. These may be in the form of grass swales, which convey surface water flows overland from the drained surface to storage or a receiving watercourse, or shallow detention basins designed to retain storm run-off for short periods, usually not exceeding a few hours.

Where conveyance is by means of grass swales, with provision for infiltration into the sub-soil and attenuation of the flow, these facilities will normally be excluded from Land Drainage Consent procedures and, subject to the approval of the planning and highway authorities, these may be located within roadside verges or land adjacent to cycleways and footpaths.

Designers must, however, take account of the potential drawback of using highway verges where these are also occupied by utility company mains and services. Future access to and maintenance of these utility mains and services may destroy, or at least damage, the effective operation of the SuDS.

Alternatively, SuDS serving individual residential properties may be constructed within private gardens.

On a larger scale, ponds may be introduced downstream of swales and basins, to further attenuate storm flows. These may be designed to include normally dry floodable margins and/or wetlands. Such ponds are most likely to provide visual enhancement of a development area and contribute to biodiversity where they include a permanent water body.

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By allowing adequate detention time, the level of solids removal achieved in a well-designed pond can be significant. The algae and plants of ponds and wetlands also provide a particularly good level of filtering and nutrient removal. Ponds and wetlands can be fed by swales, filter drains or piped systems, and the use of inlet and outlet sumps will enhance performance by trapping silt and preventing clogging of the outlet.

Only specially constructed wetlands should be used to treat surface water - the use of existing, natural wetlands is unlikely to be acceptable.

Where conveyance within the site is by means of open watercourses, these watercourses will be subject to Land Drainage Consent procedures and, with the agreement of the planning authority, should be located within areas of public open space. The Board will wish to see that proposals for the use of open watercourses are technically and environmentally acceptable, and that provisions for the future maintenance (See below) have been adequately addressed.

### 5.6 Regional Control

Regional control implies conveyance of excess surface water flows discharged from on-site control systems off the development site for further attenuation and storage, before final discharge to the receiving watercourse. This process follows the environmental principle of subsidiarity.

Where such conveyance is by means of open watercourses, these will be subject to Land Drainage Consent procedures and may also require planning permission as 'engineering works'. It is for the applicant to ensure that they have all necessary consents and agreements with off-site landowners to undertake such works.

The Board will not use its statutory powers to give a developer right of access onto third party land.

### 5.7 General Considerations

The design of SuDS will require decisions between differing options, often depending on the flood risk associated with each alternative course of action. The risks of any particular area being flooded have to be balanced with the costs in financial and environmental terms of flood protection. Existing land and property outside the development site must not be exposed to a greater flood risk as a consequence of the development than would have been experienced had not the development taken place.

When dividing development site catchments into smaller sections for detailed design purposes, it is essential to retain a perspective on how this affects the whole drainage catchment and its overall management, and the hydrological cycle.

Where watercourses are to remain open an adequate width of undeveloped land must be retained adjacent to the channel for maintenance purposes (See also Land Drainage Byelaws), for the continuity of the natural environment and for wildlife habitats.

Should it be necessary to obtain access over an open watercourse either within the development site, or off-site, a culvert crossing or bridge may be required. In such cases, the length of the culvert should be restricted to the minimum necessary to meet the applicant's objective and, where appropriate, mitigating environmental enhancements included in the proposals. Where practicable, clear span bridges are always to be preferred.

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These structures, if they are to carry an adopted public highway, cycleway or footpath, will be 'highway structures' adopted by the highway authority and will not be the responsibility of the Board. If the crossing is not to be adopted by the highway authority, then the developer shall make alternative arrangements for all future maintenance and repair with the private owner who benefits from the use of the crossing.

### 5.8 Environmental Mitigation

Although the SuDS concept is based on environmental and amenity enhancement, nonetheless the need for mitigation works to reduce the impact of particular elements of the overall system on the local environment will be taken into account when determining applications for Consent. Such works could include:

- Enhancing proposed or modified open channels with berms and ledges;
- Providing variable channel profiles;
- Planting with native wetland species;
- Creating off-line ponds, temporary floodable areas, reedbeds or wetlands.

## 6. SuDS Ownership and Future Maintenance

- 6.1 There is, at present, no clear and simple guidance on who may be responsible for taking ownership of, and maintaining SuDS, which, by their nature may be below ground structures, open watercourses or landscape features. Early discussion with all relevant authorities is therefore recommended to establish whether, or not, the features proposed are suitable for 'adoption' by a public authority.
- 6.2 In general, the Board will expect that future ownership of all SuDS constructed within or as an integral part of public open spaces, landscape or wildlife corridors or adjacent to public highways, cycleways and footpaths, will be vested in the local authority. SuDS constructed on privately owned land will be the responsibility of the private landowner.
- 6.3 Where open watercourses form an integral element of SuDS in a development area and these watercourses connect directly to, and form an extension of, watercourses already maintained by the Board, then the Board will give consideration to their future maintenance. In these situations, the Board will require the developer to provide a commuted sum to fund future maintenance over a period of 30 years, in accordance with the guidance set out in PPG25. The provision of a commuted sum in these circumstances will be a Condition of Land Drainage Consent.

## 7. Further Guidance

- 7.1 The Construction Industry Research and Information Association (CIRIA) publish the following documents, which are relevant to the design of SuDS:
- Sustainable Drainage Systems - Design Manual for England and Wales. C522
  - Sustainable Drainage Systems - Best practice. C523
  - Source control using constructed pervious surfaces. C582
  - Infiltration drainage - Manual of good practice. C156
  - Review of the design and management of constructed wetlands. C180
  - SuDS - Hydraulic, structural and water quality advice. C609

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- 7.2 Guidance on soakaway design may be found in Building Research Establishment (BRE) Digest 365 - Soakaway design.
- 7.3 Reference should also be made to the following West Mendip IDB Documents:
- Guidance Notes for Applicants
  - Policy with Regard to Culverts and the Culverting of Watercourses
  - Policy and Requirements for Environmental Mitigation

For further information and guidance in individual cases, please contact the Engineer to the Board.

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