Department for Environment Food & Rural Affairs

June 2014

Draft National Standards and Specified Criteria for Sustainable Drainage

National Standards

These Standards are issued to set out the requirements for the design, construction, maintenance and operation of sustainable drainage systems (SuDS) in accordance with paragraph 5 of Schedule 3 (National Standards) to the Flood and Water Management Act 2010 (the Act).

Terms used in the Standards have the same meaning as those in the Act and supporting Statutory Instruments.

National Standards are denoted by "**SuDS NS**" followed by a number.

1 Design

Runoff destinations

SuDS NS1. Surface runoff not collected for use must be discharged to one or more of the following, listed in order of priority:

1) discharge into the ground (infiltration); or where not reasonably practicable,

2) discharge to a surface water body; or where not reasonably practicable,

3) discharge to a surface water sewer, highway drain, or another drainage system; or where not reasonably practicable,

4) discharge to a combined sewer.

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Flood risk outside the development

SuDS NS2. The design of the drainage system must mitigate any negative impact of surface runoff from the development[1] on the flood risk outside the development boundary.

SuDS NS3. Where the drainage system discharges to a surface water body that can accommodate uncontrolled surface water discharges without any impact on flood risk from that surface water body (e.g. the sea or a large estuary) the peak flow control Standards (**SuDS NS4** and **SuDS NS5**) and volume control National Standards (**SuDS NS6 to SuDS NS8**) do not apply.

Peak flow control

SuDS NS4. For greenfield developments, the peak runoff rate from the development to any highway drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must not exceed the peak greenfield runoff rate for the same event.

SuDS NS5. For developments which were previously developed, the peak runoff rate from the development to any drain, sewer or surface water body for the 1 in 1 year rainfall event and the 1 in 100 year rainfall event must be as close as reasonably practicable to the greenfield runoff rate from the development for the same rainfall event, but must not exceed the rate of discharge from the development prior to redevelopment for that event.

Volume control

SuDS NS6. Where reasonably practicable, for greenfield developments, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must not exceed the greenfield runoff volume for the same event.

[1] *In these standards 'development' means the area of land for which approval for work was required in accordance with paragraph 7 of Schedule 3 to the Flood and Water Management Act 2010*

SuDS NS7. Where reasonably practicable, for developments which have been previously developed, the runoff volume from the development to any highway drain, sewer or surface water body in the 1 in 100 year, 6 hour rainfall event must be constrained to a value as close as is reasonably practicable to the greenfield runoff volume for the same event, but must not exceed the runoff volume for the development site prior to redevelopment for that event.

SuDS NS8. Where it is not reasonably practicable to constrain the volume of runoff to any drain, sewer or surface water body in accordance with **SuDS NS6** or **SuDS NS7** above, the additional volume must be discharged at a rate that does not adversely affect flood risk.

Flood risk within the development

SuDS NS9. The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur on any part of the development for a 1 in 30 year rainfall event.

SuDS NS10. The drainage system must be designed so that, unless an area is designated to hold and/or convey water as part of the design, flooding does not occur during a 1 in 100 year rainfall event in any part of: a building (including a basement) or in any utility plant susceptible to water (e.g. pumping station or electricity substation) within the development.

SuDS NS11. The design of the drainage system must ensure that so far as is reasonably practicable, flows resulting from rainfall in excess of a 1 in 100 year rainfall event are managed in exceedance routes that minimise the risks to people and property.

Water quality

SuDS NS12. The drainage system must be designed and constructed so surface water discharged does not adversely impact the water quality of receiving water bodies, both during construction and when operational.

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Structural integrity

SuDS NS13. Components must be designed to ensure structural integrity of the drainage system and any adjacent structures or infrastructure under anticipated loading conditions over the design life of the development taking into account the requirement for reasonable levels of maintenance.

SuDS NS14. The materials, including products, components, fittings or naturally occurring materials, which are specified by the designer must be of a suitable nature and quality for their intended use.

Designing for maintenance considerations

SuDS NS15. The drainage system must be designed to take account of the construction, operation and maintenance requirements of both surface and subsurface components, allowing for any personnel, vehicle or machinery access required to undertake this work.

SuDS NS16. The drainage system must be designed to ensure that the maintenance and operation requirements are economically proportionate.

SuDS NS17. Pumping must only be used to facilitate drainage for those parts of the development where it is not reasonably practicable to drain water by gravity.

SuDS NS18. The drainage system must be designed so that the capacity of the drainage system takes account of the likely impacts of climate change and likely changes in impermeable area within the development over the design life of the development.

2 Construction

SuDS NS19. The drainage system must be constructed in accordance with the approved design such that materials, including products, components, fittings or naturally occurring materials, are adequately mixed or prepared and applied, used, or fixed so as to perform adequately the functions for which they are intended and constructed in a workmanlike manner.

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SuDS NS20. The mode of construction of any communication with an existing sewer or drainage system must be such that the making of the communication would not be prejudicial to the structural integrity and functionality of the sewerage or drainage system.

SuDS NS21. Once constructed in accordance with the approved design, an approving body must presume that a drainage system is functioning in accordance with the approved design unless there is evidence to demonstrate that it is not.

SuDS NS22. Damage to the drainage system resulting from associated construction activities must be minimised and must be rectified before the drainage system is considered to be completed.

3 Maintenance

SuDS NS23. The drainage system must be maintained to ensure that it continues to function as designed.

4 Operation

SuDS NS24. The drainage system must be operated to ensure that it continues to function as designed.

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Specified Criteria by which judgments are to be formed

The specified criteria are published in accordance with paragraph 5(3)(a) of the Flood and Water Management Act 2010 which states “National Standards may permit or require approving bodies to form judgements by reference to specified criteria”.

Specified criteria are denoted by “**SuDS SC**” followed by a number**.**

5 Specified criteria to which regard is to be had

SuDS SC1. The approving body may have regard to a technical standard or criteria submitted as evidence:

a) of the hydrological modelling of flood risk off and on the development,
b) of the hydrological modelling of flow rate and volume of water to be discharged,
c) of the water quality outcomes achieved by drainage components,
d) that components are designed to ensure structural integrity of the drainage system and any adjacent structures,
e) that materials, including products, components, fittings or naturally occurring materials are of a suitable nature and quality for their intended use.

SuDS SC2. The approving body must have regard to the flood risk management and water quality requirements, if any, which apply to the provision of drainage systems, in:

a) the National Planning Policy Framework and its technical guidance;
b) up-to-date local and neighbourhood plans which covers the area of the development;
c) the National Flood and Coastal Erosion Risk Management Strategy;
d) the Local Flood Risk Management Strategy which covers the area of the development;
e) IDB, EA and Local Authority Bylaws where a drainage system discharges to a relevant watercourse.

Where a drainage system is designed, constructed, maintained and operated in accordance with the National Standards, would in the opinion of the approving body, not meet a requirement of the above criteria the approving body may refuse the application.

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SuDS SC3. In the National Standards **SuDS NS1 to 24**, geology, geography and costs associated with construction of a drainage system are relevant criteria which must be considered in determining what is reasonably practicable.

SuDS SC4. This criterion requires an approving body to form its judgement of what is reasonably practicable in **SuDS NS1** by special reference to construction costs. If, in an application for approval of a drainage system, it is demonstrated that it would cost more to design and construct a drainage system which discharges to a higher priority discharge destination rather than to a discharge destination which is lower in the order of priority, it is not to be considered reasonably practicable to achieve the higher discharge destination. The calculation of construction costs may include the opportunity cost of providing land for a drainage system above ground where the land utilised for the drainage system is not also utilised for another land use. Each movement down the hierarchy must be demonstrated.

SuDS SC5. This criterion requires an approving body to form its judgement of what is reasonably practicable in **SuDS NS5, 6, 7, and 11** by reference to the construction cost of an effective drainage system which would not require approval. If, in an application for approval of a drainage system, it is demonstrated that the design and construction costs of a drainage system in accordance with the **SuDS NS5, 6, 7, and 11** would be more expensive than an effective drainage system which would be built but for these Standards, then it is not to be considered reasonably practicable to achieve the full requirements of those Standards. The calculation of construction costs may include the opportunity cost of providing land for a drainage system above ground where the land utilised for the drainage system is not also utilised for another land use. To be considered reasonably practicable, the drainage system proposed must demonstrate it complies as far possible with those National Standards, without exceeding the design and construction costs of the alternate system.

SuDS SC6. This criterion requires an approving body to form its judgement of what is economically proportionate in SuDS NS16 by reference to the costs that would be incurred by consumers for the use of an effective drainage system, connecting directly to a public sewer, which would have been built but for these Standards.

SuDS SC7. Where a drainage system is partly in the area of one approving body and partly in the area of another approving body or bodies, each approving body must form judgements having regard to the existence and effect of the parts of the drainage system in the area of the other approving body or bodies.

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