Water Use

Regulatory Method (WAT-RM-08)

Sustainable Urban Drainage Systems (SUDS or SUD Systems)

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Update Summary

Version	Description
v1.0	First issue for Water Use reference using approved content from the following documents: SUDS_Regulatory_Guidance_Interim.doc
v2	New base template applied, links to docs revised for new SEPA website, Nov 2008
v3	Revised to reflect greater emphasis on SUDS through planning consultation process, plus development size threshold to determine SUDS level, clarification of SUDS by development type.
v4	Section 7.2 inserted , updated doc numbering and doc links to QP
v5	Section 7.2 updated with flowchart and text to emphasise system design must allow effective maintenance &removal of pollutants.
v5.1/5.2	Revised for consistency: 1-level SUDS for parking (<50), >1000 reqs licence but not single outfall./'SEPA recognises….' added top p24
v6	Simple Index Approach (SUDS Manual) replaces requirement for SUDS levels. Planning Liaison section revised, SUDS background deleted.
v6.1	Improved wording for appropriate authorisation level f or control of flocculants (s6.3)
v6.2	Construction site licensing added (s5.1, s6.3) and s3.1/s6.8 revised
v6.3	s3.1 "<1000 houses/car parking spaces" entry deleted.
v6.4	Clauses added: s2 Waiver from SfS, s6.1 Note, s6.4 Pond/wetland, s6.7 DMRB/HAWRAT, s6.8 direct discharge to GW

Notes

References: Linked references to other documents have been disabled in this web version of the document. See the References section for details of all referenced documents.
Printing the Document: This document is uncontrolled if printed and is only intended to be viewed online. If you do need to print the document, the best results are achieved using Booklet printing or else double-sided, Duplex (2-on-1) A4 printing (both four pages per A4 sheet).
Always refer to the online document for accurate and up-to-date information.

Table of Contents

1. Key Points

This document provides guidance on the regulation of surface water discharges from built developments including construction sites, buildings, roads and yards. It covers the planning consultation procedure for new developments and the appropriate types of Sustainable Urban Drainage Systems (SUDS or SUD systems) for the developments.

SUDS are a legal requirement for all developments draining to the water environment other than a single dwelling or discharges to coastal waters.

Guidance on the high risk construction phase of developments is provided in section 6.3.

NOTE: Surface water runoff from rural environments, such as field drainage or land runoff, is not covered by this guidance but by guidance on the Water Environment (Diffuse Pollution) (Scotland) Regulations 2008.

Key reference documents are:

- *CAR - a practical guide* (Contolled Activities Regulations)
- *Sewers for Scotland*
- *SUDS for Roads*
- *SUDS Manual* (CIRIA C753)
- *Water Assessment and Drainage Assessment Guide* (WADAG)
- *WAT-SG-12: GBR for Surface Water Drainage Systems*
- *WAT-SG-75: Sector-specific Guidance - Construction Sites*

2. Adoption Issues

The *Water Assessment and Drainage Assessment Guide* (WADAG) provides advice to those involved in the installation of water and drainage infrastructure on the relevant stages to obtain relevant permissions, such as those from local authority Planning, Scottish Water and SEPA.

Maintenance of SUDS within the boundaries or curtilage of a private property, such as a residential driveway or a supermarket car park, is the responsibility of the land owner or occupier.

SEPA's preference is for SUDS constructed outwith the boundaries or curtilage of a private property to be adopted by Scottish Water, the local authority or a public body, and as such SEPA seeks a guarantee for the long-term maintenance and sustainability of any SUDS implemented.

Sewers for Scotland contains Scottish Water's construction standards for SUDS. A waiver or deviation from the Sewers for Scotland design can potentially be agreed with Scottish Water, e.g. to enhance biodiversity or amenity benefits.

If a SUDS for a development is constructed to these standards, Scottish Water has a duty (at the developer's discretion) to adopt the SUDS and thereby become responsible for it.

Section 7 of the Sewerage (Scotland) Act 1968 allows for the roads authority and Scottish Water to connect to each other's drainage systems where reasonable to do so. The *SUDS for Roads* guidance document was published in 2010 and provides a collaborative framework for a more integrated drainage approach.

It is anticipated that in a growing number of circumstances the local authority, in its role as the roads authority, may take on part or all of the SUD system as part of a surface water management plan.

3. SUDS Requirement

3.1 Authorisation under CAR

The following proposed developments can be authorised by GBR 10 (refer to section 4):

- housing developments up to 60 hectares;
- land used for non-residential premises or yards (except industrial estates);
- car parks with <1000 car parking spaces;
- retail (shops) or business parks (offices) (the size of retail/business parks being assessed on the basis of number of car parking spaces) and which are

Developments outwith GBR10 are authorised by a licence (refer to section 5).

GBR 10 also applies to surface water runoff during the construction phase of developments under 4 hectares; with a road or track length in excess of 5km; or where the slope is greater than 250 over 1 hectare or 500m length (refer to section 6.3). Above these thresholds a Construction SUDS licence will be required.

For surface water discharges such as those from quarries, open cast coal sites and landfill sites, additional considerations may be needed. Discharge quality limits related to dosing of flocculants or possible contamination with landfill leachate may be required.

The document *WAT-SG-39: Point Source Regime Definitions* provides guidance on when a discharge is classed as a trade effluent or as a surface water discharge.

3.2 SUDS Requirements

SUDS requirements for a particular land use (e.g. residential, industrial estates) should be determined by referring to the *SUDS Manual* (CIRIA C753).

Different urban land uses generate a variety of pollutants and similarly, different types of SUDS are capable of treating these pollutants to various extents.

3.2.1 Interception

It is very important that SUDS are designed to prevent runoff from the site for the majority of small rainfall events, as described in section 4.3.1 of the SUDS Manual. This is known as interception and typically requires source control.

3.2.2 Treatment of Runoff

Runoff should be treated to prevent negative impacts on receiving water quality. Table 4.3 of the *SUDS Manual* sets out the water quality management approach for differing land uses.

For most developments, this can be achieved by following the Simple Index Approach as described in section 26.7.1 of the CIRIA SUDS Manual to determine the type of SUDS required for the site. A *Simple Index Approach (SIA) Tool* is available to help determine whether the proposed SUDS are in line with the Simple Index Approach and acceptable. Appendix C of the SUDS Manual also includes worked examples of applying the Simple Index Approach. Guidance on infiltration SUDS is provided in section 6.8 of this document (WAT-RM-08).

The Simple Index Approach is appropriate for all land uses authorised by CAR GBR 10. For trunk roads/motorways, *Design Manual for Roads and Bridges* (Vol.11, Sect.10, Pt.3) guidance should be followed.

High pollution hazard sites require a CAR licence and whereas the Simple Index Approach may be appropriate, an alternative approach such as detailed risk assessment is likely to be required. Further guidance on detailed risk assessment is available from section 26.7.3 of the SUDS Manual.

Refer to section 6 of this document (WAT-RM-08) for further guidance on appropriate SUDS.

3.3 Planning Liaison

SEPA's planning service is consulted on a range of higher environmental risk planning applications as specified in our guidance *LUPS-GU9* (*Advice for planning authorities on how and when to consult SEPA*). A key consultation threshold included in the guidance is for 'major developments'. Major developments include housing developments of 50 or more houses and industrial/business developments with a floor space that exceeds 10,000 square metres .

3.3.1 Developments below the 'major development' threshold

For development that falls below the consultation threshold of 'major development' refer to *LUPS-GU8* (*SEPA standing advice for planning authorities and developers on development management consultations*) for standing advice on SUDS.

The standing advice makes it clear that SUDS are a requirement for new development under CAR with the exception of runoff from a single dwelling and discharges to coastal waters. Developers are directed to the *SUDS Manual* and the importance of preventing runoff from the site for the majority of small rainfall events (interception) is promoted. Applicants should be using the *Simple Index Approach (SIA) Tool* to determine if the types of SUDS proposed are adequate.).

For proposed developments of any scale (including below the 'major development' threshold) where a high pollution hazard level is identified (as defined in Table 4.3 of the SUDS Manual), the planning service will advise the applicant that direct contact is made with the local Operations (OPS) team. In such circumstances a detailed risk assessment is likely to be required (as per section 26.7.3 of the SUDS Manual) and OPS teams provide advice on the proposals and associated risk assessment as part of the CAR licence process.

The above approach will also apply to planning applications supported by an Environmental Impact Assessment (EIA) below the major development threshold.

3.3.2 Developments above the 'major development' threshold

In line with *LUPS-GU9* (*Advice for planning authorities on how and when to consult SEPA*) we advise planning authorities to consult us on larger scale developments ('major developments') including developments of 50 or more houses. Major applications should be accompanied by a Design Framework, Development Brief or Masterplan which:

1. provides adequate space to accommodate SUDS; and,
2. provides suitable construction phase SUDs.

SUDS should be considered at an early stage and be an integral part of the design process. SUDS design should be based upon the characteristics of the site and the nature of the proposed development. Priority should be given to managing water as close to source as possible through interception (section 4.3.1 of the *SUDS Manual*). Where a detention basin, pond, swale and/or filter trenches is/are proposed, SEPA encourages it/them to be designed to an adoptable standard in accordance with *Sewers for Scotland* or the SUDS Manual. We will provide a standard paragraph in our response to the planning authority to this effect.

OPS teams are not, therefore, routinely consulted on SUDS proposals. OPS teams and SEPA Hydrology may, however, be consulted in exceptional circumstances where there are complex surface drainage issues with a potential link to pluvial flood risk.

It is ultimately the responsibility of the planning authority to be satisfied that appropriate SUDS are included in the development design. They can refer to the CIRIA SUDS Manual and *Simple Index Approach (SIA) Tool* (both freely available on line).

Where a potential high pollution hazard level is identified by the applicant (as defined in Table 4.3 of the SUDS Manual), the planning service will advise the applicant that direct contact is made with the local OPS team. In such circumstances a detailed risk assessment is likely to be required (as per section 26.7.3 of the SUDS manual) and OPS teams provide advice on the proposals and associated risk assessment as part of the CAR licence process.

The above approach also applies to planning applications supported by an EIA above the major development threshold.

3.4 Discharges to Coastal/Transitional Waters

Discharges to transitional waters would normally only require minimal SUDS (see *WAT-SG-12: GBR for Surface Water Drainage Systems*). Simple source control for all run-off would be acceptable.

SUDS are not compulsory for discharges to coastal waters (see section 4.1) but may be required in certain circumstances.

3.5 Freshwater Pearl Mussel Sites

Where there is a conservation site (SAC or SSSI) designated for freshwater pearl mussels downstream which may be affected by the discharge, consideration should be given to enhancing the SUDS treatment either by increasing the treatment volume to 4Vt or, alternatively, by using an additional level of treatment. SNH may need to be consulted in accordance with the *Nature Conservation Procedure* for Environmental Licensing.

4. Authorising the Discharge - GBR

Surface water discharges are authorised by GBR 10 of CAR, a licence or by a construction SUDS licence depending on the nature of the development. The level of authorisation applicable is set down in *CAR - a practical guide* (Contolled Activities Regulations).

Infrequently, a high risk discharge may be escalated from a GBR to a licence (section 4.2). In addition, discharges from high risk areas (such as refuelling and chemical storage areas) constructed after 1 April 2007 cannot comply with GBR 10 and must be authorised by licence (section 6.6).

4.1 GBR

Discharges from low risk developments are authorised by GBR 10 and no direct consultation with SEPA by the developer is required. SEPA will respond to planning consultations in accordance with section 3. (Licensing is only required for discharges from higher risk developments, as specified in section 5).

For such discharges to be authorised, all conditions of the GBR must be complied with, including the requirement for SUDS (or agreed equivalent during construction phase only) draining to the water environment for all developments other than a single dwelling or discharges to coastal waters. Refer to *WAT-SG-12: GBR for Surface Water Drainage Systems* for further guidance.

NOTE: For all surface water discharges to coastal waters, including those to Bathing and Shellfish Waters, the GBR does not automatically require SUDS, due to the high dilution available. However these discharges still have to comply with the GBR's 'no pollution' requirement and SEPA may promote SUDS for these developments through its planning response.

In certain high risk situations SEPA may require SUDS for surface water discharges to coastal waters – this can only be achieved through direct regulatory control by escalation from a GBR to a licence.

4.2 Risk Assessment Leading to Escalation from GBR to Licence

Where the scale/location/nature of activity means that the proposed discharge would pose a high risk, for example for certain discharges to designated freshwater pearl mussel sites or designated Bathing and identified Shellfish Waters, then the discharge should be authorised by licence, rather than via the GBR.

A licence should be issued if the discharge requires ongoing monitoring or where site specific controls are deemed necessary.

(NOTE: it is expected that escalation to a licence will only occur in exceptional situations).

In these cases the developer should be informed that the discharge requires site-specific licence conditions and/or may require ongoing monitoring and control, so they need to apply for a licence. N.B. the normal licence application fee will apply in this case.

See section 5 for details of licensing.

On the rare occasion when it is intended to escalate to licence, then the OPS officer should inform the relevant Planning Team through the Planning Casework System and should also contact the applicant directly.

It should be noted that if a developer refuses to install SUDS to SEPA's satisfaction or to apply for a licence, there is an option of imposing a simple licence using a notice under regulation 11 of CAR (including payment of the licence application fee), provided SEPA has enough information to carry out a risk assessment and issue a licence. The licence conditions could then specify the SUDS requirements. Alternatively it may be preferable to take enforcement action relating to a breach of the GBR. These options should be put to RRT for a recommendation.

4.3 Pollution from Existing sites Leading to Escalation from GBR to Licence

For surface water discharges authorised by GBR where there is evidence of repeated pollution events, an application for a discharge licence should be required. Such sites causing chronic pollution would be expected to be on SEPA's monitoring plan.

5. Authorising the Discharge - Licence

Large-scale (high risk) developments are regulated by simple licence and cover the following:

- >60 hectares of land used for residential purposes
- >1000 car parking spaces
- Industrial estates
- Motorways/ A-roads

See sections 2 to 5 for more detail.

5.1 Construction SUDS Licences

Construction SUDS licences are project based activities due to the very high risk of run-off laden with sediment. These licences are applied on construction sites which:

- Exceed 4 hectares;
- Contain a road or track length in excess of 5km; or
- Includes any area of more than 1 hectare or any length of more than 500 metres on ground with a slope in excess of 250.

See section 6.3 for more detail. Specific information on construction SUDS licences, including the requirement for Pollution Prevention Plans, can be found in *WAT-SG-75: Sector-specific Guidance - Construction Sites*.

Standing advice to planning authorities and standard paragraphs for use in bespoke responses on higher risk sites can be found in the Land Use Planning publications.

5.2 Licence Applications

5.2.1 General

Licence-level surface water discharges are only authorised by a simple (or lower fee) licence (as opposed to a complex licence), except for Construction SUDS licences which attract project based fees. The licence application form is available on the SEPA website along with details of the current application fee.

A responsible person must be named in the licence application. The responsible person is the person specified in the licence who will secure compliance with the conditions of the licence. The responsible person can be a named individual or a corporate body. For those discharges which are intended to be eventually adopted by Scottish Water (SW), the licence will require to be transferred to SW as the responsible person, on adoption.

Discharges from developments that existed prior to 1st April 2006 but were unconsented under the Control of Pollution Act 1974 are authorised under GBR 10, but these can be escalated to a licence in exceptional circumstances.

Unmonitored surface water discharges which existed prior to 1 April 2006 and which were consented under COPA (and legalised by a COPA Prohibition Notice) have been transferred into the CAR regime as deemed registrations. The COPA consent conditions continue to apply as conditions of the CAR registration.

Discharges monitored by SEPA under COPA and attracting an annual subsistence charge were transferred to the CAR regime as licences, provided the operator applied to SEPA during the transitional period ending on 31 March 2006.

5.2.2 Advertising

Refer to *WAT-RM-20: Advertising and Consultation* for details.

5.2.3 Consultation

Refer to *WAT-RM-20: Advertising and Consultation* for details .

5.2.4 Other Water Use Regimes

An assessment should be made as to whether an application is required under other water use regimes. For example the development may involve a road crossing of a watercourse, bank reinforcement or a water abstraction, any of which may require incorporating into a multiple water use licence. The construction of the outfall is authorised by a separate schedule on the licence template. Guidance on best practice for outfall construction is available in *WAT-SG-28: Good Practice Guide - Intakes & Outfalls*.

If the SUD system is to be adopted by Scottish Water or a Local Authority or other public body, the construction of the surface water outfall must be to their standards.

5.2.5 Car Park Spaces

In order to automatically trigger the requirement for authorisation at licence level, this must be a new or enlarged development of >1000 car parking spaces.

It should be noted that business/retail parks with >1000 car parking spaces fall into this category. (Multi-storey car parks should only be licensed if > 1000 car parking spaces are exposed to rain water.)

5.2.6 Industrial Estates

The requirement for a licence only applies to new or enlarged industrial estates. For the purposes of this guidance, industrial estates do not include business parks (offices) or retail parks (shops). These should be assessed simply according the number of parking spaces associated with the development. An industrial estate would normally include marshalling yards, lorry parks and distribution depots including ports, but does not include low risk developments of a single or a few small units.

Every outfall from a new or enlarged industrial estate is a licensable activity.

5.2.7 Road Drainage

Drainage from new or modified motorways or A roads requires a licence. The requirement for a licence also covers drainage from major intersections from such roads. 'Modified' in this context means major work such as the addition of an extra lane but not re-tarring of roads etc. Each outfall draining needs authorising by a licence.

5.3 Receiving Environment

5.3.1 Check Areas on GIS

The following areas identified on GIS should be checked:

- Check the status of the receiving water body. If the water is less than good status due to pollution pressures, then a higher standard of SUDS may be required, for example applying 100% coverage of source control throughout the development.
- Depending on the officer's local knowledge, it may be necessary to check GIS for other discharges in order to assess pollution pressures on the water environment, including the Planning Standard map which contains a layer (used to flag areas of potential concern) called 'Areas of Cumulative Wastewater Drainage Impact'. As required, other officers in the local team should be consulted to gain local information.
- Sites listed for nature conservation (refer to the *Nature Conservation Procedure* for Environmental Licensing)

Sites of Special Scientific Interest (SSSIs)

- If the discharge is within the boundary of any SSSI, SNH should be consulted. SNH should also be consulted where the discharge is likely to damage any features specified in a downstream SSSI notification. Note that European-level water-dependent designated sites (SACs and SPAs), as WFD Protected Areas, are covered in section 5.2.2 below. Where there is a downstream conservation site designated for freshwater pearl mussels which may be affected by the discharge, consideration should be given to enhancing the

SUDS treatment either by increasing the treatment volume to 4Vt or, alternatively, by using an additional level of treatment.

Non-statutory conservation designations

- For example SWT and RSPB reserves.

Please note that the *Nature Conservation (Scotland) Act 2004* places a duty on SEPA and all public bodies to further the conservation of biodiversity. This general duty should be taken into account when issuing a licence.

5.3.2 Protected Areas

Protected Areas are given particular protection under the Water Framework Directive. They include areas designated under a number of other EU Directives as well as areas identified to protect the surface water or groundwater within them for drinking (Drinking Water Protected Areas).

- The risk of the surface water discharge impacting on a nearby potable water abstraction requires consideration. A check of GIS must be made to see if there are any drinking water abstractions close enough to be potentially affected by the discharge.
- The location of the discharge relative to identified Shellfish Growing Waters and designated Bathing Waters on the GIS database should be checked. Site-specific factors such as the likely constituents of the discharge and its volume, location and available dilution should be taken into account in order to determine the risk to such waters. Large scale discharges of surface water to Bathing/Shellfish Waters may need particular attention to minimise the extent of cross-connections and therefore risk of failures in the standards. SUDS are not designed to deal with sewage contamination, therefore any cross-connection should be dealt with separately through Scottish Water. Refer to *WAT-RM-13: Regulation of Microbiological Discharges for details* for details.
- Areas designated for the protection of habitats and species

Water-dependent Natura 2000 sites (SPAs and SACs).

- If SEPA is reasonably certain that the discharge shall have no significant effect on any such area then no consultation with SNH is required. Where this is not certain, an appropriate assessment is required. Refer to the *Nature Conservation Procedure* for Environmental Licensing.
- Where there is a conservation site designated for freshwater pearl mussels downstream which may be affected by the discharge, consideration should be given to enhancing the SUDS treatment either by increasing the treatment volume to 4Vt or, alternatively, by using an additional level of treatment.

5.3.3 Discharge to Coastal and Transitional Waters

Consideration needs to be given to the impact on designated Bathing Waters, Shellfish Waters and Shellfish Growing Waters as discussed in sections 5.2.1 and 5.2.2. (Sewer cross-connections and dog poo may pose risks).

NOTE: Direct discharges to Bathing and Shellfish Growing Waters may need to be avoided.

Refer to *WAT-RM-13: Regulation of Microbiological Discharges* and *WAT-SG-11: Modelling Discharges to Coastal and Transitional Waters* for further details.

The outfall may need to be located below Mean Low Water Springs (MLWS) to avoid a visible plume and aid dispersion etc. However there may be situations where MLWS may lie a large distance across mudflats eg. as is frequently the case in estuaries. In this case it may not be reasonable to require the construction of an outfall below MLWS, especially if for a small discharge. Similar cost/benefit considerations should apply for outfalls constructed in other difficult situations such as across a very rocky shore.

NOTE: Engineering works below Mean High Water Springs (MHWS) such as the construction of the outfall itself may require a licence under the Food and Environment Protection Act 1985 from Marine Scotland.

5.3.4 Discharge to Freshwater Loch / Canal

For a discharge to a freshwater loch, particular care must be taken to prevent aesthetic impacts due to visible oil on the loch surface. In certain locations phosphorus loading may need to be considered.

The discharger should contact *Scottish Canals* at an early stage if a discharge is proposed to a canal.

5.4 Licensing the Discharge

To determine appropriate SUDS refer to Chapters 4 and Chapter 26 of the *SUDS Manual*.

It is very important that SUDS are designed to prevent runoff from the site for the majority of small rainfall events, as described in section 4.3.1 of the SUDS Manual. This is known as interception and typically requires source control.

Whilst appropriate treatment can normally be determined by using the *Simple Index Approach (SIA) and Tool*, an alternative approach such as detailed risk assessment is likely to be required. Further guidance on detailed risk assessment is available from section 26.7.3 of the CIRIA SUDS Manual. The SUDS hydraulics should be checked, e.g. flow route, inlet and outlet. Liaison with SEPA Hydrology may be required.

The opportunity for habitat enhancement (e.g. due to SUDS wetland creation) should be maximised, and it may be appropriate to take advice from SEPA Ecology and Scottish Natural Heritage. The SEPA publication *Ponds, Pools and Lochans* is a valuable source of information regarding pond creation.

The local authority (acting as flood prevention authority) is responsible for specifying limitations on the flow from the development. Flow attenuation measures are often incorporated into the SUD system.

For infiltration systems requiring prior investigation, liaison with SEPA Hydrogeology may be required (refer to section 6.8).

Licence conditions must be set using the guidance in section 5.4 to ensure that local environmental standards will not be breached.

NOTE: Deterioration from high to good status can be permitted in certain circumstances. Refer to *WAT-RM-34: Derogation Determination - Adverse Impacts on the Water Environment* for details.

It is essential that an appropriate maintenance schedule for the SUDS is agreed with SEPA and the adopting party if appropriate. This schedule may be referred to in the licence.

Once submitted, SEPA has 4 months in which to determine a licence application. During this period, informal discussions may take place regarding the proposed discharge. Once the licence conditions have been drafted, SEPA will forward a draft copy of the licence to the applicant for their comments prior to issuing the licence.

Where SEPA needs further information and considers that determination of the application may take more than 4 months, then SEPA should formally request the information in writing under regulation 14(1) (Refer to *WAT-LETT-14: Letter Requesting Further Information*). This effectively stops the determination clock, which will only begin again once the required information has been supplied.

In order to assist other SEPA officers who may in the future deal with queries relating to the licence conditions, details of how any non-standard licence conditions were determined must be recorded on the Document Approval Form (DAF) in the box headed ‘Details of non-standard conditions not already covered in an appropriate decision document or RRT paper’ and placed in the working file. This is particularly important for any numeric licence conditions and information used in the determination such as flows should be recorded. This record will prove useful in situations such as when reviewing the licence conditions, if there was an appeal against a Notice or in the event of complaints from the operator or the public regarding the licence conditions.

The discharge should be assessed in order to determine the requirement for routine monitoring. Refer to *DREAM* (Dynamic Regulatory Effort Assessment Model & Risk Assessment Tool) for further details.

5.5 Licence Conditions

Use the Surface Water Discharges licence template:

- *WAT-TEMP-60: Surface Water Discharges (SUDS) Licence Template*

5.5.1 Effluent Quality Conditions

Descriptive Conditions

Descriptive conditions describe the quality or impact of the effluent and should be used in the majority of circumstances for licensed surface water discharges. Periodic inspections may be required to ensure there is no chronic environmental impact. The intermittent nature of surface water discharges means that routine chemical sampling is normally inappropriate since it will not coincide with short lived polluting episodes. Downstream ecological monitoring is therefore often a more useful means of determining the impact of intermittent discharges.

This does not apply to surface water discharges from sites such as quarries, open cast coal sites and landfill sites, where routine sampling may be needed. For such sites discharge quality limits related to suspended solids, dosing of flocculants or possible contamination with landfill leachate may be required.

A descriptive condition must not be included with a numeric standard regulating the same determinand. For example, the descriptive oil condition “shall not include significant traces of visible oil or grease” must not be included with a numeric standard for hydrocarbon oil.

Conditions to prevent growth of sewage fungus downstream, smothering of the stream bed, foaming and visible effluent plumes should be included if there are no sanitary determinands.

Single Tier Standards

Due to the complexity and range of pollutants in surface water discharges, a traditional EQS approach in determining licence conditions is not appropriate.

Numeric standards should only be used where descriptive conditions are not appropriate. Single tier standards should be used for surface water discharges.

5.5.2 General Conditions

Maintenance

Conditions requiring operation and maintenance of the treatment facility in accordance with the maintenance schedule and provision of a record of maintenance for inspection by SEPA, on request, should be included.

Sampling Points

A facility for inspecting and obtaining representative samples of the discharge is required. The sample point, at which point any effluent numeric conditions would apply, should be after the treatment system.

Details of a sampling chamber allowing easy access into the manhole to sample using a container can be found in *Technical Handbook Section 3: Environment*.

If the discharge is to be routinely monitored, the site will require a health and safety risk assessment. For new developments, where the sampling point has not yet been constructed, the requirement for safe access should be discussed with the discharger prior to the licence being granted.

6. Determining Appropriate SUDS

6.1 Introduction

To determine appropriate SUDS, refer to Table 4.3 and Chapter 26 of the *SUDS Manual* (including the *Simple Index Approach (SIA) Tool*). This approach takes into account that SUDS vary in terms of their pollutant removal capacity, and land-uses differ in terms of the risks of pollution they present.

The CIRIA Manual is a major source of information regarding SUDS selection and as well as including guidance on appropriate treatment, it provides detailed guidance on types of SUDS and design considerations.

In addition consideration must be given to who will adopt the system e.g. Scottish Water and *Sewers for Scotland* standards or Roads Authority and *SUDS for Roads*.

The indicative guidance in the following sections provides additional guidance on the type of SUDS that may be appropriate for various situations.

It is important to realise that the impact on the water environment at a local scale must be assessed and not just the impact on the scale of the overall water body (the scale of which may be many kilometres).

NOTE: Surface water must be fully treated by SUDS prior to discharge to the water environment. Existing ponds must not be used as SUDS and existing watercourses must not be used to convey untreated surface water.

There are a number of sources of information that may be used to determine whether a proposed SUDS is acceptable.

- *CAR - a practical guide* (Contolled Activities Regulations)
- *Sewers for Scotland*
- *SUDS for Roads*
- *SUDS Manual*
- *Water Assessment and Drainage Assessment Guide* (WADAG)
- *WAT-SG-12: GBR for Surface Water Drainage Systems*

6.2 Proprietary SUD Systems

6.2.1 Background

Proprietary surface water treatment systems such as oil interceptors and vortex settlement chambers have historically been used and accepted as ‘equivalent systems’ for use during the construction phase of a development, in accordance with GBR10(d)(i).

For completed developments, proprietary systems are sometimes used as part of the overall SUDS management train e.g. to protect a SUDS pond from excess silt or oil contamination. However SEPA does not consider that they provide a level of SUDS treatment.

Increasingly sophisticated proprietary systems are being developed for use to treat runoff from the completed phase of a development. In recognition of this, SEPA has agreed that there may be specific situations where proprietary systems would constitute a level of SUDS, as explained in section 6.2.2 below. It should be emphasised however that SEPA's general position is that conventional SUDS will be required for the majority of developments.

6.2.2 Proprietary Systems

Proprietary systems would not be considered as a level of treatment in unconstrained sites due to their relatively high maintenance requirements and the lack of visibility if these systems fail.

Proprietary systems will only be considered as a level of SUDS for constrained sites (i.e. in exceptional circumstances where conventional SUDS are not practicable). Proprietary systems may also be appropriate for existing sites which are currently causing pollution and where treatment is to be retrofitted.

If it is agreed that a proprietary system is acceptable, then in order to be considered a level of SUDS, this system should fulfil the following functions -

- treat runoff
- allow infiltration (where ground conditions are suitable*)
- attenuate flows.

*SEPA acknowledges that infiltration will not always be appropriate or possible as a result of particular ground conditions (e.g. land subject to contamination or impermeable soils). Where this has been demonstrated by the applicant for a constrained site, a proprietary system that treats run-off and attenuates flows may be acceptable.

If conventional SUDS are not proposed, then contact will have to be made with the local SEPA team in order to discuss this on a site specific basis.

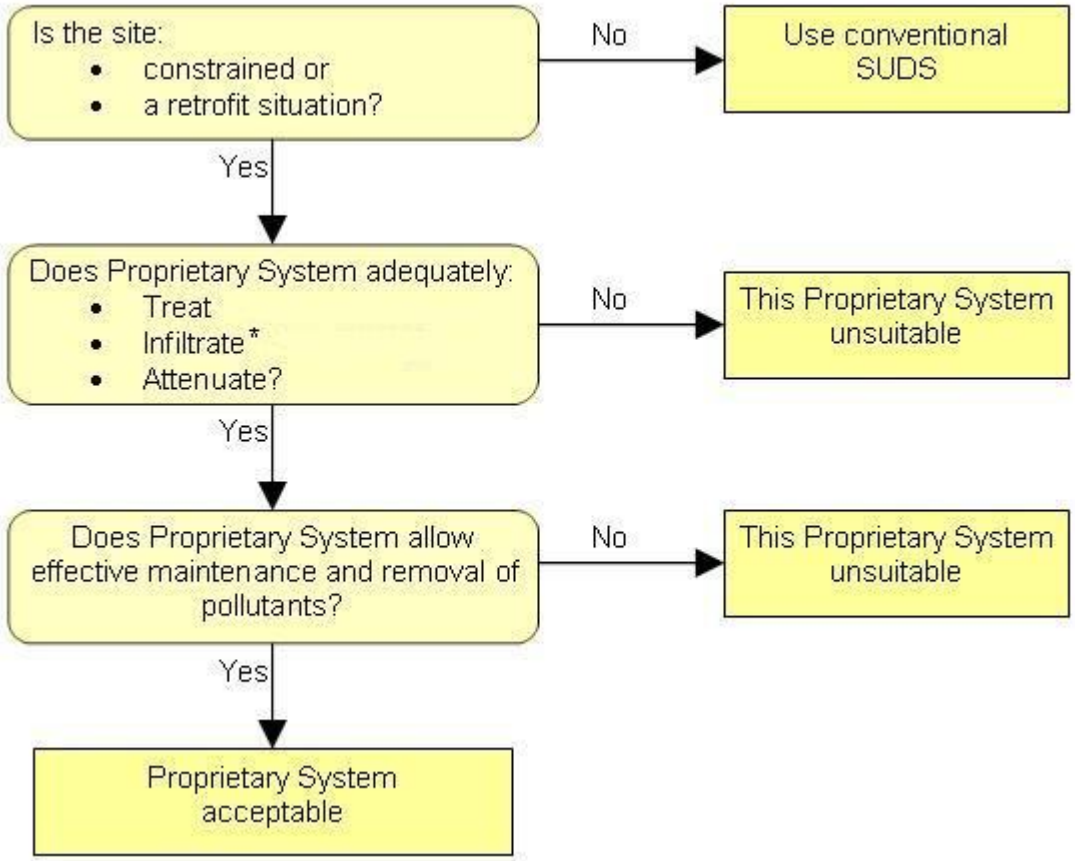
Clearly not all proprietary systems are equally capable at treating surface water – some systems will be more effective and robust than others.

SEPA recognises that some proprietary products may have demonstrated that they are capable of delivering more than 1 level of SUDS.

The SEPA officer should require the person proposing the system to demonstrate that the design of the proprietary system allows effective maintenance and removal of accumulated pollutants.

A flowchart summarising when a proprietary system could be acceptable is provided below.

Figure 1 Summary of checks on suitability of a Proprietary System



*SEPA acknowledges that infiltration will not always be appropriate or possible as a result of particular ground conditions (e.g. land subject to contamination or impermeable soils). Where this has been demonstrated by the applicant for a constrained site, a proprietary system that treats run-off and attenuates flows may be acceptable.

Proprietary systems generally have a higher maintenance requirement than SUDS and therefore maintenance and vesting responsibilities must be made very clear.

Clearly there is an advantage in installing systems where it becomes apparent if maintenance has not been undertaken (e.g. by ponding on the surface).

6.3 Construction Phase and Sediment Removal

Sediment removal is an essential part of the treatment for surface water discharges, especially during the construction phase, during which the risk of pollution is high.

The performance of the final SUDS scheme will be seriously jeopardised if it becomes contaminated during the construction phase of a site development and so suitable protection or the timing of the permanent SUDS construction will need to be carefully considered.

General Binding Rule (GBR) 10 (which authorises run-off water discharges to the water environment) applies to the construction phase as well as the completed development. GBR 10 requires that during construction, developments are drained by a SUD system or equivalent systems equipped to avoid pollution of the water environment. Equivalent systems allows for alternative devices such as vortex separators to be used, but only during the construction phase. Where the GBR 10 threshold for the size of development is exceeded a Construction SUDS Licence (WAT-TEMP-21) will be required.

Pollution from construction sites commonly occurs due to large areas of stripped soil being exposed to rainfall over a protracted period. GBR 11 (which authorises discharges into surface water drainage systems) therefore requires the minimising of the extent of such areas of exposed soil and the duration that these areas are exposed.

WAT-SG-12: GBR for Surface Water Drainage Systems gives additional guidance on GBRs 10 and 11. **WAT-SG-12 also provides useful links to guidance documents on best practice in prevention of pollution during the construction phase**.

For large developments the Pollution Prevention Plan is required as part of the licence. *WAT-SG-75: Sector-specific Guidance - Construction Sites* details the information required to be incorporated into the Pollution Prevention Plan. SEPA officers should use *WAT-TEMP-21: Construction Site Licence Template* when issuing a licence for these activities.

Whereas source control will obviously reduce the quantity of silt entering a SUDS, a pond/basin may be required for larger developments. The most appropriate means of achieving this depends on site-specific factors such as expected flows and the anticipated loading of silt.

An operator may wish to discuss the use of flocculant to aid the settlement of solids in a construction phase settlement pond. Flocculants are substances which promote the clumping of particles. Flocculants are often polyelectrolytes and can contain aluminium which is toxic to fish, particularly in its dissolved form. It is therefore, important that the use of flocculants is discouraged in favour of good surface water management as described in the in best practice guides linked to from *WAT-SG-12: GBR for Surface Water Drainage Systems*.

GBR10 and CAR licences require that the discharge must not result in pollution of the water environment. Where a site has a CAR licence there may by a condition to control the discharge concentration of flocculants. Further information about poly-aluminium chloride and polyelectrolytes can be found in *WAT-RM-12: Regulation of Discharges from Water Treatment Works*. Please seek Chemistry advice for appropriate licence conditions as these substances can have complex chemical reactions in the water environment.

6.4 Housing, Parking, Retail/Business Parks

Source controls such as permeable block paving, filter strips, green roofs or swales are best practice and are a vital part of the treatment train.

Site and regional controls include detention basins/ponds or stormwater wetlands. Pond/wetlands are preferred to detention basins due to biodiversity / amenity benefits. Larger ponds and wetlands may be necessary for large / high risk activities.

Water butts with overflows to permeable block paving or soakaways may be worth including. Green roofs should be considered, especially for larger buildings.

An open drainage network comprising conveyance swales or linear wetlands is encouraged as this allows for rapid detection and management of accidental spills, as well as providing an initial level of treatment.

The SUDS needs to identify and cope with dry weather contamination (e.g. exposure of gross wrong connections so they can be rectified and absorb minor occasional contamination) as well as treating wet weather runoff. SUDS for housing need to be selected by the developer in consultation with SEPA and other interested parties such as Scottish Water and the local authority.

It is good practice that a maintenance schedule / regime is established which also identifies who is responsible for maintenance.

For retail/business parks with high risk areas such as vehicle unloading bays, refer to section 6.6.

Discharges to transitional waters normally require only minimal treatment.

6.5 Industrial Estates

Business or retail parks are covered in section 6.4 above.

Suitable treatment options for industrial estates include:

- **Source controls** such as filter strips, permeable block paving, green roofs or swales
- **Site controls** such as swales or detention basins/ponds.
- **Regional controls** such as ponds or stormwater wetlands. Larger ponds and wetlands may be necessary for large / high risk activities.

Green roofs should be considered, especially for larger buildings.

An open drainage network comprising conveyance swales or linear wetlands is encouraged as this allows for rapid detection and management of accidental spills, as well as providing an initial level of treatment.

Upstream oil interceptors may be required to protect SUDS from gross oil pollution, but are not considered as a SUD system by themselves. NOTE: It is not intended that oil interceptors would be adopted by Scottish Water and therefore ongoing maintenance would be the responsibility of the owner.

Infiltration systems for industrial yards are usually inappropriate because of groundwater and contaminated land concerns and need to be assessed on a site-by-site basis.

High risk areas on industrial estates need assessing as described in section 6.6 below.

It is important that written evidence of the maintenance schedule / regime is provided and assessed as being acceptable. This should include a detailed maintenance schedule and also identify who is responsible for maintenance.

Discharges to transitional waters from certain industrial estates however, normally require only one level of treatment.

6.6 Discharges from High Risk Areas

Certain proposals will be for the discharge of surface water from ‘high risk’ areas constructed after 1st April 2006. (These high risk areas detailed in GBR 10(e) are (i) fuel delivery / refuelling areas (ii) vehicle loading or unloading bays where potentially polluting matter is handled; and (iii) oil and chemical storage, handling and delivery areas.)

GBR 10(e) prohibits surface water discharges to the water environment from these areas.

All efforts should be made to minimise or eliminate completely the need for these high risk areas to discharge to the surface water drainage system and/or foul sewer e.g. by using canopies or undertaking the high risk activities indoors.

Where drainage from a high risk area is unavoidable in an area served by a suitably sized foul sewer, the high risk area should discharge to the foul sewer with the prior agreement of Scottish Water.

If there is no reasonable alternative (including disposal to a foul sewer) other than a discharge to the surface water drainage system, then this activity will require a licence as it is not authorised under the GBR. The licence will then specify the controls, including levels and type of SUDS treatment, and any additional treatment such as oil interceptors, required to protect the receiving waters.

The developer should be asked to apply for a licence, with an application fee.

However, if a developer refuses to apply for a licence, there is an option of imposing a licence using a notice under regulation 11 of CAR (including payment of the simple application fee), provided SEPA has enough

information to carry out a risk assessment and issue a licence. This should be put to RRT for a recommendation.

6.7 Roads and Motorways

For trunk roads and motorways, the *Design Manual for Roads and Bridges* (Vol.11, Sect.10, Pt.3) guidance should be followed.

- DMRB requires that all SUDS draining trunk roads / motorways to watercourses are lined unless a Ground Water Impact Assessment (GWIA) has been carried out. N.B. SEPA encourages unlined SUDS so that road runoff can be infiltrated near to its source, and therefore we would not normally require lining of road runoff SUDS.
- DMRB requires the use of HAWRAT (Highways Agencies Water Risk Assessment Tool). This tool specifies the treatment required to protect the receiving watercourse. SEPA will accept the HAWRAT assessment. However, where the HAWRAT assessment indicates no treatment, we will require a minimum of 1 level of SUDS for new or modified developments.
- HAWRAT is designed for watercourses, and where discharges are proposed to lochs, a suitable risk assessment is required to be undertaken by the applicant.The DMRB/HAWRAT assessment takes account of discharges into protected areas, therefore there is an opportunity for SEPA to use the assessment outputs as a simple way to complete the Annex 1 assessment in SEPA's *WAT-SG-90: Application of environmental standards in assessing risks to river and loch Natura 2000 interests*.

For roads and motorways suitable treatment options include:

- **Source controls** such as swales, filter trenches and filter strips.
- **Site or regional controls** such as extended detention basins.

Basins are preferred to ponds for treating runoff from motorways and major roads, if protected by filter drains or swales first. An extended detention basin contains permanent wet pools within the basin and provides additional habitat of reasonable quality, but probably more importantly for water quality performance is the far larger area of intermittently wet vegetation. That is the principal surface to be contaminated by oil as surface films are left clinging to vegetation when water volumes decline after the rain event. Exposure to sunlight and the far greater availability of oxygen allows for degradation in surface zones, eg. oily vegetation compared to bottom sediments in ponds.

6.8 Infiltration SUDS

Infiltration SUDS can affect groundwater in 2 ways

- By mobilising contaminants that are already in the ground to groundwater or surface water.
- By the land use itself (e.g. as a lorry park) contaminating groundwater.

Surface water discharges must be authorised so that the Water Framework and Groundwater Directives are complied with. For activities which pose a risk of entry of List I substances into groundwater, or a risk of groundwater pollution by other pollutants, a prior investigation must be undertaken and shown to be acceptable before authorising such an activity. A SEPA Hydrogeologist should be contacted.

Direct discharges to groundwater are not usually permitted under CAR. Refer to *LUPS-GU31* (*Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems*).

Activities requiring prior investigation include infiltration SUDS proposed for:

- Brownfield sites
- Industrial sites
- Petrol stations
- Lorry parks

For low risk infiltration SUDS such as permeable block car parking, roof water soakaways and infiltration trenches serving housing and roads, no prior investigation is required.

Table 26.4 of the *SUDS Manual* provides guidance on SUDS mitigation indices for discharges to groundwater and requires soils of 'Good attenuation capacity'.

'Good attenuation capacity' includes loamy soils. This would not include soils with a 'principal soil type' of sand or coarser, with the material having no apparent plasticity/cohesion. Clay soils would not normally allow sufficient infiltration. These characteristics should be determined in accordance with British Standard (BS5930: 1999, Code of Practice for Site Investigations).

6.9 Additional Considerations for Contaminated Land Sites

SUDS can be applied on contaminated land sites, but a prior investigation needs to be undertaken.

Where infiltration systems are not appropriate, non-infiltration SUDS can be installed. A shallow grass swale (with impervious liner) is the shallowest drainage option (therefore carrying the least risk of inserting drains deep enough to pick up contamination from the ground): conventional drains will invariably be deeper. A shallow wetland marsh (with impervious liner) may be a good idea to remove residual contamination that may be unavoidable.

Basically, SUDS do not conflict with normal business on contaminated land, and actually offer advantages over conventional systems. Refer to *SUDS Advice Note: Brownfield Sites* for further details.

6.10 Combined Sewers

Scottish Water recommends that new surface water discharges should not be permitted to discharge to a combined sewer. This avoids premature operation of combined sewer overflows (CSOs) and the unnecessary using up of capacity in the drainage infrastructure. If Scottish Water is to permit new surface water discharges to the combined sewer, then storm flows will need to be attenuated to Scottish Water's prescribed limit.

NOTE: Scottish Water will only accept new surface water into a combined system in exceptional circumstances.

References

NOTE: Linked references to other documents have been disabled in this web version of the document.

See the Water >Guidance pages of the SEPA website for Guidance and other documentation (*www.sepa.org.uk/regulations/water/guidance/*).

All references to external documents are listed on this page along with an indicative URL to help locate the document. The full path is not provided as SEPA can not guarantee its future location.

CIRIA guidance (www.susdrain.org), including:

- Guidance on the construction of SuDS (C768)
- The SuDS Manual (C753)

CAR - a practical guide (*Controlled Activities Regulations*) (www.sepa.org.uk)

Design Manual for Roads and Bridges (Vol.11:Sect.3:Pt.10 HD45/09) Highways England (www.gov.uk)

DREAM (Dynamic Regulatory Effort Assessment Model & Risk Assessment Tool) SEPA Intranet

Land Use Planning publications (www.sepa.org.uk), including:

- *LUPS-GU8* (*SEPA standing advice for planning authorities and developers on development management consultations*)
- *LUPS-GU9* (*Advice for planning authorities on how and when to consult SEPA*)
- *LUPS-GU31* (*Guidance on Assessing the Impacts of Development Proposals on Groundwater Abstractions and Groundwater Dependent Terrestrial Ecosystems*)

Nature Conservation (Scotland) Act 2004 NetRegs (www.netregs.org.uk)

Nature Conservation Procedure (for Environmental Licensing) SEPA Intranet

Ponds, Pools and Lochans Guidance on good practice in the management and creation of small waterbodies in Scotland (www.sepa.org.uk)

Scottish Canals (www.scottishcanals.co.uk/)

Sewers for Scotland Scottish Water (www.scottishwater.co.uk)

Simple Index Approach (SIA) Tool (MS Excel) (www.susdrain.org)

SUDS for Roads Aug 2010, SCOTS website (www.scotsnet.org.uk)

SUDS Advice Note: Brownfield Sites (www.sepa.org.uk)

Technical Handbook Section 3: Environment Scottish Government Building Standards (www.gov.scot)

Water Assessment and Drainage Assessment Guide (WADAG) SUDSWP (www.sepa.org.uk)

WAT-LETT-14: Letter Requesting Further Information

WAT-RM-12: Regulation of Discharges from Water Treatment Works

WAT-RM-13: Regulation of Microbiological Discharges

WAT-RM-20: Advertising and Consultation

WAT-RM-34: Derogation Determination - Adverse Impacts on the Water Environment

WAT-SG-11: Modelling Discharges to Coastal and Transitional Waters

WAT-SG-12: GBR for Surface Water Drainage Systems

WAT-SG-28: Good Practice Guide - Intakes & Outfalls

WAT-SG-39: Point Source Regime Definitions

WAT-SG-75: Sector-specific Guidance - Construction Sites

WAT-SG-90: Application of environmental standards in assessing risks to river and loch Natura 2000 interests

WAT-TEMP-21: Construction Site Licence Template

WAT-TEMP-60: Surface Water Discharges (SUDS) Licence Template

Non-online References

- *Diffuse Pollution: An Introduction to the Problems and Solutions* 2004, IWA, London (Neil Campbell, Brian D'Arcy, Alan Frost, Vladimir Novotny, Anne Sansom)
- *DPI technical report, Number 7* (Wilson and Clarke)

- End of Document -