

Code for Sustainable Homes – Technical Guidance Note 001

Supplementary guidance on the assessment of the Management of Surface Water Run-off criteria (SUR 1)

Issued 16 December 2009

This note has been issued by BRE Global on behalf of CLG for use by providers of Code services, housing developers, consultants and assessors.

One of the objectives of the Code for Sustainable Homes is to promote DEFRA's sustainable drainage (SUDs) policy which aims to minimise and better manage surface water run-off to reduce flood risk, whilst also taking account of prevailing regulatory requirements.

Following experience from the first assessments and feedback from industry, stakeholders and assessors, BRE Global has recommended further clarification of the interpretation of the Technical Guide requirements and to overcome barriers to development where the standards set out are inappropriate. CLG has agreed to the publication of this Technical Guidance Note and its retrospective implementation against current and previous versions of the code as described in this document. This guidance takes immediate effect.

This Technical Guidance Note should be read in conjunction with the relevant Technical Guide for the version of the Code being used. It has been prepared by BRE Global and CLG with the help of a technical advisory group comprised of representatives from housing developers, consultants, DEFRA and the Environment Agency.

It is intended that this guidance will be reviewed on a regular basis in line with developments in Government policy including the ongoing development of National SUDs Standards and changes to regulations as these develop. This will ensure that the Code continues to provide an incentive to move towards policy targets. Further changes to this issue are proposed in the consultation on the future revisions to the Code published in December 2009.

1.0 Special Cases

Items 1.1 and 1.2 below should be read in addition to the Sur 1 'Special Cases' as detailed in the May 2009 and all previous versions of the Technical Guide.

Although a number of Special Cases have been identified below, the aim of Sur 1 should always be met as far as is possible. This is;

"To design housing developments which avoid, reduce and delay the discharge of rainfall to public sewers and watercourses. This will protect watercourses and reduce the risk of localised flooding, pollution and other environmental damage."

1.1 Sites with Existing Infrastructure/Planning Approval

Some sites may not be in a position to meet the requirements set out in the Code due to existing or approved infrastructure strategies that pre date the requirement for a Code rating.

- a) For sites where planning approval (covering the *detailed* drainage strategy for the site) has been granted prior to the Code requirement being set for the development, the mandatory element of Sur 1 can be met by default. No credits for water quality can be awarded if the mandatory element is met using this method. Evidence requirements 1,2 and 3 as listed below
- b) For sites where the assessed dwellings are *directly* connected to existing infrastructure which pre-dates the Code requirement for the site the mandatory element of Sur 1 can be met by default. No credits for water quality can be awarded if the mandatory element is met using this method. Evidence requirements 3 and 5 as listed below.
- c) Where the Planning Authority (or other statutory authority) have exercised their statutory powers and have set specific *minimum* flow rate/*maximum* storage requirements that are less onerous than the specific Sur 1 criteria, the statutory requirements will take precedent over the specific Code criterion. All other criteria will still be applicable. Evidence should be provided to confirm that this is the case and should be formal documentation from the statutory authority, this should include evidence 1 and 4 as listed below.
Note: Where the statutory authority has approved a design on the basis of a minimum discharge rate identified through an FRA, compliance with this minimum standard will be deemed to meet the mandatory peak rate of runoff requirement, where supported by the documentary evidence. In all other cases, the approval of a specific design feature or the setting of a non-compliant discharge rate will not be sufficient to demonstrate compliance.

The following evidence may be provided to demonstrate that the aim of Sur 1 cannot be achieved as, referred to in a) to c):

1. Planning approvals/conditions.
2. HCA grant approvals, RSL/HA Contract Conditions or planning conditions which demonstrate the date the Code requirement was enforced.
3. Plans showing coverage of existing and approved drainage designs and the connections to them.
4. Documentary evidence from the Statutory Authority stating specific design requirements.
5. Flood Risk Assessment – this may contain some of the evidence required in items 1 to 3 above and therefore can also be provided for any of the above scenarios in addition to those stated.

1.2 Sites with low discharge flow rates

In accordance with best practice, the discharge flow rate from the developed site should be calculated in line with the run-off rate requirements in the guidance. This calculation should include the total flow rate from all dwellings (including all non-assessed dwellings) on the site feeding into the Discharge Point. The Discharge Point is defined as the point of discharge into the watercourse (including, rivers, streams, ditches, drains, cuts, culverts, dykes, sluices, public sewers and passages through which water flows, as definition in the Technical Guidance Document). Where this calculation results in discharge flow rates of less than 5l/s this rate may be increased up to a level of no more than 5l/s at the point of discharge from the site to reduce the risk of blockage.

For example, if the flow rate for the 1 year and 100 year were respectively 4l/s and 7l/s, then the control would be 5l/s and 7l/s. Similarly if it was calculates as being 2l/s and 4l/s, then a maximum

of 5l/s could be applied to both run-off limits.

Sites should not be subdivided to enable higher overall discharge rates to be claimed. It is, however, recognised that some sites may require more than one Discharge Point as a result of the local topography/existing surrounding drainage infrastructure, and in such cases the discharge flow rate may be increased to a level no greater than 5l/s per Discharge Point. The assessor should seek evidence that the number of discharge points is required as a result of topography and/or infrastructure limitations. Evidence in respect of topography should be in the form of a topographical map including site survey levels and outfall levels. This should also include an explanation from the appropriately qualified consultant or engineer as to why multiple discharge points are required, stating that it is not feasible to have fewer discharge points. Evidence in respect of infrastructure limitations is likely to come from the appropriate statutory body and/or an appropriately qualified consultant or engineer.

2.0 Volume of Run-off - Interpretation of the Mandatory Assessment Criteria

Further to information previously published regarding the Volume of Run-off requirements in Sur 1 in the form of technical query responses and Process Notes, the following guidance provides further clarification on the approach to be taken by the appropriately qualified consultant or engineer when demonstrating that the volume of run-off from the development has been managed in accordance with the Assessment Criteria.

The information below should be read alongside the assessment criteria as set out in the relevant Technical Guide (excluding April and October 2007). It should be used in conjunction with the Sur 1 template, as a supplementary information sheet to aid in completing Section E, Questions 11 and 12.

2.1 Introduction

To comply with the Volume of Run-off criteria in Sur 1 on sites where the development will result in an additional volume of run-off, the volume must be reduced in accordance with the hierarchy as set out in the Code for Sustainable Homes Technical Guide; the additional volume should be entirely reduced using infiltration and/or by making rain water available for reuse within the dwelling. If this is not possible then a subsequent hierarchy of criteria apply, as per the Technical Guide.

The report provided by the appropriately qualified consultant or engineer for Sur 1 should evaluate the opportunities and barriers that exist on the site for infiltration and water reuse and make recommendations to maximise the practical use of these techniques.

The 'appropriately qualified consultant or engineer' (as defined in the Technical Guide) is required to demonstrate within the evidence supplied that full consideration has been given to opportunities for reducing the additional volume of run-off through infiltration and/or by making rainwater available for use in the dwelling. For clarification, this individual should therefore be capable of completing hydraulic calculations as detailed in the SUDS manual and providing and interpreting the calculations required to confirm compliance with the requirements of the Technical Guidance.

The information below has been provided to assist with this evaluation and relates to **section E, question 11** of the **Sur 1 template** where the appropriately qualified consultant or engineer is prompted to provide their reasons why infiltration and/or rainwater harvesting are not appropriate for the development being assessed.

2.2 Evaluating infiltration (Q11 of Sur 1 template);

- a) Geology – For sites where infiltration rates are insufficient to allow full or partial penetration of water into the ground, details of the ground investigation report should be provided with a full explanation of why the land is not appropriate for infiltration.
On sites where the geology is such that infiltration could create an increase in the risk of ground instability, a detailed ground investigation report should be provided with a full explanation of why the land is not suitable.
- b) High Water Table - For sites where the water table is high infiltration may not be feasible. Information on water table levels across the site should be provided (see the SUDS Manual for details on the suitable proximity of infiltration structures in relation to the water table). The hydrological report should detail the water table levels across the site and the inappropriateness of infiltration techniques on the site

- c) Contaminated Land/Sites Subject to Remediation - In cases where the land has been deemed too contaminated and/or the approved remediation strategy restricts infiltration due to the increased risk of contaminant mobilisation, evidence should be provided to demonstrate the level, nature and location of contamination together with the risks involved. This should be included in a ground investigation report and/or full risk assessment taking into account relevant legislation, such as PPS 23, the Water Resources Act 1991, the Environmental Protection Act 1990, the Groundwater Directive (2006/118/EC) and more recently, the Groundwater (England and Wales) Regulations 2009.
- d) Ground Water Protection Zones (GPZ) – In areas where other restrictions such as GPZs are present which restrict the ability to infiltrate, this can be used to justify an inability to infiltrate. This restriction should be confirmed in writing by the regulator to demonstrate compliance.
- e) Small or Densely Built Sites – In cases where there is insufficient space to permit use of infiltration techniques in compliance with Building Regulations Part H3 this should be demonstrated on site plans.

2.3 Evaluating Rainwater Harvesting Systems (Q11 of Sur 1 template):

The following information regarding rainwater harvesting takes precedent over the section entitled 'Reasons for not installing' on page 6 of the September 2009 process note.

For sites where infiltration cannot reduce all of the additional volume the appropriately qualified consultant or engineer must evaluate the appropriateness of rainwater harvesting systems to reduce the residual additional volume by diverting water for use within the dwelling. Where rainwater harvesting is installed a risk assessment should be carried out in accordance with guidance in BS 8515. The following areas should be considered as part of this evaluation:

- a) Both above and below ground rainwater harvesting (RWH) tanks must be considered.
- b) Small or Densely Built Sites – In cases where there is insufficient space to permit the installation of above or below ground storage facilities in compliance with best practice this should be demonstrated on site plans which include the tank sizes and other engineering work that would be required to comply.
- c) Sites Subjected to Remediation/Contaminated Land - In some cases the land may be considered too contaminated for below ground storage solutions due to an unacceptable risk of leaching into surrounding pipework or where a contaminant barrier layer on the site cannot be compromised. In such cases the appropriate contaminated land expert should specifically confirm that this is the case in the form of a ground contamination investigation report and such a document can be used as evidence of non-viability.
- d) In some instances a statutory Planning Authority, the Environment Agency or other statutory body may set specific site run-off requirements which conflict with the Code requirements to consider rainwater harvesting systems. The statutory requirements will take precedence over those in the Code only where the body is doing so by exercising their statutory powers. These bodies do not have an arbitrary discretion to set requirements which are conflicting with the Code. Written documentary evidence will be required in the form of a letter, site specific policy statement or notification of rejection from the relevant statutory body, stating details of the policy/rejection and the basis on which it is made.

2.4 Residual Run-off:

If the additional volume of run-off has not been entirely reduced via infiltration and/or rainwater harvesting, the appropriately qualified consultant or engineer should ensure that run-off is discharged into the watercourse (this includes rivers, streams, ditches, drains, cuts, culverts, dykes, sluices, sewers and passages through which water flows) according to the options listed in the guidance, in the order of priority that they appear in the guidance. Full justifications must be provided for not achieving an option before attempting the next option in the list. These justifications can be entered within Section E, Question 12, of the Sur 1 template.

- A. The remaining additional volume of run-off post development (for the 1 in 100 year event of 6 hour duration) which cannot be prevented from discharging to watercourses, must firstly be discharged at the pre development site's estimated mean annual flood flow rate (Q_{bar}).
Where this cannot be achieved, full justification must be provided within the hydrological report. Calculations detailing the required size of throttle to meet this requirement and an explanation as to why this was deemed technically unacceptable must be provided.
- B. The discharge rate should then be reduced to 2l/s/ha. Again, where this is not achievable, full justifications must be provided within the hydrological report. Calculations detailing the required size of throttle to meet this requirement and an explanation as to why this was deemed technically unacceptable must be provided. The next option can then be attempted.
- C. If the run-off cannot be reduced to Q_{bar} or 2l/s/ha it should then be reduced to the minimum flow rate (l/sec) based on good practice guidelines to prevent easy blockage, by ensuring the outlet throttle is not too small. Where the Special Cases as outlined in this document, (section 1.2) is applicable, the guidance regarding the 5l/s can be applied to the site.

2.5 Sewerage Undertaker Requirements

Where the Sewerage Undertaker has set a specific **minimum** flow rate requirement that exceeds the pre development run-off rate, this minimum flow rate will take precedence over the requirements set out in the Code. Documentary evidence must be provided from the Sewerage Undertaker to confirm the requirement and the basis on which it has been made.

*Note: Confirmation that discharges will be at a level below the Sewerage Undertaker's **maximum** permitted flow rate requirements would not be sufficient to demonstrate compliance.*