



Drainage Assessment Form

We require applicants to complete this Drainage Assessment Form (DAF) and submit it to the Local Planning Authority, referencing from where the information in the submission document is taken. The form is supported by the [Defra/EA guidance on Rainfall Runoff Management](http://www.evidence.environment-agency.gov.uk/FCERM/Libraries/FCERM_Project_Documents/Rainfall_Runoff_Management_for_Developments_-_Revision_E.sflb.ashx) document (www.evidence.environment-agency.gov.uk/FCERM/Libraries/FCERM_Project_Documents/Rainfall_Runoff_Management_for_Developments_-_Revision_E.sflb.ashx) and aligns to the tools on www.UKsuds.com.

1. Site details

SITE DETAILS		NOTES FOR APPLICANTS & LOCAL AUTHORITIES
Site Name		
LPA reference (if applicable)		
Address & postcode		
Grid reference		Centre point of the site in eastings, northings (XXXXXX, YYYYYY) format.
Brief description of proposed work		For example, type of development, number of units etc.
Is the existing site Brownfield or Greenfield?		Brownfield = developed. Greenfield = undeveloped.
Total site area (Ha)		The area, in hectares, of the whole development site including any large parkland areas and public open space.
Significant public open space (Ha)		The area, in hectares, of any large parkland areas or public open space situated within the site which remains largely unchanged and is not provided with positive drainage
Area positively drained (Ha)*		This is the total development area that is served by the drainage system. It is the difference between the total site area and the significant public open space.



Is the site currently known to be at risk of flooding from any sources? If so, please state and provide evidence.		Please attach surface water and fluvial flood risk maps (as shown on the Environment Agency's website) and any records of known historic flooding at the site.
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* The Greenfield runoff rate from the development which is to be used for assessing the requirements for limiting discharge flow rates and attenuation storage from a site should be calculated for the area that forms the drainage network for the site whatever size of site and type of drainage technique. Please refer to the Rainfall Runoff Management document or CIRIA SuDS Manual for details.

2. Impermeable area

	EXISTING	PROPOSED	DIFFERENCE (PROPOSED-EXISTING)	NOTES FOR APPLICANTS & LOCAL AUTHORITIES
Impermeable area (Ha) Surfaces which do not permit infiltration of water into the ground.				If proposed > existing, then runoff rates and volumes will be increasing.
Drainage Method Rainwater harvesting/infiltration/SuDS/ watercourse/sewer				See the London Plan Policy 5.13 Drainage Hierarchy . If the existing drainage was via infiltration and the proposed is not, section 3 should provide evidence as to why.

3. Is infiltration on-site suitable? Storage is required for the additional volume from site but also for holding back water to slow down the rate of discharge from the site. This is known as attenuation storage and long term storage. The idea is that the additional volume is not permitted to flow rapidly overland, into watercourses or into the sewer system and hence potentially increase flood risk on site and/or downstream of the site. You can either infiltrate the stored water back into the ground or if this is not possible, hold it back with on-site storage, allowing gradual discharge at a controlled rate. Please fill in the table to show the extent of your investigations as to whether infiltration is a possible route for runoff to be discharged to.

			NOTES FOR APPLICANTS & LOCAL AUTHORITIES
Infiltration	State the site's geology (including superficial deposits where known)		Infiltration rates are highly variable and infiltrating into made (i.e. unnatural) ground should be avoided.
	State the site's known Source Protection Zones (SPZ)		Please refer to the Environment Agency website to identify any source protection zones (SPZ).
	What is the development site's infiltration rate?		Infiltration rates should be worked out in accordance with BRE 365. If infiltration is the preferred method of drainage, then rates should be no lower than 1×10^{-6} m/s.
	Were infiltration rates obtained via a desktop study or from infiltration tests?		If it is not feasible to access the site to carry out infiltration tests before the application is submitted, a desktop study could be undertaken looking at the underlying geology of the area and assuming a worst-case infiltration rate. If a desktop study demonstrated that infiltration could be feasible then a ground



			investigation will need to be completed to evidence that infiltration can be used as part of the scheme without increasing risk.
	At what depth below ground is the water table (groundwater level)?		Where known, please use borehole test results and state the time of year these were carried out. If high groundwater levels are considered to be an issue, then borehole testing should be completed as part of a ground investigation.
	State the distance between the proposed infiltration device base and the water table		If the ground conditions are found to be suitable from a desktop survey or ground investigation, a minimum of 1m depth between the base of the infiltration device and the water table is required to protect groundwater quality and ensure groundwater does not enter infiltration devices. Avoid infiltration where this is not possible.
	Is the site contaminated? If yes, consider advice from others on whether infiltration is a safe solution.		A ground investigation will need to consider potential contamination to groundwater. Water should not be infiltrated through land that is contaminated. The Environment Agency may provide bespoke advice in planning consultations for contaminated sites that should be considered.
In light of the above information, is infiltration feasible?		Yes / No	If infiltration is not feasible the applicant should consider the options in section 4. If infiltration is feasible, then it can be combined with the methods in section 4.

4. Method proposed for discharge of surface water (in line with the [London Plan Policy 5.13](#)). Please select multiple options where necessary. Where an option is not deemed possible, sufficient justification must be submitted with supporting evidence where necessary.

	YES	NO	EVIDENCE THAT THIS IS OR IS NOT POSSIBLE	NOTES FOR APPLICANTS & LOCAL AUTHORITIES
Rainwater harvesting				Rainwater harvesting is where rainwater is stored on site for reuse. For example, water for gardening, domestic use etc. Harvesting features could include, but are not limited to, rainwater harvesting tanks and water butts.
Infiltration				Allowing space for rainwater to soak into the ground, as per natural methods. If proposed, these must satisfy the requirements shown in section 3 of this DAF.
Attenuation of rain water in ponds and open water features				Please see the CIRIA SuDS Manual (C753) for further details about above ground attenuation techniques. Examples could include, but are not limited to, swales, detention basins, rain gardens, planters, etc



Attenuation of rain water through tanks or sealed water features				Underground storage features which gradually release water. Please note that these are less sustainable than above ground methods and are usually more complex to maintain.
To watercourse				Is there a watercourse nearby? If so please name, stating approximate distance from site. Evidence of discharge agreement with the Environment Agency (for 'main rivers') or the Lead Local Flood Authority (for 'ordinary watercourses', i.e. all non-'main rivers') will be required.
To surface water sewer				The confirmation from sewer provider that sufficient capacity exists for this connection will be required.
To combined sewer				This would only be acceptable where other options are not reasonably practical and will not be accepted where separate sewer systems currently exist on or close to the site.

5. Supporting calculations – in order to check that the proposed development is designed to conform to standards, please complete the following three tables and submit your supporting calculations.

A. Peak discharge rates – this is the maximum flow rate at which storm water runoff leaves the site during a particular storm event.

Please circle which method was used to calculate the Greenfield Runoff Estimation:			IH124 method / FEH method / Other (please state)	
<i>London Plan policy 5.13: Developers should aim for a Greenfield runoff rate from their developments.</i>				
<i>London Plan Sustainable Design and Construction SPG section 3.4.10: All developments on Greenfield sites must maintain Greenfield runoff rates. On previously developed sites, runoff rates should not be more than three times the calculated Greenfield rate.</i>				
	GREENFIELD RATES (L/s)	EXISTING RATES (IF PREVIOUSLY DEVELOPED) (L/s)	PROPOSED RATES (L/s)	NOTES FOR APPLICANTS & LOCAL AUTHORITIES
QBAR				QBAR is approximately the 1 in 2 year storm event.



1 in 1 year				Proposed discharge rates (with mitigation) should be no greater than the Greenfield rates for all corresponding storm events. If restrictions to Greenfield rates cannot be achieved then sufficient justification (with supporting evidence) must be submitted. Please note that discharging all flow, regardless of the corresponding storm event intensity, from site at the existing 1 in 100 year event rate would increase flood risk during smaller events and therefore would not be permitted. Applicants must also check and adhere to existing Local planning policy where further runoff restrictions may apply.
1 in 30 year				
1 in 100 year				
1 in 100 year plus climate change (CC)				To mitigate for climate change, the proposed 1 in 100 year +CC runoff rate must be no greater than the Greenfield 1 in 100 year event runoff rate. The peak rainfall intensity allowance used must be in line with the latest Environment Agency's climate change allowance guidance. Currently this requires allowances of 20% and 40% to be added, and the most appropriate one used and justified. Typically for heavily urban sites we would ask for 40% to be used.

B. Discharge volumes post development

The Non-Statutory Technical Guidance for SuDS: Where reasonably practicable, for Greenfield development, 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 should never exceed the Greenfield runoff volume for the same event. 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 should never exceed the runoff volume from the development site prior to redevelopment for that event.

	STORAGE VOLUME REQUIRED TO ACHIEVE THE GREENFIELD RUNOFF RATE (M ³)	PROPOSED STORAGE VOLUME ON SITE POST-DEVELOPMENT (M ³)	IF THE PROPOSED STORAGE VOLUME ON SITE POST-DEVELOPMENT IS LESS THAN THE STORAGE VOLUME REQUIRED TO ACHIEVE THE GREENFIELD RUNOFF RATE, PLEASE PROVIDE A JUSTIFICATION AS TO WHY. APPLICANTS MUST ALSO CHECK AND ADHERE TO EXISTING LOCAL PLANNING POLICY WHERE FURTHER RUNOFF RESTRICTIONS MAY APPLY.
1 in 100 year, 6 hour event			



C. Storage methods – Attenuation storage is provided to enable the rate of runoff from the site into the receiving watercourse or sewer to be limited to an acceptable rate to protect against erosion and flooding downstream. The volume needing storage is a function of the amount of development relative to the Greenfield discharge rate.

TYPE OF SUDS FEATURE	VOLUME (M ³)	NOTES FOR APPLICANTS & LOCAL AUTHORITIES
1		SuDS can be adapted for most situations even where infiltration isn't feasible e.g. impermeable liners beneath some SuDS devices allows treatment but not infiltration. See the CIRIA SuDS Manual (C753) . If no storage features have been proposed please explain why this is the case and provide evidence to support this reasoning in the box below.
2		
3		
4		
5		
6		
7		
8		
9		
10		
TOTAL		This value should be equal to or greater than the 'Proposed storage volume' value in section 5B.



IF NO STORAGE FEATURES HAVE BEEN PROPOSED IN THE SECTION ABOVE, PLEASE EXPLAIN WHY THIS IS THE CASE AND PROVIDE EVIDENCE TO BACK UP THIS REASONING IN THIS BOX:
(EVIDENCE MUST BE SUFFICIENTLY DETAILED TO DEMONSTRATE THAT A SUDS BASED SYSTEM IS IMPRACTICAL FOR THIS SITE)

6. Please confirm...

	EVIDENCE (PLEASE NAME RELEVANT EVIDENCE DOCUMENT(S))	NOTES FOR APPLICANTS & LOCAL AUTHORITIES
That the drainage system can contain the 1 in 30 storm event without flooding.		The Non-Statutory Technical Standards for SuDS states that no part of the site should flood during a 1 in 30 year event (unless that area is designated to hold and/or convey water as part of the design). This is also a requirement for Sewers for Adoption and is good practice.
That any flooding between the 1 in 30 & 1 in 100 plus climate change storm events will be safely contained on site.		Safely: not causing property flooding or posing a hazard to site users i.e. no deeper than 300mm on roads/footpaths. Flood waters must drain away at section 5A rates.
How runoff flows from storm events in excess of 1 in 100 years will be managed on site.		As per the Non-Statutory Technical Standards for SuDS, proposed methods for managing excess flows should be demonstrated so as to minimise the risks to people and property, e.g. through evidence of exceedance routes. These exceedance proposals should be for runoff in storm events greater than 1 in 100 year plus climate change.



<p>How are rates being restricted (hydrobrake etc.)?</p>		<p>Recent development in some flow control devices now allow flow rates to be controlled as low as 0.7l/s without pipe blockages (see Hydrobrake)</p>
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7. Adoption and maintenance – please provide the following information (*Note: This space should only be used to reference a standalone document that covers details of both maintenance and adoption of the scheme*)

	ADOPTION AND MAINTENANCE INFORMATION	NOTES FOR APPLICANTS & LOCAL AUTHORITIES
<p>Please confirm the proposed owners/adopters of the entire drainage systems throughout the life of the development. Please list all the owners and contact details.</p>		<p>If there are multiple owners, a drawing illustrating exactly which features will be within each owner’s remit must be submitted with this DAF.</p>
<p>How is the entire drainage system to be maintained?</p>		<p>Clear details of the maintenance proposals of all elements of the proposed drainage system over the lifetime of the development must be provided. Poorly maintained drainage can lead to increased flooding problems in the future.</p> <p>Please note that a maintenance plan should be provided as a standalone document, so that it can then be implemented easily by whoever adopts the drainage scheme going forward.</p>



8. Evidence. Please identify where the details quoted in the sections above have been taken from i.e. supporting plans, calculations, reports etc. Please also provide relevant drawings that need to accompany your submitted DAF, in particular exceedance routes and ownership and location of SuDS (maintenance access strips etc.).

FORM SECTION	DOCUMENT REFERENCE WHERE DETAILS STATED ABOVE ARE TAKEN FROM	PAGE NUMBER(S)
Section 2		
Section 3		
Section 4		
Section 5A		
Section 5B		
Section 5C		
Section 6		
Section 7		

This DAF should be completed using evidence from the documents submitted with this application. This should include site plans and, if necessary for the site, a Flood Risk Assessment (FRA) (see the Local Planning Authority’s Strategic Flood Risk Assessment for details of when a FRA is required). The DAF serves as a summary sheet of the drainage proposals and should clearly show that the proposed runoff rate and volume as a result of development will not be increased. If, without the use of SuDS, there would be an increase in runoff rate and/or volume, the rate and volume sections should be completed to set out how the additional rate/volume will be managed.

Form completed by:

Qualification of person responsible for signing off this Drainage Assessment Form:

Company:

On behalf of (Client’s details):

Date: