Slough Borough Council Surface Water Drainage Pro-Forma

This pro-forma accompanies Slough Borough Council's developer guide. It should be completed for all **major** planning applications and submitted to the Local Planning Authority, referencing from where in their submission documents this information is taken. The pro-forma is supported by the Defra/EA guidance on Rainfall Runoff Management. Developers are encouraged to use the tools available at www.UKsuds.com when completing the pro-forma. The tools available at www.UKsuds.com helps developers to comply with the requirements of the National Planning Policy Framework and provides a quick tool for assessing storage requirements. The quick tool should only be used at the outline planning stage to assist with estimating indicative volumes. Detailed design, which must be carried out at the full planning application stage, will always require the use of suitable software to confirm or modify the storage proposals as well as address conveyance and the many other aspects of drainage design.

This pro-forma is based upon current industry standard practice (National Non-statutory Technical Standards, CIRIA SUDS Manual 697 and Site Construction Handbook CIRIA 698).

1. Site Details

Site	
Address & post code or LPA reference	
Grid reference	
Is the existing site developed or Greenfield?	
Total Site Area served by drainage system (excluding open space) (Ha)*	
Topographical survey plan showing existing site layout, site levels and existing drainage system	

***** The Greenfield runoff off 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 manual for detail on this.

2. Impermeable Area

	Existing	Proposed	Difference (Proposed-Existing)	Location of evidence – document and page no	Notes for developers & Local Authorities
Impermeable area (ha) **(areas to be shown on a plan)**					If the proposed amount of impermeable surface is greater, then runoff rates and volumes will increase. Section 6 must be filled in. If proposed impermeability is equal or less than existing, then section 6 can be skipped & section 7 filled in.
Drainage Method (infiltration/sewer/watercourse)			N/A		If different from the existing, please fill in section 3. If existing drainage is by infiltration and the proposed is not, discharge volumes may increase. Fill in section 6.

PPG Paragraph 080

3a. Proposing to discharge surface water via

	Yes	No	Evidence / Location of evidence – document and page no	Notes for developers & Local Authorities
Micro Drainage calculations of the existing and proposed drainage systems				Please provide Micro Drainage calculations of existing and proposed run-off rates and volumes in accordance with a recognised methodology or the results of a full infiltration test (see line below) if infiltration is proposed.
Infiltration				e.g. soakage tests. Section 7 (infiltration) must be filled in if infiltration is proposed.
To watercourse				e.g. Is there a watercourse nearby? Please provide details of any watercourse to which the site drains including cross-sections of any adjacent water courses for appropriate distance upstream and downstream of the discharge point (as agreed with the LLFA and/or EA)
To surface water sewer				Confirmation from sewer provider that sufficient capacity exists for this connection.
Combination of above				e.g. part infiltration part discharge to sewer or watercourse. Provide evidence above.

3b. Additional drainage strategy information

	Yes	No	Evidence / Location of evidence – document and page no	Notes for developers & Local Authorities
Has the drainage proposal had regard to the SuDS hierarchy?				Evidence must be provided to demonstrate that the proposed Sustainable Drainage proposal has had regard to the SuDS hierarchy.
Drainage layout plan including; location of data collection points (eg infiltration points); sustainable drainage infrastructure; significant utility plant and trees; and drainage structures (proposed & existing)				Please provide plan reference numbers for the site layout showing where the sustainable drainage infrastructure will be located on the site. If the development is to be constructed in phases this should be shown on a separate plan and confirmation should be provided that the sustainable drainage proposal for each phase can be constructed and can operate independently and is not reliant on any later phase of development.
Exceedance flow paths **(flow paths to be shown on a plan)**				

Technical Standards S2 and S3

4a. Peak Discharge Rates – Greenfield Sites – This is the maximum flow rate at which surface water runoff leaves the site during a particular storm event.

	Existing Rates (l/s)	Proposed Rates (l/s)	Difference (l/s) (Proposed-Existing)	Location of evidence – document and page no	Notes for developers & Local Authorities
Greenfield QBAR		N/A	N/A		Mean annual Greenfield peak flow - QBAR is approx. 1 in 2 storm events. Use that figure in Section 7a.
1 in 1					Proposed discharge rates (with mitigation) should be no greater than existing rates for all corresponding storm events. e.g. discharging all flow from site at the existing 1 in 100 event increases flood risk during smaller events.
1 in 30					
1in 100					
1 in 100 plus climate change	N/A				To mitigate for climate change the proposed 1 in 100 +CC must be no greater than the existing 1 in 100 runoff rate. If not, flood risk increases under climate change. 20% should be added to the peak rainfall intensity for commercial and 30% should be added for residential properties.

4b. Peak Discharge Rates – Brownfield Sites – This is the maximum flow rate at which surface water runoff leaves the site during a particular storm event. Proposed drainage need to be reduced as per the Local Policy.

	Existing Rates (l/s)	Proposed Rates (l/s)	Difference (l/s) Proposed % reduction	Location of evidence – document and page no	Notes for developers & Local Authorities
Drainage peak discharge rates					Existing peak discharge rate cannot be greater than the capacity of the receiving system. Actual % reductions will be subject to the characteristics of the catchment.

Technical Standards S4 to S9

5. Calculate Discharge Volumes – The total volume of water leaving the development site for a particular rainfall event. Introducing new impermeable surfaces increases surface water runoff and may increase flood risk outside the development.

	Existing Rates (l/s)	Proposed Rates (l/s)	Difference (l/s) (Proposed-Existing)	Location of evidence – document and page no	Notes for developers & Local Authorities
Greenfield QBAR		N/A	N/A		Proposed discharge volumes (without mitigation) should be no greater than existing volumes for all corresponding storm events. Any increase in volume increases flood risk elsewhere. Where volumes are increased section 6 must be filled in.
1 in 1					
1 in 30					
1in 100					
1 in 100 plus climate change	N/A				To mitigate for climate change the volume discharged from the site must be no greater than the existing 1 in 100 storm event. If not, flood risk increases under climate change.

6. Calculate attenuation storage – In order to minimise the negative impact on flood risk resulting from increased volumes of runoff from the proposed development, storage must be provided.

	Location of evidence – document and page no	Notes for developers & Local Authorities
Storage volume required to retain discharge rates as existing (m^3)		Volume of water to attenuate on site if discharging at existing rates. Can't be used where discharge volumes are increasing.
Where will the storage be provided on site?		

7a. How is Storm Water stored on site? – Storage is required for the additional volume from site but also for holding back water to slow down the rate from the site. This is known as attenuation storage and long term storage. The intention is to not discharge that volume into the watercourses so as not to increase flood risk elsewhere.

		Location of evidence – document and page no	Notes for developers & Local Authorities
Infiltration	**State the Site's Geology/drift material overlaying)**		Avoid infiltrating in made ground.
	Does the site have a high ground water table? Yes/No?		If yes, please provide details of the site's hydrology.
	Is the site within a known Source Protection Zones (SPZ)? Yes/No?		Refer to the Environment Agency website to identify source protection zones (SPZ). However the aquifers are multi-layered in Slough and local knowledge may prevail.
	Are infiltration rates suitable?		Permeability tests (BRE 365) must be taken at the depth and location of significant infiltration features. Infiltration rates should be no lower than $1x10^{-6}$ m/s.
	Is the site contaminated? If yes, consider advice from others on whether infiltration can happen.		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.

	State the distance between a proposed infiltration device base and the ground water (GW) level		Need 1metre (min) between the base of the infiltration device & the water table to protect Groundwater quality & ensure GW doesn't enter infiltration devices. Avoid infiltration where this isn't possible. If groundwater is found to be 1.5 metres from any significant drainage element, a log of groundwater levels must be provided for a suitable period of time (dependent on prevailing weather conditions/regional water levels).
	Were infiltration rates obtained by desk study or infiltration test?		Infiltration rates MUST be obtained by infiltration tests in accordance with BRE365. Note, Thames Water will not allow the use of a back-up attenuation scheme that overflows via pipe into the surface water sewer.
	What factor of safety has been used?		State what factor of safety has been used, and whether it is adequate. Typically a factor >2 should be used increasing up to 10 on a sloping site where there is flood risk from exceedance.
Is infiltration feasible?	**Yes/No?**		If infiltration is not feasible how will the additional volume be stored?. The applicant should then consider the following options in the next section.

7b. Storage requirements – Where infiltration is not possible, then the developer must confirm that either of the two options below will be implemented for dealing with the amount of water that needs to be stored on site.

Option 1 Simple – Store both the additional volume and attenuation volume in order to make a final discharge to the surface water sewer from site at **QBAR**. This is preferred if no infiltration can be made on site. This very simply satisfies the runoff rates and volume criteria.

Option 2 Complex – If some of the additional volume of water can be infiltrated back into the ground, the remainder can be discharged to the surface water sewer at a very low rate of 2 l/sec/hectare. A combined storage calculation using the partial permissible rate of 2 l/sec/hectare and the attenuation rate used to slow the runoff from site.

	Location of evidence – document and page no	**Notes for developers & Local Authorities**
Please confirm what option has been chosen and how much storage is required on site.		The developer at this stage should understand the site characteristics and be able to explain what the storage requirements are on site and how it will be achieved.

8. SuDS for Roads – If SuDS for roads has been proposed, details of these SuDS elements should be specified.

	Location of evidence – document and page no	Notes for developers & Local Authorities
Which SuDS elements are used for road drainage?		Has this proposal been agreed with the Highway Authority?
Will that part of the SuDS be adopted?		Agree adoption requirement with the Highway Authority or detail maintenance agreement in Section 12.

9. Additional considerations to comply with the Technical Standards and PPG

	Evidence / Location of evidence – document and page no	Notes for developers & Local Authorities
Which SuDS elements have been used? **Are there alternative more suitable SuDS solutions for the site?**		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 CIRIA SUDS Manual C753 or equivalent.
How will exceedance events be catered on site without increasing flood risks (both on site and outside the development)?		**Safely:** not causing property flooding or posing a hazard to site users i.e. no deeper than 300mm on roads/footpaths
How are rates being restricted?		Hydrobrakes must not be used for flow rates lower than 5 l/s. Pipes with flows < 5 l/s are prone to blockage.
Drainage during construction period		Provide details of how drainage will be managed during the construction period including any necessary connections, impacts, diversions, erosion control, and what measures will be put in place to prevent pollution.
Key Drainage components / Features and Consequences		Which component if blocked (even partial) will lead to flooding and how will that be managed? Where will the exceedance flows go?
Level of treatments provided if required		Depending on diffuse pollution risk from the proposed sites, adequate level of treatment is required to mitigate against pollution

Technical Standards S10 to S12

10. Management and Maintenance of SuDS – Details are required to be provided of the management and maintenance plan for the SuDS, including for the individual plots in perpetuity.

	Evidence / Location of evidence – document and page no	**Notes for developers & Local Authorities**
How is the entire drainage system to be maintained in perpetuity? **Please provide Maintenance Plan and Regime for the site.** **Include how maintenance is to be recorded.**		Clear details of the maintenance proposals of all elements of the proposed drainage system must be provided to show that all parts of SuDS are effective and robust. Provide a management plan to describe the SuDS scheme and set out the management objectives for the site. It should consider how the SuDS will perform and develop over time anticipating any additional maintenance tasks to ensure the system continues to perform as designed. — Specification notes that describe how work is to be undertaken and the materials to be used. — A maintenance schedule describes what work is to be done and when it is to be done using frequency and performance requirements as appropriate. — A site plan showing maintenance areas, control points and outfalls. Responsibility for the management and maintenance of each element of the SuDS scheme will also need to be detailed within the Management Plan. Where open water is involved please provide a health and safety plan within the management plan. A proposed method for recording maintenance activities must also be produced.
Please confirm the owners/adopters of the entire drainage systems throughout the development. Please list all the owners.		If these are multiple owners then a drawing illustrating exactly what features will be within each owner's remit must be submitted with this Pro-forma. Please give details of each feature and how it will be managed in accordance with the details in the management plan.
Please provide details demonstrating that any third party agreements required using land outside the application site have been secured.		

The above form should be completed using evidence from information which should be appended to this form. The information being submitted should be proportionate to the site conditions, flood risks and magnitude of development. It should serve as a summary of the drainage proposals and should clearly show that the proposed discharge rate and volume as a result of development will not be increasing. Where there is an increase in discharge rate or volume, then the relevant section of this form must be completed with clear evidence demonstrating how the requirements will be met.

This form is completed using factual information and can be used as a summary of the surface water drainage strategy on this site.

Form completed by:……..

Qualification of person responsible for signing off this pro-forma:……...

Company:……...

On behalf of (client's details):……..

Date:……..