Surface Water Drainage Pro-forma for new developments

This pro-forma accompanies our surface water guidance note. We advise that developers should complete this form and submit it to Guildford Borough Council 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. and uses the storage calculator on www.UKsuds.com. The pro-forma should be considered alongside other supporting SuDS guidance but focuses on ensuring flood risk is not made worse elsewhere. This pro-forma is based upon current industry standard practice.

1. Site Details

Site	Streamside / Land at Harpers Road, Ash
Address & post code or LPA reference	Streamside, Harpers Road, Ash, Surrey, GU12 6DB
Grid reference	490,450mE, 150,784mN
Is the existing site developed or Greenfield?	Greenfield
Total Site Area served by drainage system (excluding open space) (Ha)*	1.26

***** 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)	Notes for developers & Local Authorities
Impermeable area (ha)	0.1283	0.4632	+0.3349ha	If proposed > existing, then runoff rates and volumes will be increasing. Section 6 must be filled in. If proposed ≤ existing, then section 6 can be skipped & section 7 filled in.
Drainage Method (infiltration/sewer/watercourse)			Infiltration	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.

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3. Proposing to Discharge Surface Water via

	Yes	No	Evidence that this is possible	Notes for developers & Local Authorities
Infiltration	✓		Soakage Tests in FRA	e.g. soakage tests. Section 6 (infiltration) must be filled in if infiltration is proposed.
To watercourse				e.g. Is there a watercourse near by?
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.

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

	Existing Rates (l/s)	Proposed Rates (l/s)	Difference (l/s) (Proposed-Existing)	Notes for developers & Local Authorities
Greenfield QBAR	3.56	N/A	N/A	QBAR is approx. 1 in 2 storm event. Provide this if Section 6 (QBAR) is proposed.
1 in 1	3.03	N/A	N/A	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	8.19	N/A	N/A	
1in 100	11.37	N/A	N/A	
1 in 100 plus climate change	N/A	N/A	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. 30% should be added to the peak rainfall intensity.

5. Calculate additional volumes for storage –The total volume of water leaving the development site. New hard surfaces potentially restrict the amount of stormwater that can go to the ground, so this needs to be controlled so not to make flood risk worse to properties downstream.

	Existing Volume (m^3)	Proposed Volume (m^3)	Difference (m^3) (Proposed-Existing)	Notes for developers & Local Authorities
1 in 1	112.18	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 30	258.52	N/A	N/A	
1in 100	350.38	N/A	N/A	
1 in 100 plus climate change		N/A	N/A	To mitigate for climate change the volume discharge from 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 – Attenuation storage is provided to enable the rate of runoff from the site into the receiving watercourse to be limited to an acceptable rate to protect against erosion and flooding downstream. The attenuation storage volume is a function of the degree of development relative to the greenfield discharge rate.

		Notes for developers & Local Authorities
Storage Attenuation volume (Flow rate control) required to retain rates as existing (m^3)	Soakaway Volume = 186m3	Volume of water to attenuate on site if discharging at existing rates. Can't be used where discharge volumes are increasing

7. 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 idea is that the additional volume does not get into the watercourses, or if it does it is at an exceptionally low rate. You can either infiltrate the stored water back to ground, or if this isn't possible hold it back with on site storage. Firstly, can infiltration work on site?

			Notes for developers & Local Authorities
Infiltration	**State the Site's Geology and known Source Protection Zones (SPZ)** **Are infiltration rates suitable?**	Head Deposits & Bagshot formation, not in SPZ zone Yes	Avoid infiltrating in made ground. Infiltration rates are highly variable and refer to Environment Agency website to identify and source protection zones (SPZ) Infiltration rates should be no lower than $1x10^{-6}$ m/s.
	State the distance between a proposed infiltration device base and the ground water (GW) level	At least 1m	Need 1m (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.
	Were infiltration rates obtained by desk study or infiltration test?	On site testing	Infiltration rates can be estimated from desk studies at most stages of the planning system if a back up attenuation scheme is provided..
	Is the site contaminated? If yes, consider advice from others on whether infiltration can happen.	No	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 , is infiltration feasible?	**Yes/No? If the answer is No, please identify how the storm water will be stored prior to release**	Yes	If infiltration is not feasible how will the additional volume be stored?. The applicant should then consider the following options in the next section.

Storage requirements

The developer must confirm that either of the two methods 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 from site at **QBAR** (Mean annual flow rate). 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 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.

		Notes for developers & Local Authorities
Please confirm what option has been chosen and how much storage is required on site.	Full Infiltration	The developer at this stage should have an idea of the site characteristics and be able to explain what the storage requirements are on site and how it will be achieved.

8. Please confirm

		Notes for developers & Local Authorities
Which Drainage Systems measures have been used?	Soakaways and Water butts	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 C697.
Drainage system can contain in the 1 in 30 storm event without flooding	Confirmed – See FRA	This a requirement for sewers for adoption & is good practice even where drainage system is not adopted.

Any flooding between the 1 in 30 & 1 in 100 plus climate change storm events will be safely contained on site.	Yes, see FRA	**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 6 rates. Existing rates can be used where runoff volumes are not increased.
How are rates being restricted (hydrobrake etc)	No, full infiltration	Hydrobrakes to be used where rates are between 2l/s to 5l/s. Orifices not be used below 5l/s as the pipes may block. Pipes with flows < 2l/s are prone to blockage.
Please confirm the owners/adopters of the entire drainage systems throughout the development. Please list all the owners.	A third part management company will be jointly employed by the property 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 Proforma.
How is the entire drainage system to be maintained?	See Maintenance detail in Section 7 of the FRA	If the features are to be maintained directly by the owners as stated in answer to the above question please answer yes to this question and submit the relevant maintenance schedule for each feature. If it is to be maintained by others than above please give details of each feature and the maintenance schedule. Clear details of the maintenance proposals of all element of the proposed drainage system must be provided. Poorly maintained drainage can lead to increased flooding problems in the future.

10. Evidence Please identify where the details quoted in the sections above were taken from. i.e. Plans, reports etc. Please also provide relevant drawings that need to accompany your proforma, in particular exceedence routes and ownership and location of SuDS (maintenance access strips etc

Pro-forma Section	Document reference where details quoted above are taken from	Page Number
Section 2	Flood Risk And Drainage Strategy prepared by PJA dated May 2022	
Section 3	Flood Risk And Drainage Strategy prepared by PJA dated May 2022	
Section 4	Flood Risk And Drainage Strategy prepared by PJA dated May 2022	
Section 5	Flood Risk And Drainage Strategy prepared by PJA dated May 2022	
Section 6	Flood Risk And Drainage Strategy prepared by PJA dated May 2022	
Section 7	Flood Risk And Drainage Strategy prepared by PJA dated May 2022	

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The above form should be completed using evidence from the Flood Risk Assessment and site plans. It should serve as a summary sheet of the drainage proposals and should clearly show that the proposed rate and volume as a result of development will not be increasing. If there is an increase in rate or volume, the rate or volume section should be completed to set out how the additional rate/volume is being dealt with.

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

Form Completed By……Paul Timmins BEng(Hons) CEng MICE…….....
Qualification of person responsible for signing off this pro-forma .....Chartered Civil Engineer.....

Company……KPT Properties Ltd……,.....
On behalf of (Client's details) .....Bourne Homes Ltd.....
Date:……28/11/23…….....