Surface Water Drainage Summary Pro-forma – V2

Introduction

Surrey County Council (SCC) as Lead Local Flood Authority (LLFA) recommends this pro-forma is completed in full and should be submitted with any planning application which seeks permission for 'major' development. The information contained in this form will be used by SCC in its role as LLFA as a 'statutory consultee' on Sustainable Drainage Systems (SuDS) for all 'major' planning applications. The pro-forma should be completed in conjunction with the SCC SuDS Design Guidance. The pro-forma will accompany the site-specific Flood Risk Assessment and Drainage Strategy submitted as part of the planning application.

Please complete this pro-forma in full for full applications and the coloured sections for outline applications. This will help us identify what information has been included and will assist in our review process.

All bracketed numbers refer to the relevant note on page 5 of this document.

Site Details

1.0 Site Detail Questions

Question number	Question	Answer (to be completed or delete as applicable)	Required
1.1	Planning application reference	RU.22/0024	Outline & Full
1.2	Site name	Bridge Point Weybridge	Outline & Full
1.3	Total application site area	3.4 hectares	Outline & Full
1.4	Predevelopment use	Offices with car parking and service yards	Outline & Full
1.5	Urban Creep applicable	No	Outline & Full
1.6	If Urban Creep required, factor applied (percentage)		Outline & Full
1.7	Proposed design life / planning application life (in years)	25 years	Outline & Full
1.9	Have agreements in principle (where applicable) for discharge been provided?	Yes. Pre-application feedback from Runnymede Council indicates no objection to the drainage proposals, subject to submission of supporting information.	Outline & Full

2.0 Method(s) of Discharge (5)

Question number	Question	Answer (delete as applicable)	Required
2.1	Reuse	No	Full
2.2	Infiltration	No	Full
2.3	Hybrid	No	Full
2.4	Watercourse	Yes	Full
2.5	Surface Water Sewer	No	Full
2.6	Combined sewer	No	Full

Calculation Inputs

3.0 Calculation input questions

Question number	Question	Answer (to be completed or delete as applicable)	Required
3.1	Area within proposed site which is drained by SuDS (2) (in hectares)	Northern unit area = 0.67ha Southern unit area = 2.16ha	Outline & Full
3.2	Impermeable area drained predevelopment (3) (in hectares)	Northern unit area = 0.73ha Southern unit area = 2.29ha	Outline & Full
3.3	Impermeable area drained post development (3) (in hectares)	Northern unit area = 0.67ha Southern unit area = 2.16ha	Outline & Full
3.4	Additional impermeable area (Question 3.3 minus Question 3.2) (in hectares)	Northern unit area = -0.06ha Southern unit area = -0.13ha	Outline & Full
3.5	Method for assessing greenfield runoff rate	ICP SUDS	Outline & Full
3.6	Method for assessing brownfield runoff rate (if applicable)	Using the average rainfall intensity for a 15 minute storm for 1:1, 1:30 and 1:100 return periods x predevelopment impermeable area	Outline & Full
3.7	Coefficient of runoff (6) (Cv)	Summer 0.750 Winter 0.840 Default Cv values used due to FEH data chosen over FSR data.	Outline & Full

3.8	Source of rainfall data (FEH Preferred)	FEH	Outline & Full
3.9	Climate change factor applied (percentage)	20%	Full

4.0 Attenuation (positive outlet) (13)

Question number	Question	Answer (to be completed or delete as applicable)	Required
4.1	Drainage outlet at risk of drowning (elevated water levels in watercourse/sewer)	No EA product 4 flood level data shows no flooding during 1:100 + 20% event	Full
4.2	Invert level at final outlet (in metres above ordnance datum)	Northern unit area = 10.970 mAOD Southern unit area = 11.040 mAOD	Full
4.3	Design level used for surcharged water level at outlet (13) (in metres above ordnance datum)	N/A	Full

5.0 Infiltration (Discharge to Ground)

Question number	Question	Answer (to be completed or delete as applicable)	Required
5.1	Have infiltration tests been undertaken	Yes	Outline & Full
5.2	If yes, which method has been used	BRE-365	Outline & Full
5.3	Infiltration rate (where applicable) (in metres per second)	Unmeasurable – negligible infiltration	Outline & Full
5.4	Depth to highest known ground water table (in metres above ordnance datum)	10.7 to 11.7 mAOD	Full
5.5	Depth of infiltration feature (in metres above ordnance datum)	Not proposed	Full
5.6	Factor of safety used for sizing infiltration storage	Not applicable	Full

Calculation Outputs

Section 6.0, 7.0 and 8.0 refer to sites where storage is provided by full attenuation or partial infiltration. For sites where all flows are infiltrated to ground go straight to Section 9.0.

6.0 Greenfield runoff rates

Question number	Question	Answer (to be completed)	Required
6.1	1 in 1 year rainfall (in litres per second)	2.9l/s/ha	Outline & Full
6.2	1 in 30 year rainfall (in litres per second)	7.7l/s/ha	Outline & Full
6.3	1 in 100 year rainfall (in litres per second)	10.9l/s/ha	Outline & Full
6.4	Qbar (in litres per second)	3.4l/s/ha	Outline & Full

7.0 Brownfield runoff rates (if applicable)

Question number	Question	Answer (to be completed)	Required
7.1	1 in 1 year rainfall (in litres per second)	30.2mm/hr / 3600 = 0.008 l/sec/m^2 0.008 x 30,200m^2 = 241.6 l/sec	Outline & Full
7.2	1 in 30 year rainfall (in litres per second)	74.7mm/hr / 3600 = 0.020 l/sec/m^2 0.02 x 30,200m^2 = 604 l/sec	Outline & Full
7.3	1 in 100 year rainfall (in litres per second)	96.9mm/hr / 3600 = 0.027 l/sec/m^2 0.027 x 30,200m^2 = 815.4 l/sec	Outline & Full

8.0 Proposed maximum rate of runoff from site (incl. Urban Creep) (7)

Question number	Question	Answer (to be completed)	Required
8.1	1 in 1 year rainfall (in litres per second)	9.8 l/sec	Outline & Full
8.2	1 in 30 year rainfall (in litres per second)	9.8 l/sec	Outline & Full
8.3	1 in 100 year rainfall plus climate change allowance (in litres per second)	9.8 l/sec	Outline & Full

9.0 Attenuation storage to manage flow rates from site (inclusive of Climate Change Allowance and Urban Creep)

Question number	Question	Answer (to be completed)	Required
9.1	Volume of Storage for the 1 in 100 year plus Climate Change Allowance (9) (in metres cubed)	2,056m^3	Full
9.2	50% storage drain down time for 1 in 30 year rainfall (in hours)	N/A	Full

10.0 Volume control provision

Question number	Question	Answer (to be completed)	Required
10.1	Interception losses (11) (in metres cubed)	144.45	Full

10.2	Rain harvesting (in metres cubed)	N/A	Full
10.3	Infiltration (in metres cubed)	N/A	Full
10.4	Attenuation (in metres cubed)	2,056	Full
10.5	Separate volume designated as long-term storage (12) (in metres cubed)	N/A	Full
10.6	Total volume control (sum of inputs for Questions 10.1 to 10.5) (in metres cubed)	2,200.5	Full

11.0 Site storage volumes (for sites proposing full infiltration only)

Question number	Question	Answer (to be completed)	Required
11.1	Volume of Storage for the 1 in 30 year (8)	N/A	Full
11.2	Volume of Storage for the 1 in 100 year plus Climate Change Allowance (10)	N/A	Full

Notes

1. All area within the proposed application site boundary to be included.

2. The site area which is positively drained includes all green areas which drain to the SuDS system and area of surface SuDS features. It excludes large open green spaces which do not drain to the SuDS system.

3. Impermeable area should be measured pre and post development. Impermeable surfaces include roofs, pavements, driveways and paths; where runoff is conveyed to the drainage system.

4. Predevelopment use may impact on the allowable discharge rate. The LLFA will seek for reduction in flow rates to greenfield (SCC SuDS Design Guidance).

5. Runoff may be discharged via one or more methods.

6. Sewers for Adoption 7th Edition recommends a Cv of 100% when designing drainage for impermeable area (assumes no loss of runoff from impermeable surfaces) and 0% for permeable areas. Where lower Cv's are used the applicant should justify the selection of Cv.

7. It is Surrey County Council's preference that discharge rates for all events up to the 1 in 100 year rainfall event plus climate change match the greenfield rate for the same rainfall event.

8. Storage for the 1 in 30 year rainfall event must be fully contained within the SuDS components. Note that standing water within SuDS components such as ponds, basins and swales is not classified as flooding. Storage should be calculated for the critical duration rainfall event.

9. Runoff generated from rainfall events up to the 1 in 100 year rainfall event will not be allowed to leave the site in an uncontrolled way. Temporary flooding of designated areas to shallow depths and velocities may be acceptable.

10. Climate change is specified between 10% and 40% increase to rainfall intensity depending upon the design life of the development. Sensitivity testing should be carried out up to the 40% climate change allowance.

11. Where Source Control is provided Interception losses will occur. An allowance of 5mm rainfall depth can be subtracted from the net inflow to the storage calculation where interception losses are demonstrated. The Applicant should demonstrate use of sub-catchments and source control techniques. Further information is available in the SCC SuDS Design Guide.

12. Flows within long term storage areas should be infiltrated to the ground or discharged at low flow rate of maximum 2 l/s/ha.

13. Careful consideration should be used for calculations where flow control / storage is likely to be influenced by surcharged sewer or peak levels within a watercourse. Calculations should demonstrate that risk of drowned outlet has been taken into consideration. Vortex controls require conditions of free discharge to operate as per specification.