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Job No.	Sheet no.	Date
C1203	1	09/12/13

MasterDrain
HY 8.66

Project	By	Checked	Reviewed
17 Goldington Crescent	S.L		

Title: SUR1 calculations for 17 Goldington Crescent

Data:-

Hydrology:-

Location = LONDON (NORTH)		WRAP	= 4
Long reference = 540190		Grid reference	= TQ4090
M5-60 (mm)	= 20	SAAR (mm/yr)	= 610
r	= 0.43	Soil	=0.47
Hyd. area	= 6	Hyd. zone	= 8
Hydrograph	= Summer	Area = England and Wales	

Site values used in design:-

Total site area	= 0.0384 ha	Climate change factor	= 30%
Pre-dev area drained	= 0.0384 ha	Post-dev area drained	= 0.0384 ha
Imperm runoff factor	= 98%	Perm runoff factor	= 20%

Pre-development

Area to soakaways	= 0.0000 ha	Area to other SUDS	= 0.0000 ha
Perv. area to SUDS	= 0.0000 ha	Pre-dev flow to drain	= 0.00 l/s

Post-development

Area to soakaways	= 0.0000 ha	Area to other SUDS	= 0.0000 ha
Perv. area to SUDS	= 0.0000 ha	Post-dev flow to drain	= 0.00 l/s

Calculations:-

Revised Post-dev Imperm. area = 0.038 ha
Equiv. Post-dev Imperm. area = 0.038 ha
Equiv. Post-dev Perm. area = 0.000 ha
Total Pre-dev equiv. area ha = 0.038 ha
Total Post-dev equiv. area ha = 0.038 ha
100 yr 6 hour mean intensity = 10.13mm/hr

Results:-

Pre-dev peakflow runoff (l/s) (m^3/s)

R.P.	15	30	60	120	240	360	480	600	Max	CCF	Final	R.P.
1	13.1	8.6	5.2	3.2	2.0	1.5	1.2	1.0	13.1	30	17.0	1
30	31.9	20.5	12.6	7.5	4.4	3.2	2.5	2.1	31.9	30	41.5	30
100	41.5	26.9	16.6	9.9	5.8	4.2	3.3	2.8	41.5	30	53.9	100

Post-dev peakflow runoff (l/s)

R.P.	15	30	60	120	240	360	480	600	Max	CCF	Final	R.P.
1	13.1	8.6	5.2	3.2	2.0	1.5	1.2	1.0	13.1	30	17.0	1
30	31.9	20.5	12.6	7.5	4.4	3.2	2.5	2.1	31.9	30	41.5	30
100	41.5	26.9	16.6	9.9	5.8	4.2	3.3	2.8	41.5	30	53.9	100

100 year 6 hour (x Climate Change Factor) storm gives:-
Pre-dev runoff volume m^3 = 29.7m^3
Post-dev rainfall volume = 29.7m^3
Post-dev volume m^3 (excess above SUDS) = 29.7m^3
100 yr 6 hour mean intensity = 10.13mm/hr
Post-dev volume to drain at 0 l/s = 0.0 m^3
Post-dev storage volume = 29.7m^3

$Q_{BAR(rural)}$ = 0.158 l/s or 4.110 l/s/ha or 0.000 cumecs - from IoH 124.

The rainfall rates are calculated using the location specific values above in accordance with the Wallingford procedure.

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Job No.	Sheet no.	Date
C1203	2	09/12/13

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Project	By	Checked	Reviewed
17 Goldington Crescent	S.L		

Title: **SUR1 calculations for 17 Goldington Crescent**

Data summary.

Use the data below for the SUR1 form

Site areas:-

Total site area = 0.0384 ha ;384.1 m² [3A]
Pre-development impermeable area = 0.0384 ha [3B]
Pre-development permeable area = 0.0000 ha
Post-development impermeable area = 0.0384 ha [3C]
Post-development permeable area = 0.0000 ha

Peak runoff:-

Pre-development 1 year storm (15min) = 13.1 l/s [6A]
Pre-development 100 year storm (15min) = 41.5 l/s [6C]
Post-development 1 year storm (15min) = 13.1 l/s [6B]
Post-development 100 year storm (15min)= 41.5 l/s [6D]

Greenfield runoff:-

$Q_{BAR(rural)}$ = 0.158 l/s or 4.110 l/s/ha or 0.000 cumecs - from IoH 124.

Climate change factor:-

CCF = 30%

Volumes:-

Pre-development 100 yr/6hr storm [12A]= 29.7m³
Post-development 100 yr/6hr storm (add. volume with no SUDS) [12B]= 29.7m³
Post-development 100 yr/6hr storm (add. volume with SUDS) = 29.7m³
Post-development add. predicted volume (No SUDS) [12C] = 0.0m³

You may also require

Data relating to the infiltration test calculations (if applicable)
Evidence to show runoff reduction (if applicable)
Information on calculation methods (if applicable see next sheet)

Note

Numbers in square brackets relate to the
Nov. 2010 v1.1 / issued 11/02/10 copy of SUR1

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Job No.	C1203
Sheet no.	3
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Project	17 Goldington Crescent	By	S.L
Title	SUR1 calculations for 17 Goldington Crescent	Checked	
		Reviewed	

Definitions and methods

Hydrology

The hydrological constants are derived from the Wallingford maps. They are used to calculate location specific rainfall figures.

Site values and factors

Areas of the site should be entered in hectares (10000 m²). If the Pre-development site is a green field, this box is blank.
Climate Change Factor is initially set at 20% - this may be changed as required.
Greenfield runoff is calculated using the method described in IoH 124.
Runoff factors

The impermeable runoff factor is initially set at 98%
The permeable runoff factor is initially set at 20%

Note: the CCF and the runoff factors may be changed by the user to suit the development
The areas draining to soakaways and other SUDS are entered in the appropriate box (in hectares)

Calculations

The post-development area is reduced by subtracting the areas that drain to soakaways or other SUDS, to give a revised figure.
All areas are then multiplied by the appropriate runoff factor to give an equivalent area with 100% runoff.
These are then summated.
This gives a total pre-development equivalent area, and a similar figure for the post-development area.
The 'Post-dev volume to drain (no SUDS)' gives the total runoff to drain if no SUDS were used.

Results

The pre- and post-development areas are subjected to 1,30 and 100 year return period storms with a duration of 15 to 600 minutes.
The Revised Post-dev Imperm. area is the area (in ha) that is not going to SUDS x impervious runoff factor.
The runoff rates are calculated for the chosen hydrograph (Summer or Winter) as l/s. Figures in red indicate m³/s
The peak value is measured, multiplied by the CCF and the total maximum rate is shown.
The pre- and post-development volumes for a 100 year / 6 hour storm are calculated from the area under the hydrograph curve.
Post-dev volume (i.e. excess above SUDS) is that volume produced by the drained area that does not go to SUDS.
Qbar(rural) is calculated in accordance with the procedure laid down in IoH 124