



Waste Water -	NWL Responsibility		Private/Non NWL		Proposed		Water Network -	Network Types		AB Asbestos	
Combined			Combined		Combined		Distribution			Abandoned	
Foul			Foul		Foul		Treated			Out of Comm	
Surface			Surface		Surface		Raw			Proposed	
Treated Eff			Treated Eff				Fire				
Untreated Eff			Trade Eff				Supply				
Overflow			Watercourse				Private				

User : BOWMS

Date : 03/04/2019 10:53:07

Map Sheet : NZ5421SE

Title :

Centre Point : 454841,521198

Paper / Scale : A0@1:2500



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APPENDIX 3

H R WALLINGFORD RUNOFF ESTIMATIONS

Calculated by: Daniel Porteous

Site name: Tees Valley BA

Site location: Grangetown Prairie,

This is an estimation of greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude: 54.58469° N

Longitude: 1.15603° W

Reference: 2267969915

Date: Feb 17 2022 12:20

Runoff estimation approach: IH124

Site characteristics

Total site area (ha): 4.05

Methodology

Q_{BAR} estimation method: Calculate from SPR and SAAR

SPR estimation method: Calculate from SOIL type

Soil characteristics

	Default	Edited
SOIL type:	4	4
HOST class:	N/A	N/A
SPR/SPRHOST:	0.47	0.47

Hydrological characteristics

	Default	Edited
SAAR (mm):	600	600
Hydrological region:	3	3
Growth curve factor 1 year:	0.86	0.86
Growth curve factor 30 years:	1.75	1.75
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is $Q_{BAR} < 2.0$ l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is $SPR/SPRHOST \leq 0.3$?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):	16.33	16.33
1 in 1 year (l/s):	14.04	14.04
1 in 30 years (l/s):	28.57	28.57
1 in 100 year (l/s):	33.96	33.96
1 in 200 years (l/s):	38.69	38.69

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

APPENDIX 4

H R WALLINGFORD SURFACE WATER STORAGE ESTIMATIONS

Print

Close Report



Surface water storage requirements for sites

www.uksuds.com | Storage estimation tool

Calculated by:

Site name:

Site location:

This is an estimation of the storage requirements that are needed to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013), the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). It is not to be used for detailed design of drainage systems. It is recommended that hydraulic modelling software is used to calculate volume requirements and design details before finalising the design of the drainage scheme.

Site Details

Latitude:

Longitude:

Reference:

Date:

Site characteristics

Total site area (ha):

Significant public open space (ha):

Area positively drained (ha):

Impermeable area (ha):

Percentage of drained area that is impermeable (%):

Impervious area drained via infiltration (ha):

Return period for infiltration system design (year):

Impervious area drained to rainwater harvesting (ha):

Return period for rainwater harvesting system (year):

Compliance factor for rainwater harvesting system (%):

Net site area for storage volume design (ha):

Net impermeable area for storage volume design (ha):

Pervious area contribution to runoff (%):

Methodology

esti:

Q_{BAR} estimation method:

SPR estimation method:

Soil characteristics

	Default	Edited
SOIL type:	<input type="text" value="4"/>	<input type="text" value="4"/>
SPR:	<input type="text" value="0.47"/>	<input type="text" value="0.47"/>

Hydrological characteristics

	Default	Edited
Rainfall 100 yrs 6 hrs:	<input type="text" value="--"/>	<input type="text" value="70"/>
Rainfall 100 yrs 12 hrs:	<input type="text" value="--"/>	<input type="text" value="89.04"/>
FEH / FSR conversion factor:	<input type="text" value="1.06"/>	<input type="text" value="1.06"/>
SAAR (mm):	<input type="text" value="600"/>	<input type="text" value="600"/>
M5-60 Rainfall Depth (mm):	<input type="text" value="20"/>	<input type="text" value="20"/>
'r' Ratio M5-60/M5-2 day:	<input type="text" value="0.3"/>	<input type="text" value="0.3"/>
Hydrological region:	<input type="text" value="3"/>	<input type="text" value="3"/>
Growth curve factor 1 year:	<input type="text" value="0.86"/>	<input type="text" value="0.86"/>
Growth curve factor 10 year:	<input type="text" value="1.45"/>	<input type="text" value="1.45"/>
Growth curve factor 30 year:	<input type="text" value="1.75"/>	<input type="text" value="1.75"/>
Growth curve factor 100 years:	<input type="text" value="2.08"/>	<input type="text" value="2.08"/>
Q _{BAR} for total site area (l/s):	<input type="text" value="16.33"/>	<input type="text" value="16.33"/>
Q _{BAR} for net site area (l/s):	<input type="text" value="16.33"/>	<input type="text" value="16.33"/>

* where rainwater harvesting or infiltration has been used for managing surface water runoff such that the effective impermeable area is less than 50% of the 'area positively drained', the 'net site area' and the estimates of Q_{BAR} and other flow rates will have been reduced accordingly.

Design criteria

Climate change allowance factor:

Urban creep allowance factor:

Volume control approach:

Interception rainfall depth (mm):

Minimum flow rate (l/s):

Site discharge rates	Default		Edited		Estimated storage volumes	Default		Edited	
1 in 1 year (l/s):	14	14	14	14	Attenuation storage 1/100 years (m ³):	3474	3474	3474	3474
1 in 30 years (l/s):	28.6	28.6	28.6	28.6	Long term storage 1/100 years (m ³):	936	936	936	936
1 in 100 year (l/s):	34	34	34	34	Total storage 1/100 years (m ³):	4410	4410	4410	4410

This report was produced using the storage estimation tool developed by HRWallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement, which can both be found at <http://uksuds.com/terms-and-conditions.htm>. The outputs from this tool have been used to estimate storage volume requirements. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.