APPENDIX ES11.2

GREENFIELD RUNOFF CALCULATIONS

AU/CH/SPS/1774/01/ES/FV

February 2024



Catchment 1

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Chris G	reenwood				Site Deta	ails
Site name:	Cooks	Hole				Latitude:	52.58665° N
Site location:	Thornh	augh				Longitude:	0.44932° W
					eet normal best practice criteria in line with Environmer 130219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the		3022247618
	dards for Su	IDS (Defra, 2015).	This inform	ation on gro	eenfield runoff rates may be the basis for setting	Date:	Dec 19 2023 12:12
Runoff esti approach	imatio	า	FEH Sta	atistical			
Site charac	cterist	ics			Notes		
ſotal site area (ŀ	n a): ^{19.93}	384686000			(1) Is Q _{BAR} < 2.0 I/s/ha?		
Methodolo	gy						
Q _{MED} estimation	method:	Calculate fro	om BFI an	d SAAR	When Q _{BAR} is < 2.0 l/s/ha then limiting di	ischarge	
3FI and SPR meth	hod:	Specify BFI n	nanually		rates are set at 2.0 l/s/ha.		
IOST class:		N/A					
BFI / BFIHOST:		0.933			(2) Are flow rates < 5.0 l/s?		
Q _{MED} (I/s):					Where flow rates are less than 5.0 l/s co		
Q _{BAR} / Q _{MED} facto	or.	1.12			from vegetation and other materials is	0	
Hydrologie	al						

Hydrological characteristics

SAAR (mm):	561	561	Lower consent flow rates blockage risk is addressed
Hydrological region:	5	5	drainage elements.
Growth curve factor 1 year.	0.87	0.87	
Growth curve factor 30 years:	2.45	2.45	(3) Is SPR/SPRHOST ≤
Growth curve factor 100 years:	3.56	3.56	Where groundwater levels
Growth curve factor 200 years:	4.21	4.21	use of soakaways to avoid would normally be preferr
			surface water runoff.

Lower consent flow rates may be set where the	
blockage risk is addressed by using appropriate	
drainage elements.	

Is are low enough the id discharge offsite rred for disposal of

Greenfield runoff rates	Default	Edited
Q _{BAR} (I/s):		5.02
1 in 1 year (l/s):		4.36
1 in 30 years (l/s):		12.29
1 in 100 year (l/s):		17.86
1 in 200 years (l/s):		21.12

Catchment 2

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Chris G	reenwood			Site Deta	ails
Site name:	Cooks H	Hole			Latitude:	52.58665° N
Site location:	Thornh	augh			Longitude:	0.44932° W
				eet normal best practice criteria in line with Environmen 130219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the	t Reference:	2049405995
	ards for Su	IDS (Defra, 2015). T	nis information on gr	eenfield runoff rates may be the basis for setting	Date:	Dec 19 2023 12:12
Runoff estir approach	matior	ר [FEH Statistical			
Site charac	teristi	ics		Notes		
Total site area (ha	a): ^{9.023}	32442000		(1) Is Q _{BAR} < 2.0 l/s/ha?		
Methodolog	gy					
Q _{MED} estimation n	nethod:	Calculate fro	m BFI and SAAR	When Q _{BAR} is < 2.0 l/s/ha then limiting di	scharge	
BFI and SPR metho	od:	Specify BFI m	anually	rates are set at 2.0 l/s/ha.		
HOST class:		N/A				
BFI / BFIHOST:		0.933		(2) Are flow rates < 5.0 l/s?		
Q _{MED} (I/s):				Where flow rates are less than 5.0 l/s co		
Q _{BAR} / Q _{MED} factor	:	1.12		for discharge is usually set at 5.0 l/s if b from vegetation and other materials is	•	

Hydrological characteristics

Default

Edited

SAAR (mm):	561	561	Lower consent flow rates blockage risk is addressed
Hydrological region:	5	5	drainage elements.
Growth curve factor 1 year:	0.87	0.87	
Growth curve factor 30 years:	2.45	2.45	(3) Is SPR/SPRHOST ≤
Growth curve factor 100 years:	3.56	3.56	Where groundwater levels
Growth curve factor 200 years:	4.21	4.21	use of soakaways to avoid would normally be preferre
			surface water runoff.

Lower consent flow rates may be set where the	
blockage risk is addressed by using appropriate	
drainage elements.	

Is are low enough the id discharge offsite red for disposal of

Greenfield runoff rates	Default	Edited
Q _{BAR} (I/s):		2.27
1 in 1 year (l/s):		1.97
1 in 30 years (l/s):		5.56
1 in 100 year (l/s):		8.08
1 in 200 years (l/s):		9.56

Default

Edited

Catchment 3

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by: Ch	ris Greenwood			Site Deta	ils
Site name: Co	oks Ho l e			Latitude:	52.58665° N
Site location: The	ornhaugh			Longitude:	0.44932° W
This is an estimation of th	e greenfield runoff rat runoff management fo	es that are used to n	neet normal best practice criteria in line with Environmen 030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the	t Reference:	244343672
	for SuDS (Defra, 2015).	This information on g	reenfield runoff rates may be the basis for setting	Date:	Dec 19 2023 12:12
Runoff estima [.] approach	tion	FEH Statistical			
Site character	istics		Notes		
ſotal site area (ha):	4.3547925000		(1) Is Q _{BAR} < 2.0 l/s/ha?		
Vethodology					
Q _{MED} estimation meth	od: Calculate fro	om BFI and SAAR	When Q _{BAR} is < 2.0 l/s/ha then limiting di	scharge	
3FI and SPR method:	Specify BFI n	nanually	rates are set at 2.0 l/s/ha.		
IOST class:	N/A				
BFI / BFIHOST:	0.933		(2) Are flow rates < 5.0 l/s?		
Q _{MED} (I/s):			Where flow rates are less than 5.0 l/s co		
Q _{BAR} / Q _{MED} factor:	1.12		for discharge is usually set at 5.0 l/s if b from vegetation and other materials is	•	
Hydrological characteristic	S Dofaul	t Editod			

SAAR (mm):	561	561	Lower consent flow rates
Hydrological region:	5	5	drainage elements.
Growth curve factor 1 year.	0.87	0.87	
Growth curve factor 30 years:	2.45	2.45	(3) Is SPR/SPRHOST ≤
Growth curve factor 100 years:	3.56	3.56	Where groundwater level
Growth curve factor 200 years:	4.21	4.21	use of soakaways to avoi would normally be prefer
			surface water runoff.

Lower consent flow rates may be set where the	
blockage risk is addressed by using appropriate	
drainage elements.	

≤ 0.3?

els are low enough the oid discharge offsite erred for disposal of

Greenfield runoff rates	Default	Edited
Q _{BAR} (I/s):		1.1
1 in 1 year (l/s):		0.95
1 in 30 years (I/s):		2.68
1 in 100 year (l/s):		3.9
1 in 200 years (l/s):		4.61

Catchment 4

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Chris Greenwood			Site Deta	ils
Site name:	Cooks Ho l e			Latitude:	52.58665° N
Site location:	Thornhaugh			Longitude:	0.44932° W
This is an estimation of	f the greenfield runoff rat fall runoff management fo	es that are used to n	neet normal best practice criteria in line with Environmen 030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the	t Reference:	3250345747
non-statutory standard		This information on g	reenfield runoff rates may be the basis for setting	Date:	Dec 19 2023 12:13
Runoff estim approach	ation	FEH Statistical			
Site characte	eristics		Notes		
Total site area (ha):	0.9454174000		(1) Is Q _{BAR} < 2.0 l/s/ha?		
Methodology	/		(1) 13 QBAR < 2.0 1/ 3/112 :		
Q _{MED} estimation me	ethod: Calculate fro	om BFI and SAAR	When Q _{BAR} is < 2.0 l/s/ha then limiting di	scharge	
BFI and SPR method	1: Specify BFI n	nanually	rates are set at 2.0 l/s/ha.		
HOST class:	N/A				
BFI / BFIHOST:	0.933		(2) Are flow rates < 5.0 l/s?		
Q _{MED} (I/s):			Where flow rates are less than 5.0 l/s co		
Q _{BAR} / Q _{MED} factor:	1.12		from vegetation and other materials is	0	

Hydrological characteristics

Default

Edited

SAAR (mm):	561	561	Lower consent flow rates r
Hydrological region:	5	5	blockage risk is addressed drainage elements.
Growth curve factor 1 year:	0.87	0.87	
Growth curve factor 30 years:	2.45	2.45	(3) Is SPR/SPRHOST ≤
Growth curve factor 100 years:	3.56	3.56	Where groundwater levels
Growth curve factor 200 years:	4.21	4.21	use of soakaways to avoid would normally be preferre
			surface water runoff.

$_$ ower consent flow rates may be set where the	
blockage risk is addressed by using appropriate	
drainage elements.	

ls are low enough the id discharge offsite red for disposal of

Greenfield runoff rates	Default	Edited
Q _{BAR} (I/s):		0.24
1 in 1 year (l/s):		0.21
1 in 30 years (I/s):		0.58
1 in 100 year (l/s):		0.85
1 in 200 years (l/s):		1

Catchment 5

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Chris G	reenwood			Site Deta	ails
Site name:	Cooks H	Hole			Latitude:	52.58665° N
Site location:	Thornh	augh			Longitude:	0.44932° W
				neet normal best practice criteria in line with Environmen 030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the	t Reference:	299296419
	ards for Su	IDS (Defra, 2015). Th	nis information on g	reenfield runoff rates may be the basis for setting	Date:	Dec 19 2023 12:13
Runoff esti approach	matior	n	FEH Statistical			
Site charac	teristi	ics		Notes		
Total site area (h	a): 5.557	77717000		(1) Is Q _{BAR} < 2.0 I/s/ha?		
Methodolog	gy]
Q _{MED} estimation r	nethod:	Calculate from	m BFI and SAAR	When Q _{BAR} is < 2.0 l/s/ha then limiting dis	scharge	
BFI and SPR meth	od:	Specify BFI m	anually	rates are set at 2.0 l/s/ha.		
HOST class:		N/A				
BFI / BFIHOST:	7	0.933		(2) Are flow rates < 5.0 l/s?		
Q _{MED} (I/s):	-			Where flow rates are less than 5.0 l/s co for discharge is usually set at 5.0 l/s if b		
Q_{BAR} / Q_{MED} facto	-	1.12		from vegetation and other materials is	C I	

Hydrological characteristics

SAAR (mm):	561	561	Lower consent flow rates blockage risk is addresse
Hydrological region:	5	5	drainage elements.
Growth curve factor 1 year:	0.87	0.87	
Growth curve factor 30 years:	2.45	2.45	(3) Is SPR/SPRHOST ≤
Growth curve factor 100 years:	3.56	3.56	Where groundwater level
Growth curve factor 200 years:	4.21	4.21	use of soakaways to avoid would normally be prefer
			surface water runoff.

Lower consent flow rates may be set where the	
blockage risk is addressed by using appropriate	
drainage elements.	

≤ 0.3?

els are low enough the oid discharge offsite rred for disposal of

Default	Edited
	1.4
	1.22
	3.43
	4.98
	5.89
	Default

Catchment 6

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Chris G	reenwood				Site Deta	ils
Site name:	Cooks I	Hole				Latitude:	52.58665° N
Site location:	Thornh	augh				Longitude:	0.44932° W
					eet normal best practice criteria in line with Environmer 130219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the		1411314383
	dards for Su	IDS (Defra, 2015).	This inform	ation on gr	eenfield runoff rates may be the basis for setting	Date:	Dec 19 2023 12:14
Runoff esti	matior	า	FEH Sta	atistical			
approach	torioti						
Site charac					Notes		
lotal site area (h	ו a): ^{3.472}	28602000			(1) Is Q _{BAR} < 2.0 l/s/ha?		
Methodolo	gv						
Q _{MED} estimation		Calculate fro	om BFI an	d SAAR	When Q _{BAR} is < 2.0 l/s/ha then limiting di	ischarge	
3FI and SPR meth	nod:	Specify BFI n	nanually		rates are set at 2.0 l/s/ha.		
HOST class:		N/A					
3FI / BFIHOST:	2	0.933			(2) Are flow rates < 5.0 l/s?		
Q _{MED} (I/s):	3				Where flow rates are less than 5.0 l/s c		
Q _{BAR} / Q _{MED} facto	r.	1.12			from vegetation and other materials is	C	
Hvdrologica	al						

characteristics

SAAR (mm):	561	561	Lower consent flow rates r
Hydrological region:	5	5	blockage risk is addressed drainage elements.
Growth curve factor 1 year.	0.87	0.87	
Growth curve factor 30 years:	2.45	2.45	(3) Is SPR/SPRHOST ≤
Growth curve factor 100 years:	3.56	3.56	Where groundwater levels
Growth curve factor 200 years:	4.21	4.21	use of soakaways to avoid would normally be preferre
			surface water runoff.

Lower consent flow rates may be set where the	
blockage risk is addressed by using appropriate	
drainage elements.	

s are low enough the d discharge offsite red for disposal of

Greenfield runoff rates	Default	Edited
Q _{BAR} (I/s):		0.87
1 in 1 year (l/s):		0.76
1 in 30 years (l/s):	1	2.14
1 in 100 year (l/s):		3.11
1 in 200 years (l/s):		3.68

Catchment 7

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Chris Greenwood			Site Deta	ails
Site name:	Cooks Hole			Latitude:	52.58665° N
Site location:	Thornhaugh			Longitude:	0.44932° W
This is an estimation c Agency guidance "Rair	of the greenfield runoff r nfall runoff management	ates that are used to n for developments", SCI	neet normal best practice criteria in line with Environmen [.] 030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the	t Reference:	3892809414
non-statutory standa). This information on g	reenfield runoff rates may be the basis for setting	Date:	Dec 19 2023 12:14
Runoff estim approach	nation	FEH Statistical			
Site charact	eristics		Notes		
Total site area (ha	e.9725270000		(1) Is Q _{BAR} < 2.0 l/s/ha?		
Methodolog	у				
Q _{MED} estimation m	ethod: Calculate f	rom BFI and SAAR	When Q _{BAR} is < 2.0 l/s/ha then limiting dis	scharge	
BFI and SPR metho	d: Specify BFI	Imanually	rates are set at 2.0 l/s/ha.		
HOST class:	N/A				
BFI / BFIHOST:	0.933		(2) Are flow rates < 5.0 l/s?		
Q _{MED} (I/s):			Where flow rates are less than 5.0 l/s co		
Q _{BAR} / Q _{MED} factor:	1.12		for discharge is usually set at 5.0 l/s if b from vegetation and other materials is p		

Hydrological characteristics

SAAR (mm):	561	561	Lower consent flow rates n
Hydrological region:	5	5	blockage risk is addressed drainage elements.
Growth curve factor 1 year:	0.87	0.87	
Growth curve factor 30 years:	2.45	2.45	(3) Is SPR/SPRHOST ≤ (
Growth curve factor 100 years:	3.56	3.56	Where groundwater levels a
Growth curve factor 200 years:	4.21	4.21	use of soakaways to avoid would normally be preferre
			surface water runoff.

$_$ ower consent flow rates may be set where the	
blockage risk is addressed by using appropriate	
drainage elements.	

are low enough the discharge offsite ed for disposal of

Greenfield runoff rates	Default	Edited
Q _{BAR} (I/s):		1.75
1 in 1 year (l/s):		1.53
1 in 30 years (l/s):		4.3
1 in 100 year (l/s):		6.24
1 in 200 years (l/s):		7.39

Area draining to Cooks Hole surface water management system

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Chris Gree	enwood				Site Deta	ails
Site name:	Cooks Ho l	e				Latitude:	52.58648° N
Site location:	Thornhau	gh				Longitude:	0.44929° W
					neet normal best practice criteria in line with Environmer 030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the		3484219859
	rds for SuDS	(Defra, 2015). T	his informati		eenfield runoff rates may be the basis for setting	Date:	Dec 19 2023 12:10
Runoff estim approach	nation		FEH Stati	stical			
Site charact	eristic	S			Notes		
Total site area (ha)): ^{57.6}				(1) Is Q _{BAR} < 2.0 I/s/ha?		
Methodology	y						
Q _{MED} estimation me		alculate fro	m BFI and S	SAAR	When Q _{BAR} is < 2.0 l/s/ha then limiting di	scharge	
BFI and SPR method	d: S	Specify BFI m	anually		rates are set at 2.0 l/s/ha.		
HOST class:	Ν	J/A					
BFI / BFIHOST:	C	.933			(2) Are flow rates < 5.0 l/s?		
Q _{MED} (I/s):					Where flow rates are less than 5.0 l/s controls for discharge is usually set at 5.0 l/s if b		
Q _{BAR} / Q _{MED} factor:	1	.12			from vegetation and other materials is		
Hydrological							

characteristics Default

Edited

SAAR (mm): 561 561	hla alcana rialcia addragaad
Hydrological region: 5	blockage risk is addressed drainage elements.
Growth curve factor 1 year. 0.87 0.87	
Growth curve factor 30 2.45 2.45 ((3) Is SPR/SPRHOST ≤ (
Growth curve factor 100 3.56 3.56	Where groundwater levels
Growth curve factor 200 4.21 4.21 years:	use of soakaways to avoid would normally be preferre
	surface water runoff.

Lower consent flow rates may be set where the	
blockage risk is addressed by using appropriate	
drainage elements.	

s are low enough the d discharge offsite red for disposal of

C	Greenfield runoff rates	Default	Edited
Q) _{BAR} (I/s):		14.19
1	in 1 year (l/s):		12.34
1	in 30 years (l/s):		34.76
1	in 100 year (l/s):		50.51
1	in 200 years (l/s):		59.74