

LAND AT REAR OF RED LION PUBLIC HOUSE, CHARING HEATH

PROPOSED RESIDENTIAL DEVELOPMENT

Surface Water Drainage Statement

Prepared on Behalf of

Shepherd Neame

2017/D1428/DS1.1

16 January 2018

 RGP Design Limited – Transport Planning and Infrastructure Design Consultants
 E: enquiries@rgp.co.uk
 www.rgp.co.uk

 South Coast Metro House, Northgate, Chichester, West Sussex, PO19 1BE
 T: 01243 210418
 T: 01243 210418

 RGP Design Limited is a subsidiary of Russell Giles Partnership Limited VAT Registration No: 219 6736 80 Registered in England No: 09674169 Registered Office: Shackleford Suite, Mill Pool House, Mill Lane, Godalming, Surrey, GU7 1EY



DOCUMENT CONTROL

Project:	Land at Rear of Red Lion Public House, Charing Heath
	Proposed Residential Development

Document: Surface Water Drainage Statement

Client:	Shepherd Neame
0	

Reference: 2017/D1428/DS1.1

Document Checking:



Status:

lssue	Date	Status	Issued by
1.	17/01/2018	Draft	LDF
2.	23/01/2018	Final	LDF
3.			
4.			

- 4. 5.
- 5. 6.

0.

© Copyright RGP Design Limited 2018

No part of this publication may be reproduced by any means without the prior permission of RGP Design Limited.



CONTENTS

1	Intro	oduction	.4
	1.1	Background	.4
	1.2	Site Location and Description	.4
	1.3	Flood Risk	.5
2	Exis 2.1	ting Drainage Surface Water	.6
	2.2	Foul Water	.6
	2.3	Highway Drainage	.6
	2.4	Ground Conditions	.6
3	Prop 3.1	Surface Water Run Off	. 7 .7
	3.2	Foul Water	.7
4	Sum	imary	.9

APPENDCIES

- Appendix A Public Sewer Map
- Appendix B Flood Maps Environment Agency and SFRA
- Appendix C British Geological Survey Historic Borehole Records
- Appendix D Microdrainage Calculations



1 INTRODUCTION

1.1 Background

- 1.1.1 RGP Design Ltd (RGP) is instructed by Shepherd Neame to prepare Drainage Strategy to support a planning application for the development of a site on land to the rear of Red Lion Pub in Charing Heath, TN27 0AU.
- 1.1.2 This strategy considers Kent County and Ashford Borough Councils, Planning Guidance documents regarding Flooding / Flood risk, Surface Water and Sustainable Drainage.
- 1.1.3 This strategy considers Kent County and Ashford Borough Councils, Planning Guidance documents regarding Flooding / Flood risk, Surface Water and Sustainable Drainage.
- 1.1.4 In preparing this report, RGP has made reference to the following documents and information:
 - Environment Agency Flood Maps for Planning
 - Long Term Flood Risk Assessment Surface Water Flood Risk Maps
 - Long Term Flood Risk Assessment Reservoir Flood Risk Maps
 - Local Authority Strategic Flood Risk Assessment
 - Topographical Survey Information
 - British Geological Survey Information
- 1.1.5 This strategy has been prepared to demonstrate that the proposed development will not increase flood risk and maximises the use of sustainable drainage techniques.
- 1.1.6 This report has been prepared for the benefit of the named Client only.

1.2 Site Location and Description

- 1.2.1 The site falls within the Borough of Ashford and is located approximately 10km to the North West of the centre of Ashford. The proposed development is on land the the rear of an existing public house.
- 1.2.2 The site is bounded by residential properties to the North, Tile Lodge Road to the West and open space to the East.
- 1.2.3 The nearest Main River (Great Stour) lies approximately 1.57m to the South (beyond the M20 motorway), with the smaller ordinary watercourses located approximately 250m to the East and West of the site.
- 1.2.4 The existing site is currently an unused field.
- 1.2.5 The site is approximately 0.49Ha (4900m2) in size and it lies between 86m and 94m AOD, falling from North East to South West.



- 1.2.6 The pre-development site is 100% permeable, with no existing hard paved areas or buildings. This is shown on drawing SK200, included in this report.
- 1.2.7 The proposed development comprises the construction of five residential properties with shared driveway and parking area.
- 1.2.8 The post development impermeable area is 1384m2 (0.14Ha).

1.3 Flood Risk

- 1.3.1 Whilst a formal flood risk assessment is not required due to the sites area and proximity to an Environment Agency designated Flood Zone, a brief assessment of flood risk, generally in accordance with National Planning Policy Guidance (NPPF): Flood Risk and Coastal Change, follows:
- 1.3.2 The NPPF requires that all sources of flooding are considered. These being Tidal, Fluvial, Pluvial, Groundwater, Sewers and Man-Made reservoirs / canals.
- 1.3.3 The SFRA confirms that the site is located in Flood Zone 1.
- 1.3.4 The SFRA confirms that there is no historical flooding in close proximity to the site.
- 1.3.5 As there are no incidents of historic flooding in close proximity to the site and that SUD's methods of surface water disposal will be implemented onsite, the flood risk on and offsite will remain low.
- 1.3.6 See Appendix B, for SFRA mapping extracts.
- 1.3.7 The Environment Agency Flood Risk mapping shows that the site is located within a Flood Zone 1, and that the long-term risk of flooding is very low.
- 1.3.8 The Environment Agency flood maps for Surface Water Flooding show that the site is at very low risk of flooding from this source.
- 1.3.9 The mapping confirms the site is located in a High Groundwater vulnerability area and that an Outer Groundwater Source Protection Zone. As set out in the SFRA, as there have been no recorded incidents of flooding from this source within close proximity to the site, it is considered the risk of flooding from this source to be low.
- 1.3.10 See Appendix B, for Environment Agency mapping.
- 1.3.11 A review of the Environment Agency's flood maps for Planning, the Long Term Flood Risk Assessment and the local authorities Strategic Flood Risk Assessment concludes that the site is at low risk of flooding:

Environment Agency Flood Zone	1
Flood Risk from Rivers and the Sea	Low
Flood risk from Groundwater	Low
Flood risk from Reservoirs	Low
Flood Risk from Sewers	Low

1.3.12 In conclusion, the site is at low risk of flooding.



2 EXISTING DRAINAGE

2.1 Surface Water

- 2.1.1 The public sewer records show that are no existing surface water sewers near the site.
- 2.1.2 The existing site is greenfield site, therefore existing surface water on site would mainly infiltrate in to the underlying soils, with some minor surface water flowing overland in severe storm events.
- 2.1.3 The existing run-off rate (QBar) has been calculated using Microdrainage (ICOP SUDS) to be 2.21/s.

2.2 Foul Water

- 2.2.1 The public sewer records show there is a 150mm diameter public foul water sewer in Tile Lodge Road at a depth of approximately 1.5m.
- 2.2.2 The existing site has no connection to the foul sewerage network.

2.3 Highway Drainage

2.3.1 Tile Lodge Road has no formal drainage, surface water either infiltrates at the road edge or runs along the carriageway to a point where it can infiltrate or escape on to lower lying land (Volume II) dated July 2008, although this document also does not specifically refer to the site.

2.4 Ground Conditions

2.4.1 Analysis of the BGS website data within the local area confirms underlying strata to be as follows:

Bedrock Geology:

Folkstone Formation - Sandstone. Sedimentary Bedrock.

Superficial Deposits:

None.

- 2.4.2 The BGS has historic borehole records within 250m of the site which confirm the soil to be sand. The historic borehole was taken to a depth of 1.2m BGL, and is recorded as being dry, therefore groundwater can be assumed as being deeper than this.
- 2.4.3 An intrusive site investigation has not yet been undertaken.
- 2.4.4 It is anticipated that the soil underlying the site will have moderate infiltration potential which should be confirmed by testing on site.



3 PROPOSED DEVELOPMENT

3.1 Surface Water Run Off

- 3.1.1 The SUDS manual and Building Regulations sets out a hierarchy of drainage methods to ensure that developments maximise the use of sustainable drainage techniques. In short, this hierarchy favours infiltration methods of disposal over other methods such as watercourses or sewers.
- 3.1.2 As discussed in section 2.4, the soil underlying the site is likely to have moderate infiltration potential. Surface water run off should be disposed of using infiltration drainage methods. It is anticipated that the infiltration rate will be in the region of 1x10⁻⁵m/s, this should be confirmed by testing on site.
- 3.1.3 The proposed development results in an increase in impermeable area on the site to approximately 1384m².
- 3.1.4 It is proposed to construct the new shared parking area using permeable/porous paving. Calculations show that a sub base storage depth of 137mm will be required.
- 3.1.5 The run off from the roof areas will be drained into new soakaways. Each plot will have its own cellular soakaway to drain its roof area.
- 3.1.6 The strategy above will ensure that there is no increase in the amount of run-off leaving the site, therefore no increase in the risk of flooding from this source.
- 3.1.7 The proposed infiltration drainage system will be designed to accommodate a 1 in 100 year critical storm and will include an allowance for the effects of climate change (40% increase in rainfall intensity).
- 3.1.8 Although there is an increase in impermeable area, as all surface water will be disposed of within the site boundary via infiltration methods there will be no increase in the risk of flooding either onsite or offsite.
- 3.1.9 The proposed surface water drainage strategy is shown on drawing **SK300**, included in this report.

3.2 Foul Water

- 3.2.1 It is proposed to connect the development to the public foul water sewer.
- 3.2.2 As the existing site is undeveloped it has no existing connection to the Southern Water public foul sewer network.
- 3.2.3 As the site is elevated above Tile Lodge Road, a gravity connection to the public sewer will be possible, to the existing manhole referenced 9302.
- 3.2.4 The proposed development will generate a wastewater flow of the order of 0.231/s (calculated in accordance with Sewers for Adoption).

The proposed foul drainage layout is shown on drawing SK300.



3.3 Maintenance

- 3.3.1 Maintenance plays an important part in the long term performance of a surface water drainage system and will be required to ensure that it remains fully operational.
- 3.3.2 The traditional parts (inspection chambers, pipes, gullies, etc) of the proposed surface water drainage system will need a minimal amount of maintenance similar to other traditional systems.
- 3.3.3 The SUDS devices will require slightly more maintenance focusing on reducing the amount of silt that is allowed to enter the system. For the cellular soakaways, this will involve ensuring that upstream catchpits and gully sumps are regularly emptied of silt.
- 3.3.4 It is important to ensure that the porous paved areas are properly maintained in accordance with the manufacturers recommendations which may include:

Periodic surface sweeping to reduce silt and debris accumulation.

Periodic silt removal from porous paved construction.

Redressing the joints on the block paved surface as required.

3.3.5 It is recommended that a simple maintenance strategy is prepared by monitoring the proposed drainage system over a specific duration to establish the rate at which silt builds up, which can then inform a programme of regular works.



4 SUMMARY

- 4.1.1 This strategy considers Kent County Councils and Ashford Borough Councils Planning Guidance Documents.
- 4.1.2 Reference has been made to the Local Authorities Strategic Flood Risk Assessment (SFRA), Public Sewer Records, and flood maps.
- 4.1.3 The existing site is currently an undeveloped greenfield site.
- 4.1.4 The application site is approximately 0.49Ha in size and it lies between 89m and 94m AOD, sloping from North East to South West. The pre-development site is 100% permeable.
- 4.1.5 Although a formal flood risk assessment is not required to support a planning application due to the overall size of the site, a brief assessment has been undertaken which concludes that flood risk is low.
- 4.1.6 It is assumed that at present the surface water run off infiltrates naturally onsite.
- 4.1.7 The proposed development will result in an increase in impermeable area of 1384m². However, as it is proposed to use infiltration methods of surface water disposal within the site boundary, there will be no increased flood risk onsite or offsite.
- 4.1.8 The proposed drainage system will be designed to cater for a 1 in 100 year critical storm event and include an allowance of 40% to cater for the effects of climate change.
- 4.1.9 The nature of the development will ensure that overflow land flows during an exceedance event will remain unchanged.
- 4.1.10 The foul drainage for the proposed development will be disposed of to the existing public foul sewer by gravity.
- 4.1.11 A maintenance regime should be established to ensure the long-term effectiveness of the surface water drainage system.
- 4.1.12 This surface water drainage strategy shows that the development can be implemented without increasing flows on to adjacent land or to existing surface water drainage systems, ensuring that flood risk is not increased.



PLANS AND DRAWINGS

CDP Architecture Drawings

738/SK21 Proposed Farm Yard Site Plan

RGP Design Ltd Drawings:

- SK100 Site Location Plan
- SK101 Topographic Survey
- SK200 Impermeable Area
- SK300 Proposed Drainage Strategy











DRAWING LEGE PROPOSED SURFACE W/ PROPOSED POROUS PAY PROPOSED CELLULAR S ELLELE PROPOSED CELLULAR S EXISTING FOUL WATER D PROPOSED FOUL WATER D

NOTES:

- This drawing is to be read in conjunction with a relevant Architect's and Engineer's drawings a found are to be reported immediately to the Er
- 2. RGP accepts no responsibility for inaccuracies as topographic surveys or Ordnance Survey m
- Do not scale, work to figured dimensions only. unless noted otherwise and all levels are in m datum.
- Any information given regarding existing under after consultation with the relevant authority, h main contractor is responsible for checking all commencing and taking due care whilst under
- All dimensions to be checked on site. All deta sub-contractors work must be checked and ac supplier and the general contractor.
- The electronic information from this drawing c drawn exact. Figured dimensions must be use logos and company information must be remo re-used.
- 7. The main contractor is responsible for the des responsible for the safe maintenance and stat
- The main contractor is responsible for dealing during the construction period.
- 9. The contractor must comply with all current le
- All products specified shall be installed in stric recommendations and instructions. If there ar information and the details on any RGP drawin must be used.
- Contractor to confirm all invert levels where co commencing any drainage works. Contractor point of discharge.

		NOTE	S		A3
END					
VATER DRAINAGE					
AVING					
SOAKAWAY					
DRAINAGE					
R DRAINAGE					
all other RGP drawings, and with all and specification. Any discrepancies Engineer.					
es in data provided by third parties such mapping.					
y. All dimensions are in millimeters netres from the topographic survey					
erground services is given in good faith however accuracy is not certain. The Il information on site prior to work ertaking the works.	PREL	.IMI	NA	٦Y	-
ails and dimensions relating to greed between the sub-contractor or					
can not be guaranteed as dimensionally ed for setting out and detailing. RGP oved from copies if information is	rg	р	Desi	ign	
sign of all temporary works, and is also bility of existing buildings at all times.	Transport Planning a 2 West Barn, Norton L Tel: 01243 210418 Fax: 0	and Infrastrue ane, Chichest 11483 861682	cture Design (er, West Sussex, WWW.	Consulta PO20 3A rgp.co.	ants F Uk
g with all occurrences of ground water	Shep	oherd N	eame		
egislation relating to health & safety.	Project Land Re	ear of Re	ed Lion P	Н	
ct accordance with the manufacturers are discrepancies between that ings, the manufacturers instructions	Drawing Title Proposec	Draina	ge Strate	gy	
connections are proposed prior to	Scale 1:500	Drawn By LF	Checked By LF	Approve LF	d By
r to commence drainage works at the	Jan 2018	Drawing No. 2017/[D1423/SK30	0 Re	9V. -



APPENDICIES



Appendix A Public Sewer Map



RGP Design Ltd Metro House Northgate Chichester West Sussex PO19 1BE

 Your ref
 D1428

 Our ref
 273459

 Date
 28 December 2017

 Contact
 searches@southernwater.co.uk Tel 0845 272 0845 0330 303 0276 Fax 01634 844514

Attention: Liam Foord

Dear Customer

Re: Provision of public sewer record extract

Location: Red Lion Public House, Charing Heath Road, Charing TN27 0AU

Thank you for your order regarding the provision of extracts of our sewer and/or water main records. Please find enclosed the extracts from Southern Water's records for the above location.

We confirm payment of your fee in the sum of £49.92 and enclose a VAT receipt for your records.

Customers should be aware that there are areas within our region in which there are neither sewers nor water mains. Similarly, whilst the enclosed extract may indicate the approximate location of our apparatus in the area of interest, it should not be relied upon as showing that further infrastructure does not exist and may subsequently be found following site investigation. Actual positions of the disclosed (and any undisclosed) infrastructure should therefore be determined on site, because Southern Water does not accept any responsibility for inaccuracy or omission regarding the enclosed plan. Accordingly it should not be considered to be a definitive document.

Should you require any further assistance regarding this matter, please contact the LandSearch team.

Yours faithfully

LandSearch



Light Blue Yellow	Orange Dark Blue	Red s	Brown
Section 104 Area Surface Water Surface Water Risin Private	Lateral Drain Building Over Agree Treated Effluent Sludge Sewer Catchment	Foul Vacuum Main Foul Rising Main Combined S Combined Syphon S	YLES / COLOURS Foul Foul Syphon Sewer
g Main SI Spur SU Spur SI Spur SI Spur ST Stee VCC Vitter	DI Dud DI Dud GRC Glas GRP Glas MAC Mas PE Poly PE Poly	in CSB Control	BAC Bonc
propylene vinyl Chloride forced Plastic Matrix v Iron I I - I	lie Iron s Reinforced Concrete s Reinforced Plastic onry in regular Courses onry in random Courses	: (Engineering) : rete Box Culvert Iron rrete (In-Situ) rrete (Pre-Cast) rrete Segments (bolted)	MATERIALS thene ted Asbestos Cement
FC Flust		Side	Hani Mani
rtight door (SW) ing ch. Mn-e (SW) Ing ch. Mn-e (SW) ing ch. No-e (SW) ing ch. No-e (SW)	entry Manhole (F&C) shaft (SW) shaft (F&C) or station (SW) or station (F&C)	-hde (SW) -hde (F&C) Ing Statton (SW) ing Statton (F&C) entry manhole (SW)	ole (SW) ole (F&C)
	WC Vorte	Rod	Wo Was
n ellipse my/S24 manhole all tock chamber boards n Overflow	cept chamber (F&C) n Tank (SW) n Tank (F&C) ex chamber (SW) ex chamber (F&C)	iing Eye (SW) iing Eye (F&C) jing point (SW) ging point (F&C) cept chamber (SW)	LEGEND - S hout (SW) hout (F&C)
Hatch	And And And Air V Air V A	Flap: case	EWERS
tion arrow NC ying valve 1st - npit 2nd away 3rd	e ad Valve alve alve hotox (SW)	ge in sewer (s) ge in sewer x valve valve ade	(s)
H Horseshoe X DDE REFERENCIP digit: hundred metre ea ridigit: hundred metre no redigit: sewer type identit digit: 0-4 = Foul/Combin f-4 = Foul/Combin f-4 = Foul/Combin	Micro Pump SHAPES (A Arched R C Barrel S C C Barrel S C C C C C C C C C C C C C C C C C C C	Outfall hear Outfall hear Vent Vent Vent Blank end Head of Pul	Wastewater
Other IG SYSTEM ting identifier thing identifier	ng Station 5) Rectangular Square Tapezoidal U Shape	vorks I tank I Sewer	treatment works nent works
Date	Title	Drav	
): 2734	wn by:	
28/	159_Red	kun	
12/2017	Lion Pub	naria	
	lic House		







Appendix B Flood Maps – Environment Agency and SFRA





Flood Map for Planning



Long Term Flood Risk Map for Rivers and the Sea





Long Term Flood Risk Map for Surface Water



Flood Risk Map for Reservoirs





Environment Agency copyright and database rights 2017. © Ordnance Survey Crown copyright. All rights reserved. Environment Agency, 100024198. Contains Royal Mail data © Royal Mail copyright and database right 2017.

Environment Agency Groundwater Source Protection Zones



© Environment Agency copyright and database rights 2017. © Ordnance Survey Crown copyright. All rights reserved. Environment Agency, 100024198. Contains Royal Mail data © Royal Mail copyright and database right 2017.

Environment Agency Groundwater Vulnerability Zones





	Geological Surve		British C	eological Su	rvey	CTRL GI DATA - Entire NDATA19 data set	Number TP847		
Excavation Method Dimensions Trial Pit		ns	Ground	Level (mOD) 75.70) Client UR/LCE				
		Location	and the task of tageney.	Dates		Engineer	Sheet		
		5924	69 E 148854 N	.22	2/07/1998	RLE	1/1		
Depth (m)	Sample / Testailo	Water Depth (m)	Field Records	Level (mOD)	Depth (m) (Thickness)	al Survey Description Briti	sh Geolog Logand		
					 	TOPSOIL.			
15-0.15 20-0.20 50-0.50	D1 C1 C2			75.60	(0.50)	Firm orange brown very fine sandy clay with some au fine to coarse gravel and cobbles of sandstone. (MA GROUND)	ngular JDE		
50-0.50 60-0.60	B1 D2			75.10 74.90	0.60	Soft to firm dark grey clayey organic silt. (MADE GR	OUND)		
80-0.80 00-1.00 00-1.00 10-1.10	D3 C3 B2 D4 al avyrey		» British C	74.60 74.50	(0.30) 1.10 1.20 (0.10)	Firm grey brown mottled dark orange brown locally fi sandy very silty clay with a little to some angular med coarse gravel and cobbles of sandstone. Rare bould pockets of grey mottled brown deb (MADE (GROU))	ine dium to der size		
20-1.20				-	(0.10)	Light green and blue grey locally yellow brown very s	silty		
						Complete at 1.20m	L		
	;								
and the second	British Geologic	al Survey			British Geolog	al Survey Briti	sh Geological Surve		
	,								
sh Geologi	al Survey		British 0	Beological Su	nev	British Geological Survey			
				- Andrew Constraints					
					- - -				
					-litel				
	British Geologic	al Survey			Fritish Geolog	al Survey Briti	sh Geological Surve		
				12022					
an				1	<u>E</u>	Remarks			
sh Geologia	al Survey	•	• • • • British 0	eological Su	rvey	Ground water : Dry British Geological Survey			
		•		•					
		-			•				
		•		•					
	€ritish Ge∎logic	al Sørvev			• British Geolog	cal Survey Briti	sh Geological Surv		
						2	grear carro		
	· ·	•			• •	cale (approx) Logged By	Figure No.		
							-		

Produced by the GEOtechnical DAtabase SYstem (GEODASY) (C) all rights reserved





Appendix D Microdrainage Calculations

RGP Design Limited		Page 1
Metro House		
Northgate		4
Chichester PO19 1BE		- m
Date 16/01/2018 14:19	Designed by l.foord	
File	Checked by	urainage
XP Solutions	Source Control 2017.1	
ICP SUD	S Mean Annual Flood	
	Input	
Return Period (yea Area () SAAR ()	rs) 100 Soil 0.450 ha) 0.490 Urban 0.000 mm) 708 Region Number Region 7	
	Results 1/s	
	QBAR Rural 2.2	
	QBAR Urban 2.2	
	Q100 years 7.0	
	Q1 year 1.9	
	Q30 years 4.9	
	Q100 years 7.0	

©1982-2017 XP Solutions

RGP Design Limited						
Metro House						
Northgate	Charing	Heath			Ly m	
Chichester PO19 1BE					Micro	
Date 16/01/2018 14:54	Designe	d by LF			Drainage	
File Permeable Paving.srcx	Checked	by			Brainacje	
XP Solutions	Source	Control 20.	17.1			
Summary of Results f	or 100 v	ear Return	Perio	d (+40%)		
<u> 4</u>						
Half Dr	ain Time :	74 minutes.				
Storm Max	x Max	Max	Max	Status		
Event Lev	el Depth	Infiltration	Volume			
(m) (m)	(1/8)	(m ³)			
15 min Summer 89.6	519 0.069	3.0	12.4	O K		
30 min Summer 89.6	61 0 111	3.0	16.7 10 0	ОК		
120 min Summer 89.6	570 0.120	3.0	19.9 21.6	0 K		
180 min Summer 89.6	69 0.119	3.0	21.4	οĸ		
240 min Summer 89.6	65 0.115	3.0	20.6	O K		
360 min Summer 89.6	53 0.103	3.0	18.6	O K		
480 min Summer 89.6	541 0.091	3.0	16.4	ОК		
600 min Summer 89.6	30 0.080	3.0	14.4 12.6	OK		
960 min Summer 89.6	520 0.070	3.0	9.9	0 K		
1440 min Summer 89.5	592 0.042	2.5	7.6	0 K		
2160 min Summer 89.5	583 0.033	2.0	5.9	O K		
2880 min Summer 89.5	577 0.027	1.6	4.8	O K		
4320 min Summer 89.5	570 0.020	1.2	3.6	ОК		
7200 min Summer 89.5	566 0.016	1.0	2.9	OK		
8640 min Summer 89.5	62 0.012	0.7	2.1	0 K		
10080 min Summer 89.5	60 0.010	0.6	1.8	ОК		
15 min Winter 89.6	530 0.080	3.0	14.4	O K		
(the sum	Dain	Pleaded min	na Daah			
Event	(mm/hr) Volume (mins)			
	(1111) 111	(m ³)				
15 min Summ	uer 131.85	1 0.0	17			
30 min Summ	ner 88.56	6 0.0	31			
60 min Summ	ner 56.71	3 0.0	56			
120 min Summ	ner 35.00	4 0.0	88			
180 min Summ	ner 25.97	3 0.0	122			
240 min Summ 360 min Summ	ler 15.36'	, U.U 5 0.0	150 224			
480 min Sum	ner 12.34	1 0.0	288			
600 min Summ	ner 10.40	2 0.0	350			
720 min Summ	ner 9.04	2 0.0	406			
960 min Summ	ner 7.24	1 0.0	520			
1440 min Summ 2160 min Summ	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	4 U.U 8 0.0	/52 1109			
2880 min Sum	ner 3.06	8 0.0	1472			
4320 min Summ	ner 2.22	6 0.0	2204			
5760 min Summ	ner 1.77	1 0.0	2936			
7200 min Summ	1.48	3 0.0	3672			
8640 min Summ 10080 min Summ	ler 1.284 1er 1.124	4 U.U 7 0.0	436U 5136			
15 min Wint	er 131.85	1 0.0	17			
©1982	-2017 XP	Solutions				
U		2014010110				

RGP Design Limited						
Metro House	F	R/O Red	Lion PH			
Northgate	C	Charing 3	Heath			La
Chichester PO19 1BE						Micro
Date 16/01/2018 14:54	I	esigned	by LF			
File Permeable Paving.srcx	C	hecked i	by			Drainage
XP Solutions	5	Source C	ontrol 2	2017.1		
Summary of Result	s foi	r 100 ye	ar Retu	rn Perio	d (+40%)	
Storm	Max	Max	Max	Max	Status	
Event	Level	Depth In	nfiltrati	on Volume		
	(m)	(m)	(1/8)	(m ³)		
30 min Winter 8	89.657	0.107	3	.0 19.3	ОК	
60 min Winter 8	89.679	0.129	3	.0 23.1	ОК	
120 min Winter 8	89.687	0.137	3	.0 24.6	ОК	
180 min Winter 8	89.683 20 675	0.133	3	.0 24.0	OK	
240 min Winter 8	89.6/5 90 656	0.125	3	.0 22.5	OK	
480 min Winter 8	39.637 89.637	0.087	3 2	.0 15 7	0 K	
600 min Winter 8	89.620	0.070	3	.0 12.7	0 K	
720 min Winter 8	89.607	0.057	3	.0 10.3	ОК	
960 min Winter 8	89.595	0.045	2	.7 8.1	ОК	
1440 min Winter 8	89.584	0.034	2	.1 6.1	ОК	
2160 min Winter 8	89.575	0.025	1	.5 4.5	ОК	
2880 min Winter 8	89.570	0.020	1	.2 3.6	ОК	
4320 min Winter 8	89.565	0.015	0	.9 2.6	ОК	
5760 min Winter 8	39.562 89 560	0.012	0	./ 2.1	OK	
8640 min Winter 8	89.558	0.008	0	.5 1.5	0 K	
10080 min Winter 8	89.558	0.008	0	.5 1.4	ОК	
Storm	L	Rain	Flooded	Time-Peak		
Evenc		(1007/117)	(m ³)	(mins)		
			(
30 min V	Winter	88.566	0.0	31		
60 min V	Winter	56.713	0.0	58		
120 min V	winter	35.004	0.0	96 1 2 4		
180 min V 240 min T	Winter	20.9/3	0.0	134 170		
360 min 1	Winter	15.365	0.0	240		
480 min V	Winter	12.341	0.0	304		
600 min V	Winter	10.402	0.0	364		
720 min V	Winter	9.042	0.0	414		
960 min V	Winter	7.241	0.0	520		
1440 min V	Winter	5.284	0.0	764		
2160 min V	winter	3.848	0.0	1124		
2880 min V 4320 min T	winter Winter	2 2 2 2 2	0.0	14/2 2200		
5760 min V	Winter	1.771	0.0	2200		
7200 min V	Winter	1.483	0.0	3576		
8640 min V	Winter	1.284	0.0	4416		
10080 min V	Winter	1.137	0.0	5128		
			_			
U19	982-2	017 XP S	Solution	IS		

RGP Design Limited				
Metro House	R/O Red Lion PH			
Northgate	Charing Heath	L		
Chichester PO19 1BE		Micro		
Date 16/01/2018 14:54	Designed by LF	Desinado		
File Permeable Paving.srcx	Checked by	Diamage		
XP Solutions	Source Control 2017.1			

Rainfall Model	FSR	Winter Storms Yes
Return Period (years)	100	Cv (Summer) 0.750
Region	England and Wales	Cv (Winter) 0.840
M5-60 (mm)	20.000	Shortest Storm (mins) 15
Ratio R	0.350	Longest Storm (mins) 10080
Summer Storms	Yes	Climate Change % +40

Time Area Diagram

Total Area (ha) 0.069

Time	(mins)	Area		
From:	то:	(ha)		
0	4	0.069		

©1982-2017 XP Solutions

RGP Design Limited		Page 4
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE		Micro
Date 16/01/2018 14:54	Designed by LF	Desinado
File Permeable Paving.srcx	Checked by	Dialitage
XP Solutions	Source Control 2017.1	

Storage is Online Cover Level (m) 90.000

Porous Car Park Structure

Infiltration Coefficient Base (m/hr)	0.03600	Width (m)	20.0
Membrane Percolation (mm/hr)	1000	Length (m)	30.0
Max Percolation (l/s)	166.7	Slope (1:X)	0.0
Safety Factor	2.0	Depression Storage (mm)	5
Porosity	0.30	Evaporation (mm/day)	3
Invert Level (m)	89.550	Membrane Depth (m)	0

RGP Design Limited					Page 1
Metro House	R/O Red	Lion PH			
Northgate	Charing	Heath			L
Chichester PO19 1BE	SA1				Micro
Date 16/01/2018 15:00	Designe	d by LF			Desinado
File SA1.srcx	Checked	by			Diamage
XP Solutions	Source	Control 20	17.1		
Summary of Results f	for 100 y	rear Return	Perio	d (+40%)	
		1001			
Hali Dra	in Time :	1291 minutes			
Storm Ma	x Max	Max	Max	Status	
Event Lev	el Depth	Infiltration	Volume		
(#	.) (m)	(1/8)	(m ³)		
15 min Summer 87.	769 0.269	0.1	4.6	O K	
30 min Summer 87.8	360 0.360	0.1	6.2	O K	
60 min Summer 87.9	155 U.455	0.1	0./	OK	
180 min Summer 88.0)98 0.598	0.1	10.2	O K	
240 min Summer 88.2	L28 0.628	0.1	10.7	ОК	
360 min Summer 88.3	L66 0.666	0.1	11.4	O K	
480 min Summer 88.2	L86 0.686	0.1	11.7	ОК	
600 min Summer 88.	L97 0.697	0.1	11.9	ОК	
720 min Summer 88.2	200 0.700	0.1	12.0	ОК	
1440 min Summer 88	194 0.694	0.1	11.9	0 K 0 K	
2160 min Summer 88.1	L29 0.629	0.1	10.8	ОК	
2880 min Summer 88.0	0.592	0.1	10.1	ОК	
4320 min Summer 88.0	0.521	0.1	8.9	O K	
5760 min Summer 87.9	953 0.453	0.1	7.7	O K	
7200 min Summer 87.8	390 0.390	0.1	6.7	ОК	
10080 min Summer 87.8	333 U.333 781 0 281	0.1	5./ 4.8	OK	
15 min Winter 87.8	302 0.302	0.1	5.2	ОК	
Storm	Dain	Eloodod Ti	ma Daalt		
Event	(mm/hr) Volume (mins)		
	、	(m ³)	,,		
15 min Cum	ner 121 QE	1 0 0	22		
30 min Sum	ner 88.56	6 0.0	37		
60 min Summ	ner 56.71	3 0.0	66		
120 min Summ	ner 35.00	4 0.0	126		
180 min Summ	ner 25.97	3 0.0	184		
240 min Sumr	ner 20.87	·/ 0.0	244		
360 min Summ	$\begin{array}{cccccccccccccccccccccccccccccccccccc$	5 U.U 1 0 0	364 192		
600 min Sum	ner 10.40	2 0.0	402 602		
720 min Sum	ner 9.04	2 0.0	722		
960 min Summ	ner 7.24	1 0.0	960		
1440 min Summ	ner 5.28	4 0.0	1190		
2160 min Summ	ner 3.84	8 0.0	1560		
2880 min Sumr	ner 3.06	8 U.O	1964 2760		
4320 IIIII Sum 5760 min Sum	ner 1.77	1 0.0	∠708 3576		
7200 min Sum	ner 1.48	3 0.0	4328		
8640 min Summ	ner 1.28	4 0.0	5104		
10080 min Summ	ner 1.13	7 0.0	5848		
15 min Wint	er 131.85	1 0.0	22		
©1982	-2017 XP	Solutions			

RGP Design Limited						Page 2
Metro House		R/O Red	Lion PH			
Northgate		Charing	Heath			4
Chichester PO19 1BE		SA1				- Cm
Date 16/01/2018 15:00		Designed	l by LF			MILIU
File SA1.srcx		Checked	by			Urainage
XP Solutions		Source (Control 2	2017.1		
Summary of Resul	ts fo	or 100 ye	ear Retu	rn Perio	d (+40%)	
		1				
Storm	Max	Max	Max	Max	Status	
Event	Leve	l Depth 1	nfiltrati	on Volume		
	(m)	(m)	(1/s)	(m³)		
30 min Winter	87.90	04 0.404	0	.1 6.9	ОК	
60 min Winter	88.01	2 0.512	0	.1 8.8	O K	
120 min Winter	88.11	9 0.619	0	.1 10.6	ОК	
180 min Winter 240 min Winter	88.17 88.21	2 0 712	0	.1 11.6 1 12.2	OK	
360 min Winter	88.25	59 0.759	0	.1 13.0	0 K	
480 min Winter	88.28	87 0.787	0	.1 13.5	ОК	
600 min Winter	88.30	0.803	0	.1 13.7	O K	
720 min Winter	88.31	2 0.812	0	.1 13.9	O K	
1440 min Winter	88.28	0.810	0	.1 13.9	O K	
2160 min Winter	88.23	5 0.735	0	.1 12.6	ОК	
2880 min Winter	88.18	33 0.683	0	.1 11.7	ОК	
4320 min Winter	88.07	0.575	0	.1 9.8	ОК	
5760 min Winter 7200 min Winter	87.97	1 0.471	0	.1 8.0	OK	
8640 min Winter	87.78	9 0.289	0	.1 4.9	ОК	
10080 min Winter	87.71	4 0.214	0	.1 3.7	ОК	
Stor	-	Pain	Floodod	Timo-Doak		
Even	t	(mm/hr)	Volume	(mins)		
		,	(m ³)	· · · ·		
			0.0	25		
30 min 60 min	Winte	r 88.566	0.0	37		
120 min	Winte	er 35.004	0.0	124		
180 min	Winte	er 25.973	0.0	182		
240 min	Winte	er 20.877	0.0	240		
360 min	Winte	er 15.365	0.0	358		
480 min 600 min	Winte	10.402	0.0	4/4 590		
720 min	Winte	er 9.042	0.0	704		
960 min	Winte	er 7.241	0.0	928		
1440 min	Winte	er 5.284	0.0	1356		
2160 min 2880 min	Winte	$\begin{array}{ccc} \text{ar} & 3.848 \\ \text{ar} & 3.069 \end{array}$	0.0	1688 2136		
4320 min	Winte	er 2.226	0.0	3028		
5760 min	Winte	er 1.771	0.0	3864		
7200 min	Winte	er 1.483	0.0	4680		
8640 min	Winte	r 1.284	0.0	5368		
10080 min	WINTE	1.13/	0.0	0050		

RGP Design Limited		Page 3
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA1	Micco
Date 16/01/2018 15:00	Designed by LF	Desinado
File SA1.srcx	Checked by	Diamage
XP Solutions	Source Control 2017.1	

	Rainfall Model		FSR	Winter Storms Yes
Return	Period (years)		100	Cv (Summer) 0.750
	Region	England	and Wales	Cv (Winter) 0.840
	M5-60 (mm)		20.000	Shortest Storm (mins) 15
	Ratio R		0.350	Longest Storm (mins) 10080
	Summer Storms		Yes	Climate Change % +40

Time Area Diagram

Total Area (ha) 0.019

Time	(mins)	Area	Time	(mins)	Area
From:	To:	(ha)	From:	To:	(ha)
		0 010		0	0.005
0	4	0.013	4	8	0.006

RGP Design Limited		Page 4
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA1	Micro
Date 16/01/2018 15:00	Designed by LF	Desinado
File SA1.srcx	Checked by	Diamage
XP Solutions	Source Control 2017.1	•

Storage is Online Cover Level (m) 90.000

Cellular Storage Structure

Invert Level (m) 87.500 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m) Area (m²) Inf. Area (m²) Depth (m) Area (m²) Inf. Area (m²)

0.000	18.0	18.0	0.900	0.0	39.6
0.800	18.0	39.6			

RGP Design Limited					Page 1
Metro House	R/O Red	Lion PH			
Northgate	Charing	Heath			L.
Chichester PO19 1BE	SA2				Micro
Date 16/01/2018 15:08	Designe	d by LF			Desinado
File SA2.srcx	Checked	by			Diamacje
XP Solutions	Source	Control 20	17.1		
Summary of Results :	Eor 100 y	vear Return	n Period	d (+40%)	
	in Time .	1070 minutes	~		
nali Dia	alli ilme •	12/9 minutes	5.		
Storm Ma	x Max	Max	Max	Status	
Event Lev	rel Depth	Infiltration	Volume		
(п	1) (m)	(1/s)	(m³)		
15 min Summer 87.	767 0.267	0.1	2.7	O K	
30 min Summer 87.	857 0.357	0.1	3.6	O K	
60 min Summer 87.	952 0.452	0.1	4.5	O K	
120 min Summer 88.	043 0.545 093 0 593	U.L 0 1	5.4 5 0	OK	
240 min Summer 88	122 0.622	0.1	6.2	O K	
360 min Summer 88.	160 0.660	0.1	6.6	ОК	
480 min Summer 88.	180 0.680	0.1	6.8	ОК	
600 min Summer 88.	190 0.690	0.1	6.9	ОК	
720 min Summer 88.	193 0.693	0.1	6.9	ОК	
960 min Summer 88.	188 0.688	0.1	6.9	ΟK	
1440 min Summer 88.	161 0.661	0.1	6.6	ОК	
2160 min Summer 88.	122 0.622	0.1	6.2	ОК	
2880 min Summer 88.	086 0.586	0.1	5.8 5.1	OK	
5760 min Summer 87	946 0 446	0.1	4 5	0 K	
7200 min Summer 87.	884 0.384	0.1	3.8	ОК	
8640 min Summer 87.	827 0.327	0.1	3.3	ОК	
10080 min Summer 87.	776 0.276	0.1	2.7	ОК	
15 min Winter 87.	800 0.300	0.1	3.0	O K	
Storm	Pain	Flooded Ti	mo-Doak		
Event	(mm/hr) Volume	(mins)		
	(/	(m ³)	(
15 min Sum	mer 131.85	1 0.0	22		
30 min Sum	uer 88.56	0.U 3 0.0	37		
120 min Sum	mer 35 00	4 0.0	126		
180 min Sum	mer 25.97	3 0.0	186		
240 min Sum	mer 20.87	7 0.0	244		
360 min Sum	mer 15.36	5 0.0	364		
480 min Sum	mer 12.34	1 0.0	482		
600 min Sum	mer 10.40	2 0.0	602		
720 min Sum	mer 9.04	2 0.0	722		
960 min Sum	mer 7.24	L 0.0	960 1106		
1440 min Sum 2160 min Sum	uci 5.28	- U.U 8 0.0	1560 1560		
2100 min Sum 2880 min Sum	mer 3.04	8 0.0	1964		
4320 min Sum	mer 2.22	6 0.0	2768		
5760 min Sum	mer 1.77	1 0.0	3576		
7200 min Sum	mer 1.48	3 0.0	4328		
8640 min Sum	mer 1.28	4 0.0	5104		
10080 min Sum	mer 1.13	7 0.0	5848		
15 min Win	uer 131.85	1 U.U	22		
©1982	-2017 XP	Solutions			

RGP Design Limited						Page 2
Metro House	R	R/O Red	Lion PH			
Northgate		Ya				
Chichester PO19 1BE	S	SA2				- un
Date 16/01/2018 15:08	MILIU					
File SA2.srcx	urainage					
XP Solutions	S	Source C	ontrol 2	2017.1		
	~					
Summary of Results	s for	c 100 ye	ear Retu	rn Perio	d (+40%)	
		-			<u> </u>	
Storm	Max	Max	Max	Max	Status	
Event I	Level	Depth I	nfiltrati	on Volume		
	(m)	(m)	(1/s)	(m³)		
30 min Winter 8	7.901	0.401	0	.1 4.0	ОК	
60 min Winter 8	8.008	0.508	0	.1 5.1	O K	
120 min Winter 8	8.115	0.615	0	.1 6.1	ОК	
180 min Winter 8 240 min Winter 9	8.1./1 8.206	0.671	0	.⊥ 6.7 1 7 ∩	O K O K	
360 min Winter 8	8.253	0.753	0	.1 7.5	0 K	
480 min Winter 8	8.280	0.780	0	.1 7.8	ОК	
600 min Winter 8	8.295	0.795	0	.1 7.9	O K	
720 min Winter 8	8.304	0.804	0	.1 8.0	O K	
1440 min Winter 8	8.280	0.780	0	.1 7.8	O K	
2160 min Winter 8	8.227	0.727	0	.1 7.3	ΟK	
2880 min Winter 8	8.175	0.675	0	.1 6.7	O K	
4320 min Winter 8	8.067	0.567	0	.1 5.7	ОК	
5760 min Winter 8 7200 min Winter 8	7.963	0.463	0	.L 4.6	OK	
8640 min Winter 8	7.782	0.282	0	.1 2.8	0 K	
10080 min Winter 8	7.707	0.207	0	.1 2.1	ОК	
Storm		Rain	Flooded	Time-Peak		
Event		(mm/hr)	Volume	(mins)		
			(m³)			
20 min 14	intor	99 566	0 0	27		
60 min W	inter	56.713	0.0	57		
120 min W	inter	35.004	0.0	124		
180 min W	inter	25.973	0.0	182		
240 min W	inter	20.877	0.0	240		
360 min W 480 min W	inter	12 241	0.0	358 474		
600 min W	inter	10.402	0.0	590		
720 min W	inter	9.042	0.0	704		
960 min W	inter	7.241	0.0	928		
1440 min W	inter	5.284	0.0	1354		
2100 min W. 2880 min W	inter	3.048	0.0	2136		
4320 min W	inter	2.226	0.0	3028		
5760 min W	inter	1.771	0.0	3864		
7200 min W	inter	1.483	0.0	4680		
8040 min Wi 10080 min Wi	inter	1.137	0.0	5368 6056		
		,	5.0			
	0.0 5	015	<u></u>			

RGP Design Limited		Page 3
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA2	Micro
Date 16/01/2018 15:08	Designed by LF	Desinado
File SA2.srcx	Checked by	Diamage
XP Solutions	Source Control 2017.1	•

	Rainfall Model		FSR	Winter Storms Yes
Return	Period (years)		100	Cv (Summer) 0.750
	Region	England	and Wales	Cv (Winter) 0.840
	M5-60 (mm)		20.000	Shortest Storm (mins) 15
	Ratio R		0.350	Longest Storm (mins) 10080
	Summer Storms		Yes	Climate Change % +40

Time Area Diagram

Total Area (ha) 0.011

Time	(mins)	Area	Time	(mins)	Area
From:	To:	(ha)	From:	To:	(ha)
0	4	0.007	4	8	0.004

RGP Design Limited		Page 4
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA2	Micro
Date 16/01/2018 15:08	Designed by LF	Desinado
File SA2.srcx	Checked by	Diamage
XP Solutions	Source Control 2017.1	•

Storage is Online Cover Level (m) 90.000

Cellular Storage Structure

Invert Level (m) 87.500 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m) Area (m²) Inf. Area (m²) Depth (m) Area (m²) Inf. Area (m²)

0.000	10.5	10.5	0.900	0.0	24.1
0.800	10.5	24.1			

RGP Design Limited					Page 1
Metro House	R/O Red	l Lion PH			
Northgate	Charing	g Heath			L.
Chichester PO19 1BE	SA3				Micro
Date 16/01/2018 15:07	Designe	ed by LF			Dcaipago
File SA3.srcx	Checked	l by			Diamage
XP Solutions					
Summary of Results	for 100 y	year Return	n Period	d (+40%)	
ualf Dx	oin Timo ·	1270 minuto			
Hall Dr.	ain lime .	12/9 minute	5.		
Storm Ma	ax Max	Max	Max	Status	
Event Lev	vel Depth	Infiltration	n Volume		
(1	n) (m)	(1/s)	(m³)		
15 min Summer 87.	767 0.267	0.1	1 2.7	O K	
30 min Summer 87.	857 0.357	0.1	1 3.6	O K	
60 min Summer 87.	952 0.452	0.1	1 4.5	O K	
180 min Summer 88.	045 0.545	0.1	т 5.4 1 5.9	OK	
240 min Summer 88.	122 0.622	0.1	1 6.2	O K	
360 min Summer 88.	160 0.660	0.1	1 6.6	O K	
480 min Summer 88.	180 0.680	0.1	1 6.8	O K	
600 min Summer 88.	190 0.690	0.1	1 6.9	ОК	
720 min Summer 88. 960 min Summer 88	193 0.693 188 0.688	0.1	L 6.9 1 6 9	OK	
1440 min Summer 88.	161 0.661	0.1	1 6.6	O K	
2160 min Summer 88.	122 0.622	0.1	1 6.2	ОК	
2880 min Summer 88.	086 0.586	0.1	1 5.8	O K	
4320 min Summer 88.	014 0.514	0.1	1 5.1	O K	
5760 min Summer 87.	946 0.446	0.1	1 4.5	OK	
8640 min Summer 87	827 0 327	0.1	1 3.0	OK	
10080 min Summer 87.	776 0.276	0.1	1 2.7	0 K	
15 min Winter 87.	800 0.300	0.1	1 3.0	O K	
Storm	Rain	Flooded T:	ime-Peak		
Event	(mm/hr) Volume	(mins)		
		(111-)			
15 min Sum	mer 131.85	0.0	22		
30 min Sum	mer 88.56	0.0	37		
60 min Sum 120 min Sum	mer 56.71	.3 0.0	66 126		
180 min Sum	mer 25.97	3 0.0	186		
240 min Sum	mer 20.87	7 0.0	244		
360 min Sum	mer 15.36	5 0.0	364		
480 min Sum	mer 12.34	1 0.0	482		
600 min Sum 720 min Sum	mer 10.40	2 0.0	602 722		
960 min Sum	mer 7.24	1 0.0	722 960		
1440 min Sum	mer 5.28	4 0.0	1186		
2160 min Sum	mer 3.84	8 0.0	1560		
2880 min Sum	mer 3.06	0.0	1964		
4320 min Sum 5760 min Sum	mer 2.22 mer 1 77	10 U.U	2768		
7200 min Sum	mer 1.48	3 0.0	4328		
8640 min Sum	mer 1.28	4 0.0	5104		
10080 min Sum	mer 1.13	0.0	5848		
15 min Win	ter 131.85	0.0	22		
©1982	2-2017 XP	Solutions	5		

RGP Design Limited						Page 2
Metro House	R	/O Red	Lion PH			
Northgate	C	haring	Heath			L.
Chichester PO19 1BE	Micco					
Date 16/01/2018 15:07						
File SA3.srcx	C	hecked	by			Diamage
XP Solutions						
Summary of Results	for	100 ye	ear Retu	rn Perio	d (+40%)	
Storm Ma	ax ,	Max	Max	Max	Status	
Event Lev	7e⊥ ∩)	Deptn 1	(1/g)	on Volume		
	,	(11)	(1)0)	()		
30 min Winter 87.	901	0.401	0	.1 4.0	ОК	
60 min Winter 88.	115	0.508	0	.L 5.L	ОК	
180 min Winter 88.	171	0.671	0	.1 6.7	0 K	
240 min Winter 88.	206	0.706	0	.1 7.0	ΟK	
360 min Winter 88.	253	0.753	0	.1 7.5	ОК	
480 min Winter 88.	280 205	0.780	0	.1 7.8	O K	
720 min Winter 88.	∠95 304	0.804	0	.1 8.0	0 K	
960 min Winter 88.	306	0.806	0	.1 8.0	ОК	
1440 min Winter 88.	280	0.780	0	.1 7.8	O K	
2160 min Winter 88.	175	0.727	0	.1 7.3	ОК	
2880 min Winter 88. 4320 min Winter 88.	1/5	0.675	0	.1 5.7	ОК	
5760 min Winter 87.	963	0.463	0	.1 4.6	ОК	
7200 min Winter 87.	867	0.367	0	.1 3.7	O K	
8640 min Winter 87.	782	0.282	0	.1 2.8	ОК	
10080 min winter 87.	/0/	0.207	0	.1 2.1	ΟK	
Storm		Rain	Flooded	Time-Peak		
Event		(mm/hr)	Volume	(mins)		
			(m ³)			
30 min Win	ter	88.566	0.0	37		
60 min Win	ter	56.713	0.0	66		
120 min Win 180 min Win	ter	35.004		124 182		
240 min Win	ter	20.877	0.0	240		
360 min Win	ter	15.365	0.0	358		
480 min Win	ter	12.341	0.0	474		
600 min Win 720 min Win	ter	10.402 9 n42		590 704		
960 min Win	ter	7.241	. 0.0	928		
1440 min Win	ter	5.284	0.0	1354		
2160 min Win	ter	3.848	0.0	1684		
2880 min Win	ter	3.068	8 0.0	2136		
4320 min Win 5760 min Win	ter	2.226	. 0.0	3028		
7200 min Win	ter	1.483	0.0	4680		
8640 min Win	ter	1.284	0.0	5368		
10080 min Win	ter	1.137	0.0	6056		
©1982	2-20	017 XP	Solution	ıs		
			-		-	-

RGP Design Limited		Page 3
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA3	Micro
Date 16/01/2018 15:07	Designed by LF	Desinado
File SA3.srcx	Checked by	Diamage
XP Solutions	Source Control 2017.1	

Rainfal	l Model		FSR	V	√inter	Storms	Yes
Return Period	(years)		100		Cv (S	Summer)	0.750
	Region	England	and Wales		Cv (W	Vinter)	0.840
M5-	60 (mm)		20.000	Shortest	Storm	(mins)	15
	Ratio R		0.350	Longest	Storm	(mins)	10080
Summer	Storms		Yes	Clim	nate Ch	nange %	+40

Time Area Diagram

Total Area (ha) 0.011

Time	(mins)	Area	Time	(mins)	Area	
From:	то:	(ha)	From:	To:	(ha)	
0	4	0.007	4	8	0.004	

RGP Design Limited		Page 4
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA3	Micro
Date 16/01/2018 15:07	Designed by LF	Desinado
File SA3.srcx	Checked by	Diamage
XP Solutions	Source Control 2017.1	•

Storage is Online Cover Level (m) 90.000

Cellular Storage Structure

Invert Level (m) 87.500 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m) Area (m²) Inf. Area (m²) Depth (m) Area (m²) Inf. Area (m²)

0.000	10.5	10.5	0.900	0.0	24.1
0.800	10.5	24.1			

RGP Design Limited					Page 1
Metro House	R/O Rec	l Lion PH			
Northgate	Charing	g Heath			L
Chichester PO19 1BE	SA4				Micco
Date 16/01/2018 15:10	Designe	ed by LF			Desinado
File SA4.srcx	Checked	l by			Diamaye
XP Solutions	Source	Control 2	017.1		
Summary of Results f	or 100 y	year Retur	n Perio	d (+40%)	
Italf Dwa	in Time .	1205 minut	0.7		
nall Dia.	III IIIIe •		65.		
Storm Max	(Max	Max	Max	Status	
Event Leve	el Depth	Infiltratic	(m ³)		
((11)	(1/5)	(111-)		
15 min Summer 87.7	56 0.256	0.	0 1.5	ОК	
30 min Summer 87.8	41 0.341	0.	.0 1.9	ОК	
120 min Summer 88 0	31 0.431 19 0 519	0.	0 2.5	OK	
180 min Summer 88.0	65 0.565	0.	0 3.2	ОК	
240 min Summer 88.0	92 0.592	0.	0 3.4	ОК	
360 min Summer 88.1	27 0.627	0.	0 3.6	O K	
480 min Summer 88.1	44 0.644	0.	0 3.7	O K	
600 min Summer 88.1	52 0.652	0.	.0 3.7	ОК	
720 min Summer 88.1 960 min Summer 88.1	54 0.654 46 0 646	0.	0 3.7	OK	
1440 min Summer 88.1	20 0.620	0.	.0 3.5	0 K	
2160 min Summer 88.0	82 0.582	0.	0 3.3	ОК	
2880 min Summer 88.0	46 0.546	0.	0 3.1	ОК	
4320 min Summer 87.9	75 0.475	0.	0 2.7	O K	
5760 min Summer 87.9	08 0.408	0.	.0 2.3	ОК	
7200 min Summer 87.8	48 0.348	0.	0 2.0	OK	
10080 min Summer 87.7	43 0.243	0.	0 1.4	ОК	
15 min Winter 87.7	87 0.287	0.	0 1.6	ОК	
Storm	Rain	Flooded	rime-Peak		
Event	(mm/hr) Volume	(mins)		
		(m ³)			
15 min Summ	er 131.85	0.0	19		
30 min Summ	er 88.56	6 0.0	34		
60 min Summ	er 56.71	.3 0.0	64		
120 min Summ	er 35.00	0.0	124		
240 min Summ	er 20.87	7 0.0	182 242		
360 min Summ	er 15.36	5 0.0	362		
480 min Summ	er 12.34	1 0.0	482		
600 min Summ	er 10.40	0.0	602		
720 min Summ	er 9.04	0.0	720		
960 min Summ	er 7.24 er 5.20		936 1154		
2160 min Summ	er 3,84	18 0.0	1536		
2880 min Summ	er 3.06	68 0.0	1936		
4320 min Summ	er 2.22	.0	2764		
5760 min Summ	er 1.77	1 0.0	3568		
7200 min Summ	er 1.48	0.0	4320		
8640 min Summ	er 1.28 er 1.13	94 U.U	5096		
15 min Wint	er 131.85	51 0.0	19		
©1982-	-2017 XP	Solution	S		

RGP Design Limited						Page 2
Metro House	R	2/0 Red	Lion PH			
Northgate	C	haring	Heath			Le
Chichester PO19 1BE	S	A4				Micro
Date 16/01/2018 15:10 Designed b			l by LF			
File SA4.srcx	C	hecked	by			Drainage
XP Solutions	S	Source C	ontrol 2	017.1		
Summary of Results	s for	r 100 ye	ear Retur	n Perio	d (+40%)	
Storm	Max	Max	Max	Max	Status	
Event 1	Level	Depth I	nfiltratio	on Volume		
	(m)	(m)	(1/S)	(m ³)		
30 min Winter 8	87.883	0.383	0.	.0 2.2	ΟK	
60 min Winter 8	87.985	0.485	0.	.0 2.8	O K	
120 min Winter 8	38.086	0.586	0.	.0 3.3	O K	
240 min Winter 8	8.172	0.639	0.	.0 3.8	0 K	
360 min Winter 8	38.215	0.715	0.	.0 4.1	ОК	
480 min Winter 8	88.239	0.739	0.	.0 4.2	O K	
600 min Winter 8	8.252	0.752	0.	.0 4.3	O K	
/20 min Winter 8 960 min Winter 8	8.259	0.759	0. 0	.0 4.3	OK	
1440 min Winter 8	38.230	0.730	0.	.0 4.2	0 K	
2160 min Winter 8	8.179	0.679	0.	.0 3.9	O K	
2880 min Winter 8	38.126	0.626	0.	.0 3.6	ОК	
4320 min Winter 8 5760 min Winter 8	88.019 7 916	0.519	0.	$ \begin{array}{ccc} .0 & 3.0 \\ 0 & 2.4 \end{array} $	OK	
7200 min Winter 8	87.823	0.323	0.	.0 2.4	0 K	
8640 min Winter 8	37.742	0.242	0.	.0 1.4	O K	
10080 min Winter 8	37.672	0.172	0.	.0 1.0	O K	
Storm		Rain	Flooded ?	Time-Peak		
Event		(mm/hr)	Volume	(mins)		
			(m³)			
30 min W	linter	88 566	0 0	33		
60 min W	linter	56.713	0.0	62		
120 min W	linter	35.004	0.0	122		
180 min W	linter	25.973	0.0	180		
240 min W 260 min W	linter	20.877	0.0	240		
480 min W	linter	12.341	0.0	472		
600 min W	linter	10.402	0.0	588		
720 min W	linter	9.042	0.0	700		
960 min W	linter		0.0	924 1340		
2160 min W	linter	3.848	0.0	1664 1		
	linter	3.068	0.0	2108		
2880 min W			0 0			
2880 min W 4320 min W	linter	2.226	0.0	2984		
2880 min W 4320 min W 5760 min W	linter linter	2.226	0.0	2984 3808		
2880 min W 4320 min W 5760 min W 7200 min W 8640 min W	linter Ninter Ninter Ninter	2.226 1.771 1.483	0.0 0.0 0.0	2984 3808 4608 5352		
2880 min W 4320 min W 5760 min W 7200 min W 8640 min W 10080 min W	Vinter Vinter Vinter Vinter Vinter	2.226 1.771 1.483 1.284 1.137	0.0 0.0 0.0 0.0	2984 3808 4608 5352 5960		
2880 min W 4320 min W 5760 min W 7200 min W 8640 min W 10080 min W	linter Ninter Ninter Ninter Ninter	2.226 1.771 1.483 1.284 1.137	0.0 0.0 0.0 0.0	2984 3808 4608 5352 5960		
2880 min W 4320 min W 5760 min W 7200 min W 8640 min W 10080 min W	Vinter Vinter Vinter Vinter	2.226 1.771 1.483 1.284 1.137	0.0 0.0 0.0 0.0	2984 3808 4608 5352 5960		
2880 min W 4320 min W 5760 min W 7200 min W 8640 min W 10080 min W	Vinter Vinter Vinter Vinter	2.226 1.771 1.483 1.284 1.137	0.0 0.0 0.0 0.0	2984 3808 4608 5352 5960		
2880 min W 4320 min W 5760 min W 7200 min W 8640 min W 10080 min W	Jinter Jinter Jinter Jinter Jinter	2.226 1.771 1.483 1.284 1.137	0.0 0.0 0.0 0.0	2984 3808 4608 5352 5960		
2880 min W 4320 min W 5760 min W 7200 min W 8640 min W 10080 min W	Jinter Jinter Jinter Jinter Jinter	2.226 1.771 1.483 1.284 1.137	0.0 0.0 0.0 0.0	2984 3808 4608 5352 5960		
2880 min W 4320 min W 5760 min W 7200 min W 8640 min W 10080 min W	Jinter Jinter Jinter Jinter	2.226 1.771 1.483 1.284 1.137	0.0 0.0 0.0 0.0 0.0	2984 3808 4608 5352 5960		

RGP Design Limited		Page 3
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA4	Micro
Date 16/01/2018 15:10	Designed by LF	Desinado
File SA4.srcx	Checked by	Diamage
XP Solutions	Source Control 2017.1	

Rainfall Model	FSR	Winter Storms Yes
Return Period (years)	100	Cv (Summer) 0.750
Region	England and Wales	Cv (Winter) 0.840
M5-60 (mm)	20.000	Shortest Storm (mins) 15
Ratio R	0.350	Longest Storm (mins) 10080
Summer Storms	Yes	Climate Change % +40

Time Area Diagram

Total Area (ha) 0.006

Time	(mins)	Area		
From:	то:	(ha)		
0	4	0.006		

©1982-2017 XP Solutions

RGP Design Limited		Page 4
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA4	Micro
Date 16/01/2018 15:10	Designed by LF	Desinado
File SA4.srcx	Checked by	Diamage
XP Solutions	Source Control 2017.1	•

Storage is Online Cover Level (m) 90.000

Cellular Storage Structure

Invert Level (m) 87.500 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m) Area (m²) Inf. Area (m²) Depth (m) Area (m²) Inf. Area (m²)

0.000	6.0	6.0	0.900	0.0	14.8
0.800	6.0	14.8			

RGP Design Limited					Page 1
Metro House	R/O Rec	l Lion PH			
Northgate	Charing	g Heath			L.
Chichester PO19 1BE	SA5				Micro
Date 16/01/2018 15:12	Designe	ed by LF			Desinado
File SA5.srcx	Checked	l by			Diamaye
XP Solutions	Source	Control 2	017.1		
Summary of Results f	or 100 y	year Retur	n Perio	d (+40%)	
Half Dra:	in Time :	1205 minut	es.		
Storm Max	c Max	Max	Max	Status	
Event Leve	el Depth	Infiltratio	on Volume		
(m)) (m)	(l/s)	(m³)		
15 min Summer 87.7	56 0.256	0.	.0 1.5	ОК	
30 min Summer 87.8	41 0.341	0.	.0 1.9	ОК	
60 min Summer 87.9	31 0.431	0.	.0 2.5	ОК	
120 min Summer 88.0	19 0.519	0.	.0 3.0	O K	
180 min Summer 88.0	65 0.565	0.	.0 3.2	ОК	
240 min Summer 88.0	92 0.592	0.	.0 3.4	OK	
360 min Summer 88.1	2/ 0.627	0.	.0 3.6	O K	
480 min Summer 88.1	44 0.644 52 0 652	0.	.0 3.7	OK	
720 min Summer 88.1	54 0.654	0.	.0 3.7	O K	
960 min Summer 88.1	46 0.646	0.	.0 3.7	ОК	
1440 min Summer 88.1	20 0.620	0.	.0 3.5	ОК	
2160 min Summer 88.0	82 0.582	0.	.0 3.3	ОК	
2880 min Summer 88.0	46 0.546	0.	.0 3.1	ОК	
4320 min Summer 87.9	75 0.475	0.	.0 2.7	ОК	
5760 min Summer 87.9	08 0.408	0.	.0 2.3	ΟK	
7200 min Summer 87.8	48 0.348	0.	.0 2.0	ОК	
8640 min Summer 8/./	92 0.292	0.	.0 1.7	OK	
15 min Winter 87.7	43 0.243 87 0.287	0.	.0 1.4	0 K	
Storm	Dain	Floodod	Time Deals		
Event	(mm/hr) Volume	(mins)		
	、 ,	(m ³)	(,		
15 min Summ	er 131.85	1 0.0	19		
30 min Summ	er 88.56	6 0.0	34		
60 min Summ	er 56.71	.3 0.0	64		
120 min Summ	er 35.00	0.0	124		
180 min Summ	er 25.97	3 0.0	182		
240 min Summ	er 20.87	0.0	242		
360 min Summ	er 15.36	5 0.0	362		
480 min Summ	er 12.34	L U.U	482		
720 min Summ	er 10.40 er 9.04	2 0.0	0UZ 720		
960 min Summ	er 7.24	1 0.0	936		
1440 min Summ	er 5.28	4 0.0	1154		
2160 min Summ	er 3.84	.0 8	1536		
2880 min Summ	er 3.06	0.0	1936		
4320 min Summ	er 2.22	0.0	2764		
5760 min Summ	er 1.77	0.0	3568		
7200 min Summ	er 1.48	0.0	4320		
8640 min Summ	er 1.28	14 U.U	5096		
15 min Wint	er 131.85	1 0.0	19		
©1982-	-2017 XP	Solution	S		

RGP Design Limited						Page 2
Metro House		R/O Red	Lion PH			
Northgate		Charing	Heath			4
Chichester PO19 1BE		SA5				- Cm
Date 16/01/2018 15:12		Designed	d by LF			MILIU
File SA5.srcx		Checked	by			Urainage
XP Solutions		Source (Control 2	2017.1		
Summary of Resul	ts fo	or 100 y	ear Retu	rn Perio	d (+40%)	
_		1				
Storm	Max	Max	Max	Max	Status	
Event	Leve	l Depth 1	Infiltrati	on Volume		
	(m)	(m)	(1/s)	(m³)		
30 min Winter	87.88	3 0.383	0	.0 2.2	ОК	
60 min Winter	87.98	5 0.485	0	.0 2.8	O K	
120 min Winter	88.08	6 0.586	0	.0 3.3	ОК	
180 min Winter 240 min Winter	88.13	9 0.639	0	.0 3.6	OK	
360 min Winter	88.21	5 0.715	0	.0 4.1	0 K	
480 min Winter	88.23	9 0.739	0	.0 4.2	ОК	
600 min Winter	88.25	2 0.752	0	.0 4.3	ОК	
720 min Winter	88.25	9 0.759	0	.0 4.3	O K	
1440 min Winter	88.23	0 0.759	0	.0 4.2	O K	
2160 min Winter	88.17	9 0.679	0	.0 3.9	ОК	
2880 min Winter	88.12	6 0.626	0	.0 3.6	O K	
4320 min Winter	88.01	9 0.519	0	.0 3.0	ОК	
5760 min Winter 7200 min Winter	87.91	0.416	0	.0 2.4	OK	
8640 min Winter	87.74	2 0.242	0	.0 1.4	ОК	
10080 min Winter	87.67	2 0.172	0	.0 1.0	ОК	
lt-ou		Dain	Tleaded	Mime Deels		
Even	nn t	(mm/hr)	Volume	(mins)		
		(/	(m ³)	(
30 min	Winte	r 88.566	5 0.0	33		
60 min 120 min	Winte	r 56.713	s 0.0	122		
180 min	Winte	r 25.973	3 0.0	180		
240 min	Winte	r 20.877	0.0	240		
360 min	Winte	r 15.365	5 0.0	356		
480 min 600 min	Winte Winte	r 12.341 r 10.400	- U.U	472 588		
720 min	Winte	r 9.042	2 0.0	700		
960 min	Winte	r 7.241	0.0	924		
1440 min	Winte	r 5.284	L 0.0	1340		
2160 min	Winte	r 3.848	B 0.0	1664		
4320 min	Winte	r 2.226	5 0.0	∠⊥08 2984		
5760 min	Winte	r 1.771	0.0	3808		
7200 min	Winte	r 1.483	8 0.0	4608		
8640 min	Winte	r 1.284	e 0.0	5352		
10080 min	winte	r 1.137	0.0	5960		
	000		a			

RGP Design Limited		Page 3
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA5	Micro
Date 16/01/2018 15:12	Designed by LF	Desinado
File SA5.srcx	Checked by	Diamage
XP Solutions	Source Control 2017.1	

Rainfall Model	FSR	Winter Storms Yes
Return Period (years)	100	Cv (Summer) 0.750
Region	England and Wales	Cv (Winter) 0.840
M5-60 (mm)	20.000	Shortest Storm (mins) 15
Ratio R	0.350	Longest Storm (mins) 10080
Summer Storms	Yes	Climate Change % +40

Time Area Diagram

Total Area (ha) 0.006

Time	(mins)	Area
From:	то:	(ha)
0	4	0.006

©1982-2017 XP Solutions

RGP Design Limited		Page 4
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA5	Micro
Date 16/01/2018 15:12	Designed by LF	Desinado
File SA5.srcx	Checked by	Diamage
XP Solutions	Source Control 2017.1	

Storage is Online Cover Level (m) 90.000

Cellular Storage Structure

Invert Level (m) 87.500 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m) Area (m²) Inf. Area (m²) Depth (m) Area (m²) Inf. Area (m²)

0.000	6.0	6.0	0.900	0.0	14.8
0.800	6.0	14.8			

©1982-2017 XP Solutions

RGP Design Limited						Page 1
Metro House	R	/O Red	Lion PH			
Northgate	C	haring	Heath			L
Chichester PO19 1BE	S	A6				Mirro
Date 16/01/2018 15:14	D	esigne	d by LF			Designment
File SA6.srcx	C	- hecked	by			Dialnage
XP Solutions	S	ource	 Control 2	2017.1		
Summary of Results	for	: 100 y	ear Retu	rn Perio	d (+40%)	
<u>_</u>		-			· · ·	
Half D:	rain	Time :	1279 minut	ces.		
Storm	Max	Max	Max	Max	Status	
Event Le	evel	Depth 1	Infiltrati	on Volume		
	(m)	(m)	(l/s)	(m³)		
15	767	0.067	0	1 0 7	0 17	
15 min Summer 87 30 min Summer 87	./6/	0.267	0	.⊥ 2.7 .1 3.6	OK	
60 min Summer 87	.952	0.452	0	.1 4.5	0 K	
120 min Summer 88	.045	0.545	0	.1 5.4	O K	
180 min Summer 88	.093	0.593	0	.1 5.9	ОК	
240 min Summer 88	.122	0.622	0	.1 6.2	O K	
360 min Summer 88	.160	0.660	0	.1 6.6	O K	
480 min Summer 88	.180	0.680	0	.1 6.8	ОК	
600 min Summer 88	.190	0.690	0	.1 6.9	ОК	
720 min Summer 88	.193	0.693	0	.1 6.9	ОК	
960 min Summer 88	.188	0.688	0	.1 6.9	OK	
1440 min Summer 88	122	0.601	0	.1 6.6	OK	
2100 min Summer 88	086	0.022	0	1 5.8	0 K	
4320 min Summer 88	.014	0.514	0	.1 5.1	ОК	
5760 min Summer 87	.946	0.446	0	.1 4.5	ОК	
7200 min Summer 87	.884	0.384	0	.1 3.8	ОК	
8640 min Summer 87	.827	0.327	0	.1 3.3	ОК	
10080 min Summer 87	.776	0.276	0	.1 2.7	ОК	
15 min Winter 87	.800	0.300	0	.1 3.0	ОК	
Storm		Rain	Flooded	Time-Peak		
Event		(mm/hr)	Volume	(mins)		
			(m³)			
15 min Su	mmer	131.851	L 0.0	22		
30 min Su	mmer	88.566	5 0.0	37		
60 min Su	mmer	56.713	3 0.0	66		
120 min Su	mmer	35.004	1 0.0	126		
180 min Su	mmer	25.973	3 0.0	186		
240 min Su	mmer	20.877	7 0.0	244		
360 min Su	mmer	15.365	5 0.0	364		
480 min Su	mmer	12.341	L 0.0	482		
600 min Su	mmer	10.402	2 0.0	602		
/20 min Su	mmer	9.042		122		
900 IIIII Su 1440 min Su	mmer	5 284	1 0.0	1186		
2160 min Su	mmer	3.848	3 0.0	1560		
2880 min Su	mmer	3.068	3 0.0	1964		
4320 min Su	mmer	2.226	5 0.0	2768		
5760 min Su	mmer	1.771	L 0.0	3576		
7200 min Su	mmer	1.483	3 0.0	4328		
8640 min Su	mmer	1.284	1 0.0	5104		
10080 min Su	mmer	1.137	0.0	5848		
15 min Wi	nter	131.851	L 0.0	22		
©198	32-20	017 XP	Solution	ıs		
0190						

RGP Design Limited						Page 2
Metro House]	R/O Red	Lion PH			
Northgate	(Charing	Heath			L.
Chichester PO19 1BE		SA6				Micro
Date 16/01/2018 15:14]	Designed	d by LF			Desinado
File SA6.srcx	(Checked	by			Drainage
XP Solutions		Source (Control 2	2017.1		
Summary of Results	s fo	r 100 y	ear Retu	rn Perio	d (+40%)	
Storm	Max	Max	Max	Max	Status	
Event	Level	Deptn 1	(1/g)	on Volume		
	(111)	(111)	(1/6)	(
30 min Winter 8	37.90	1 0.401	0	.1 4.0	ОК	
60 min Winter 8	38.00	8 0.508 5 0 615	0	.1 5.1	ОК	
120 min Winter 8	38.17	1 0.671	0	.1 6.7	ОК	
240 min Winter 8	38.20	6 0.706	0	.1 7.0	ОК	
360 min Winter 8	38.25	3 0.753	0	.1 7.5	ОК	
480 min Winter 8	38.28	0 0.780	0	.1 7.8	ОК	
720 min Winter 8	38.30	4 0.804	0	.1 8.0	0 K	
960 min Winter 8	38.30	6 0.806	0	.1 8.0	ОК	
1440 min Winter 8	38.28	0 0.780	0	.1 7.8	ОК	
2160 min Winter 8	38.22	7 0.727	0	.1 7.3	ОК	
4320 min Winter 8	38.06	5 0.675 7 0.567	0	.1 6.7	ОК	
5760 min Winter 8	37.96	3 0.463	0	.1 4.6	ОК	
7200 min Winter 8	37.86	7 0.367	0	.1 3.7	ОК	
8640 min Winter 8	37.78	2 0.282	0	.1 2.8	ОК	
10000 mill winter o	57.70	/ 0.20/	0	.1 2.1	ΟK	
Storm		Rain	Flooded	Time-Peak		
Event		(mm/hr)	(m ³)	(mins)		
			(111')			
30 min W	Vinte:	r 88.566	5 0.0	37		
60 min W	linte:	r 56.713 m 35.004		66 124		
120 min W 180 min W	vinte: Vinte:	r 25.973	s 0.0	182		
240 min W	Vinte:	r 20.877	0.0	240		
360 min W	linte:	r 15.365	0.0	358		
480 min W	Vinte:	r 12.341	0.0	474		
720 min W	vince: Vinte:	r 10.402 r 9.042	2 0.0	590 704		
960 min W	Vinte:	r 7.241	0.0	928		
1440 min W	linte:	r 5.284	L 0.0	1354		
2160 min W	Vinte:	r 3.848	8 0.0	1684		
2880 min W 4320 min W	vinte: Vinte	r 2.226	5 0.0	2136 3028		
5760 min W	Vinte:	r 1.771	0.0	3864		
7200 min W	linte:	r 1.483	0.0	4680		
8640 min W	Vinte:	r 1.284	E 0.0	5368		
10080 min w	vince:	L 1.13/	0.0	0000		

RGP Design Limited		Page 3
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA6	Micro
Date 16/01/2018 15:14	Designed by LF	Desinado
File SA6.srcx	Checked by	Diamaye
XP Solutions	Source Control 2017.1	•

Rainfal	l Model		FSR	V	√inter	Storms	Yes
Return Period	(years)		100		Cv (S	Summer)	0.750
	Region	England	and Wales		Cv (W	Vinter)	0.840
M5-	60 (mm)		20.000	Shortest	Storm	(mins)	15
	Ratio R		0.350	Longest	Storm	(mins)	10080
Summer	Storms		Yes	Clim	nate Ch	nange %	+40

Time Area Diagram

Total Area (ha) 0.011

Time	(mins)	Area	Time	(mins)	Area	
From:	To:	(ha)	From:	To:	(ha)	
0	4	0.007	4	8	0.004	

RGP Design Limited		Page 4
Metro House	R/O Red Lion PH	
Northgate	Charing Heath	L
Chichester PO19 1BE	SA6	Micro
Date 16/01/2018 15:14	Designed by LF	Desinado
File SA6.srcx	Checked by	Diamage
XP Solutions	Source Control 2017.1	•

Storage is Online Cover Level (m) 90.000

Cellular Storage Structure

Invert Level (m) 87.500 Safety Factor 2.0 Infiltration Coefficient Base (m/hr) 0.03600 Porosity 0.95 Infiltration Coefficient Side (m/hr) 0.00000

Depth (m) Area (m²) Inf. Area (m²) Depth (m) Area (m²) Inf. Area (m²)

0.000	10.5	10.5	0.900	0.0	24.1
0.800	10.5	24.1			