TECHNICAL NOTE 01

PROPOSED ERECTION OF AGRICULTURAL BUILDING AND EXTENSION TO EXISTING BUILDING REDBOURNE ROAD, HIBALDSTOW

1.0 INTRODUCTION

1.1 This Technical Note, (TN), has been produced on behalf of Mr A Lunn to calculate the size of soakaways required for the proposed development.

1.2 The site is located at grid reference SE9740201428.

Proposed Development

1.3 The proposed development consists of the erection of a new agricultural building and the extension to an existing building.

2.0 PROPOSED SOAKAWAYS

2.1 Ground investigation in the form of percolation tests undertaken to BRE Digest 365 across the site by others has identified that soakaways would be suitable. The report recommends that for soakaway calculation purposes the most conservative infiltration rate (from 3rd determination) of $2.83x10^{-04}$m/s could be utilised. The test results are included as **Appendix 1.**

2.2 The sizing of soakaways has been undertaken using a software tool developed by HR Wallingford based on the method provided in CIRIA report 156 and a summary is included below with the full results included in **Appendix 2.**

Porosity of Fill Material

2.3 Typical values for the porosity of fill materials are:

- High Void Structure 0.90 - 0.95
- Single Size Clean Stones 0.30 - 0.40
- Graded Sand/Gravel 0.20 - 0.30

2.4 In this instance it is proposed to use plastic soakaway crates with a high void structure of 0.95.

Contributing Area

2.5 The roof areas are;

- New building 372m^2
- Extension 211m^2

Soakaways Size

2.6 A factor of safety of 1.5 has been chosen based on the table below.

	CONSEQUENCE OF FAILURE		
Total Area to be Drained	**No damage or inconvenience**	**Minor Inconvenience e.g. SW on Car Park**	**Damage to Buildings or Major Inconvenience e.g. SW on Roads**
<100m^2	1.5	2.0	10.0
100m^2 to 1000m^2	1.5	3.0	10.0
>1000m^2	1.5	5.0	10.0

Table 2.1 Infiltration Factor of Safety

2.7 The size of soakaways has been calculated for the following return periods as requested by the Lead Local Flood Authority:

- 1:1 + 35% allowance for climate change,
- 1:5 + 35% allowance for climate change,
- 1:30 + 35% allowance for climate change,
- 1:100 + 40% allowance for climate change,

2.8 The maximum size of soakaway for the new building and the extension is to cater for the 1:100 + 40% climate change event and the minimum dimension for the soakaways are shown in the table below.

Soakaway	Dimensions Required
New building (1 soakaway)	4.0m x 4.0m x 0.78m
New building (2 soakaways)	2.0m x 4.0m x 0.71m
Extension (1 soakaway)	3.0m x 3.0m x 0.74m
Extension (2 soakaways)	1.5m x 3.0m x 0.68m

Table 2.2 Dimensions of Soakaway

3.0 DOCUMENT ISSUE RECORD

Document Reference	RLC/1919/TN01

Revision		Date of Issue
1	Issued	23/07/2025

Author

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Roy.Lobley@outlook.com

Limitations

The conclusions drawn by Roy Lobley Consulting are based on information supplied and could differ if the information is found to be inaccurate or misleading. In which case Roy Lobley Consulting accepts no liability should additional information exist or becomes available with respect to this project.

The information in this report is based on statistical data and qualitative analysis which are for guidance purposes only. This study provides no guarantee against flooding or of the absolute accuracy of water levels, flows and associated probabilities.

This report has been prepared for the sole use of Mr A Lunn and no other third parties may rely upon or reproduce the contents of this report without the written permission of Roy Lobley Consulting.

Appendix 1
Infiltration Test Results

Our Ref: 0001/0001
Your Ref: Hibaldstow
Date: 14th July 2025

Whitaker Land Agency
3 Lapstone Close
Nettleton
Market Rasen
LN7 6BT

Humberside Materials Laboratory LTD
Atherton Way, Brigg
North Lincs DN20 8AR
Tel & fax 01652 652753
Email:
info@humbersidematerialslab.co.uk

Dear Will

Land at Hibaldstow

Further to your instruction Humberside Materials Laboratory (HML) were engaged to undertake percolation testing as per BRE 365 digest recommendations at a site off Redbourne Road, Hibaldstow. One Trial Pit was tested on the 14th July 2025. The test location was selected by you and sited at the proposed soakaway location; a marked location plan is included below.

Trial pit (Soakaway testing)

The trial pit was excavated by a tracked excavator utilising a 600mm width bucket. Encountered strata was logged on site as the trial pits advanced. The whole site had been subject to a topsoil strip prior to the test. Encountered strata is summarised within table 1 below. Photographs are enclosed.

Table 1: Summary of revealed ground conditions	
	Exploratory hole
	TP1
Strata descriptions	*Depth to base of stratum (m bgl)*
Orange/Brown slightly Sandy CLAY with some coarse to fine Gravels	0-0.2
Buff silty sand with cobble to fine Limestone gravels	0.2-1.22
Notes: TP1 – no water seepage or ingresses noted	

Soakaway testing

Soakaway testing was completed as per guidance within BRE Digest 365.

Soakaway trial pit 1 (TP1) was excavated to 1.22m below ground level (bgl) with a width of 0.60m and a length of 1.10m. Water was added to the pit with its depth monitored against time elapsed, this pit included three consecutive fills. Calculations show infiltration rates ranging from $6.02x10^{-04}$m/s to $2.83x10^{-04}$m/s with an effective test depth from 0.69m to 1.22m bgl. Individual test report is enclosed.

Summary

The encountered strata of Buff silty sand with cobble to fine Limestone gravels appears suitable for use as part of a soakaway design, this can be by a completed drainage engineer. Three water fills were achieved with drainage surpassing each pits 75% empty line giving infiltration rates ranging from $6.02x^{-04}$m/s to $2.83x10^{-04}$m/s. For soakaway calculation purposes the most conservative infiltration rate (from 3rd determination) of $2.83x10^{-04}$m/s could be utilised.

If you require any further information, please contact the laboratory.

Yours Sincerely

. Driver *Director*

Enclosed: *Photographs*
Soakaway test reports

Trial Pit TP1 – After excavations

Trial pit TP1 – Excavated spoil

HUMBERSIDE MATERIALS LABORATORY LTD

Atherton Way, Brigg
North Lincolnshire DN20 8AR
Tel & Fax 01652 652753

DETERMINATION OF SOIL INFILTRATION RATE

Sample Ref TP1 Hibaldstow **Client** Whitaker Land Agency

Site Hibaldstow
Location TP1
Date tested 14/07/2025
Determined by M. Driver (HML)
Soil type Buff Silty sand with cobble to fine Limestone gravels

Calculation of Soil Infiltration Rate :- BRE Digest No. 365

Calculation Data

Soakaway pit No		**TP1**		
Anticipated invert level		Unknown		
Pit Dimensions (l x w x d) (m)	1.10	0.60	1.22	
Effective Depth (75% - 25%)	Determination 1		0.265	m
	Determination 2		0.265	m
	Determination 3		0.265	m
Effective volume (75% - 25%)	Determination 1		0.175	m^3
	Determination 2		0.175	m^3
	Determination 3		0.175	m^3
Effective Surface Area	Determination 1		1.561	m^2
(75% - 25%)	Determination 2		1.561	m^2
	Determination 3		1.561	m^2
Time for soakaway (75%-25% effective depth)				
	Determination 1		186	Sec.
	Determination 2		348	Sec.
	Determination 3		396	Sec.
Soil Infiltration Rate (m/s)	**Determination 1**		**6.02E-04**	**m/s**
	Determination 2		**3.22E-04**	**m/s**
	Determination 3		**2.83E-04**	**m/s**

Comments

File ref 0001/0001
Date tested 14/07/2025
Date reported 14/07/2025

Signed - M.Driver / D. Driver / C. Driver
Director

Appendix 2
Soakaway Size

Infiltration volume design tool

www.uksuds.com | Infiltration volume design tool (https://www.uksuds.com/)

This is an estimation of the infiltration volumes and drain-down time to half empty the infiltration system in line with the on CIRIA infiltration drainage R156 guidance (1996) and CIRIA SuDS manual (C753, 2015). This information may be used as the basis for designing an infiltration system for the drainage of surface water runoff from sites.

Project details

Date	23/07/2025
Calculated by	Roy Lobley
Reference	RLC-1919 (New)
Model version	2.0.1

Site details

Site name	Redbourne Road
Site location	Hibaldstow

Infiltration system

Infiltration system	Soakaway
Type	Rectangular soakaway with infiltration from sides and base

Geometry, porosity and infiltration

Width (m)	1	m
Length (m)	2	m
Infiltration coefficient (m/s)	0.000283	m/s
Porosity of fill material	95% eg. High void structure / geocellular structure	

Area to be drained

Total area (m²)	372	m^2
Factor of safety	1.5	

Rainfall

Rainfall input type	FEH22 CSV file
	Hibaldstow Rain Data.csv
Return period (years)	1
Climate change allowance factor	135%

Results

Soakaway minimum height (m)	0.88	m
Time for half-emptying (h)	0.21	h

Disclaimer

This report was produced using the infiltration volume design tool (2.0.1) developed by HR Wallingford and available at uksuds.com (https://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 uksuds.com/terms-conditions (https://www.uksuds.com/terms-conditions). The outputs from this tool have been used to estimate infiltration volumes and drain-down times. 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, Centre for Ecology and Hydrology, Wallingford Hydrosolutions or any other organisation for the use of these data in the design or operational characteristics of any drainage scheme.

HR Wallingford are not responsible for any rainfall data shared that is subject to licensing terms imposed by UK Centre for Ecology & Hydrology's Flood Estimation Handbook web service (https://fehweb.ceh.ac.uk/Home/Terms (https://fehweb.ceh.ac.uk/Home/Terms)).

Appendix A - Rainfall Depths

Rainfall depths (mm) with climate change

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
15	0.25	6.73	9.83	16.97	21.91	26.93	29.73	33.32	36.23	38.31	41.34	43.51	50.45	56.04	81.03
30	0.5	8.71	12.66	21.79	28.19	34.86	38.81	43.59	47.52	50.41	54.54	57.5	67.22	75.11	110.3
60	1	10.81	15.67	26.89	35.07	43.34	48.25	54.53	59.63	63.3	68.54	72.33	85	95.24	141.76
120	2	16.6	21.88	34.07	42.71	51.37	56.54	63.07	68.4	72.28	77.8	81.81	95.31	106.7	164.05
180	3	20.22	25.7	38.37	47.32	56.21	61.51	68.26	73.74	77.71	83.46	87.66	101.9	114.2	179.33
240	4	22.8	28.43	41.42	50.6	59.68	65.08	72	77.6	81.66	87.59	91.92	106.85	119.96	191.03
360	6	26.36	32.21	45.72	55.13	64.56	70.13	77.3	83.15	87.4	93.57	98.15	114.25	128.95	208.14
540	9	29.83	35.91	49.95	59.71	69.44	75.25	82.69	88.82	93.31	99.87	104.79	122.46	139.08	225.64
720	12	32.28	38.53	52.96	63	72.98	78.95	86.64	93	97.7	104.63	109.84	128.87	147.06	238.14
900	15	34.15	40.54	55.3	65.54	75.75	81.88	89.82	96.39	101.26	108.5	113.97	134.19	153.77	247.78
1080	18	35.69	42.21	57.27	67.7	78.11	84.38	92.54	99.31	104.33	111.85	117.56	138.83	159.6	255.72
1440	24	38.24	44.98	60.55	71.39	82.23	88.71	97.21	104.36	109.7	117.72	123.84	146.91	169.38	268.58
1800	30	40.27	47.21	63.23	74.39	85.59	92.3	101.13	108.58	114.17	122.61	129.06	153.51	177.16	278.21
2160	36	42.05	49.17	65.6	77.04	88.56	95.49	104.61	112.32	118.11	126.89	133.64	159.12	183.57	285.8
2880	48	45.15	52.6	69.78	81.73	93.81	101.12	110.77	118.88	124.98	134.3	141.47	168.4	193.78	297.27

Rainfall depths (mm) without climate change

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
15	0.25	4.99	7.28	12.57	16.23	19.95	22.02	24.68	26.84	28.38	30.62	32.23	37.37	41.51	60.02
30	0.5	6.45	9.38	16.14	20.88	25.82	28.75	32.29	35.2	37.34	40.4	42.59	49.79	55.64	81.7
60	1	8.01	11.61	19.92	25.98	32.1	35.74	40.39	44.17	46.89	50.77	53.58	62.96	70.55	105.01
120	2	12.3	16.21	25.24	31.64	38.05	41.88	46.72	50.67	53.54	57.63	60.6	70.6	79.04	121.52
180	3	14.98	19.04	28.42	35.05	41.64	45.56	50.56	54.62	57.56	61.82	64.93	75.48	84.59	132.84
240	4	16.89	21.06	30.68	37.48	44.21	48.21	53.33	57.48	60.49	64.88	68.09	79.15	88.86	141.5
360	6	19.52	23.86	33.87	40.84	47.82	51.95	57.26	61.59	64.74	69.31	72.7	84.63	95.52	154.18
540	9	22.09	26.6	37	44.23	51.44	55.74	61.25	65.79	69.12	73.98	77.62	90.71	103.02	167.14
720	12	23.91	28.54	39.23	46.67	54.06	58.48	64.18	68.89	72.37	77.5	81.36	95.46	108.93	176.4
900	15	25.29	30.03	40.96	48.55	56.11	60.65	66.53	71.4	75.01	80.37	84.42	99.4	113.9	183.54
1080	18	26.44	31.27	42.42	50.15	57.86	62.5	68.55	73.56	77.28	82.85	87.08	102.84	118.22	189.42
1440	24	28.32	33.32	44.85	52.88	60.91	65.71	72.01	77.3	81.26	87.2	91.73	108.82	125.47	198.95
1800	30	29.83	34.97	46.84	55.1	63.4	68.37	74.91	80.43	84.57	90.82	95.6	113.71	131.23	206.08

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
2160	**36**	31.15	36.42	48.59	57.07	65.6	70.73	77.49	83.2	87.49	93.99	98.99	117.87	135.98	211.7
2880	**48**	33.44	38.96	51.69	60.54	69.49	74.9	82.05	88.06	92.58	99.48	104.79	124.74	143.54	220.2

Infiltration volume design tool

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Project details

Date	23/07/2025
Calculated by	Roy Lobley
Reference	RLC-1919 (New)
Model version	2.0.1

Site details

Site name	Redbourne Road
Site location	Hibaldstow

Infiltration system

Infiltration system	Soakaway
Type	Rectangular soakaway with infiltration from sides and base

Geometry, porosity and infiltration

Width (m)	2	m
Length (m)	3	m
Infiltration coefficient (m/s)	0.000283	m/s
Porosity of fill material	95% eg. High void structure / geocellular structure	

Area to be drained

Total area (m²)	372	m^2
Factor of safety	1.5	

Rainfall

Rainfall input type	FEH22 CSV file
	Hibaldstow Rain Data.csv
Return period (years)	5
Climate change allowance factor	135%

Results

Soakaway minimum height (m)	0.80	m
Time for half-emptying (h)	0.28	h

Disclaimer

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Appendix A - Rainfall Depths

Rainfall depths (mm) with climate change

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120	2	12.3	16.21	25.24	31.64	38.05	41.88	46.72	50.67	53.54	57.63	60.6	70.6	79.04	121.52
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900	15	25.29	30.03	40.96	48.55	56.11	60.65	66.53	71.4	75.01	80.37	84.42	99.4	113.9	183.54
1080	18	26.44	31.27	42.42	50.15	57.86	62.5	68.55	73.56	77.28	82.85	87.08	102.84	118.22	189.42
1440	24	28.32	33.32	44.85	52.88	60.91	65.71	72.01	77.3	81.26	87.2	91.73	108.82	125.47	198.95
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2880	**48**	33.44	38.96	51.69	60.54	69.49	74.9	82.05	88.06	92.58	99.48	104.79	124.74	143.54	220.2

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Calculated by	Roy Lobley
Reference	RLC-1919 (New)
Model version	2.0.1

Site details

Site name	Redbourne Road
Site location	Hibaldstow

Infiltration system

Infiltration system	Soakaway
Type	Rectangular soakaway with infiltration from sides and base

Geometry, porosity and infiltration

Width (m)	3	m
Length (m)	3	m
Infiltration coefficient (m/s)	0.000283	m/s
Porosity of fill material	95% eg. High void structure / geocellular structure	

Area to be drained

Total area (m^2)	372	m^2
Factor of safety	1.5	

Rainfall

Rainfall input type	FEH22 CSV file
	Hibaldstow Rain Data.csv
Return period (years)	30
Climate change allowance factor	135%

Results

Soakaway minimum height (m)	1.06	m
Time for half-emptying (h)	0.36	h

Disclaimer

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Appendix A - Rainfall Depths

Rainfall depths (mm) with climate change

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
15	0.25	6.73	9.83	16.97	21.91	26.93	29.73	33.32	36.23	38.31	41.34	43.51	50.45	56.04	81.03
30	0.5	8.71	12.66	21.79	28.19	34.86	38.81	43.59	47.52	50.41	54.54	57.5	67.22	75.11	110.3
60	1	10.81	15.67	26.89	35.07	43.34	48.25	54.53	59.63	63.3	68.54	72.33	85	95.24	141.76
120	2	16.6	21.88	34.07	42.71	51.37	56.54	63.07	68.4	72.28	77.8	81.81	95.31	106.7	164.05
180	3	20.22	25.7	38.37	47.32	56.21	61.51	68.26	73.74	77.71	83.46	87.66	101.9	114.2	179.33
240	4	22.8	28.43	41.42	50.6	59.68	65.08	72	77.6	81.66	87.59	91.92	106.85	119.96	191.03
360	6	26.36	32.21	45.72	55.13	64.56	70.13	77.3	83.15	87.4	93.57	98.15	114.25	128.95	208.14
540	9	29.83	35.91	49.95	59.71	69.44	75.25	82.69	88.82	93.31	99.87	104.79	122.46	139.08	225.64
720	12	32.28	38.53	52.96	63	72.98	78.95	86.64	93	97.7	104.63	109.84	128.87	147.06	238.14
900	15	34.15	40.54	55.3	65.54	75.75	81.88	89.82	96.39	101.26	108.5	113.97	134.19	153.77	247.78
1080	18	35.69	42.21	57.27	67.7	78.11	84.38	92.54	99.31	104.33	111.85	117.56	138.83	159.6	255.72
1440	24	38.24	44.98	60.55	71.39	82.23	88.71	97.21	104.36	109.7	117.72	123.84	146.91	169.38	268.58
1800	30	40.27	47.21	63.23	74.39	85.59	92.3	101.13	108.58	114.17	122.61	129.06	153.51	177.16	278.21
2160	36	42.05	49.17	65.6	77.04	88.56	95.49	104.61	112.32	118.11	126.89	133.64	159.12	183.57	285.8
2880	48	45.15	52.6	69.78	81.73	93.81	101.12	110.77	118.88	124.98	134.3	141.47	168.4	193.78	297.27

Rainfall depths (mm) without climate change

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
15	0.25	4.99	7.28	12.57	16.23	19.95	22.02	24.68	26.84	28.38	30.62	32.23	37.37	41.51	60.02
30	0.5	6.45	9.38	16.14	20.88	25.82	28.75	32.29	35.2	37.34	40.4	42.59	49.79	55.64	81.7
60	1	8.01	11.61	19.92	25.98	32.1	35.74	40.39	44.17	46.89	50.77	53.58	62.96	70.55	105.01
120	2	12.3	16.21	25.24	31.64	38.05	41.88	46.72	50.67	53.54	57.63	60.6	70.6	79.04	121.52
180	3	14.98	19.04	28.42	35.05	41.64	45.56	50.56	54.62	57.56	61.82	64.93	75.48	84.59	132.84
240	4	16.89	21.06	30.68	37.48	44.21	48.21	53.33	57.48	60.49	64.88	68.09	79.15	88.86	141.5
360	6	19.52	23.86	33.87	40.84	47.82	51.95	57.26	61.59	64.74	69.31	72.7	84.63	95.52	154.18
540	9	22.09	26.6	37	44.23	51.44	55.74	61.25	65.79	69.12	73.98	77.62	90.71	103.02	167.14
720	12	23.91	28.54	39.23	46.67	54.06	58.48	64.18	68.89	72.37	77.5	81.36	95.46	108.93	176.4
900	15	25.29	30.03	40.96	48.55	56.11	60.65	66.53	71.4	75.01	80.37	84.42	99.4	113.9	183.54
1080	18	26.44	31.27	42.42	50.15	57.86	62.5	68.55	73.56	77.28	82.85	87.08	102.84	118.22	189.42
1440	24	28.32	33.32	44.85	52.88	60.91	65.71	72.01	77.3	81.26	87.2	91.73	108.82	125.47	198.95
1800	30	29.83	34.97	46.84	55.1	63.4	68.37	74.91	80.43	84.57	90.82	95.6	113.71	131.23	206.08

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
2160	**36**	31.15	36.42	48.59	57.07	65.6	70.73	77.49	83.2	87.49	93.99	98.99	117.87	135.98	211.7
2880	**48**	33.44	38.96	51.69	60.54	69.49	74.9	82.05	88.06	92.58	99.48	104.79	124.74	143.54	220.2

Infiltration volume design tool

www.uksuds.com | Infiltration volume design tool (https://www.uksuds.com/)

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Project details

Date	23/07/2025
Calculated by	Roy Lobley
Reference	RLC-1919 (New)
Model version	2.0.1

Site details

Site name	Redbourne Road
Site location	Hibaldstow

Infiltration system

Infiltration system	Soakaway
Type	Rectangular soakaway with infiltration from sides and base

Geometry, porosity and infiltration

Width (m)	4	m
Length (m)	4	m
Infiltration coefficient (m/s)	0.000283	m/s
Porosity of fill material	95% eg. High void structure / geocellular structure	

Area to be drained

Total area (m^2)	372	m^2
Factor of safety	1.5	

Rainfall

Rainfall input type	FEH22 CSV file
	Hibaldstow Rain Data.csv
Return period (years)	100
Climate change allowance factor	140%

Results

Soakaway minimum height (m)	0.78	m
Time for half-emptying (h)	0.34	h

Disclaimer

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Appendix A - Rainfall Depths

Rainfall depths (mm) with climate change

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
15	0.25	6.98	10.19	17.6	22.72	27.93	30.83	34.55	37.58	39.73	42.87	45.12	52.32	58.11	84.03
30	0.5	9.03	13.13	22.6	29.23	36.15	40.25	45.21	49.28	52.28	56.56	59.63	69.71	77.9	114.38
60	1	11.21	16.25	27.89	36.37	44.94	50.04	56.55	61.84	65.65	71.08	75.01	88.14	98.77	147.01
120	2	17.22	22.69	35.34	44.3	53.27	58.63	65.41	70.94	74.96	80.68	84.84	98.84	110.66	170.13
180	3	20.97	26.66	39.79	49.07	58.3	63.78	70.78	76.47	80.58	86.55	90.9	105.67	118.43	185.98
240	4	23.65	29.48	42.95	52.47	61.89	67.49	74.66	80.47	84.69	90.83	95.33	110.81	124.4	198.1
360	6	27.33	33.4	47.42	57.18	66.95	72.73	80.16	86.23	90.64	97.03	101.78	118.48	133.73	215.85
540	9	30.93	37.24	51.8	61.92	72.02	78.04	85.75	92.11	96.77	103.57	108.67	126.99	144.23	234
720	12	33.47	39.96	54.92	65.34	75.68	81.87	89.85	96.45	101.32	108.5	113.9	133.64	152.5	246.96
900	15	35.41	42.04	57.34	67.97	78.55	84.91	93.14	99.96	105.01	112.52	118.19	139.16	159.46	256.96
1080	18	37.01	43.78	59.39	70.21	81	87.5	95.97	102.98	108.19	115.99	121.91	143.98	165.51	265.19
1440	24	39.65	46.65	62.79	74.03	85.27	91.99	100.81	108.22	113.76	122.08	128.42	152.35	175.66	278.53
1800	30	41.76	48.96	65.58	77.14	88.76	95.72	104.87	112.6	118.4	127.15	133.84	159.19	183.72	288.51
2160	36	43.6	50.99	68.03	79.9	91.84	99.02	108.49	116.48	122.49	131.59	138.59	165.02	190.37	296.38
2880	48	46.82	54.54	72.37	84.76	97.29	104.86	114.87	123.28	129.61	139.27	146.71	174.64	200.96	308.28

Rainfall depths (mm) without climate change

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
15	0.25	4.99	7.28	12.57	16.23	19.95	22.02	24.68	26.84	28.38	30.62	32.23	37.37	41.51	60.02
30	0.5	6.45	9.38	16.14	20.88	25.82	28.75	32.29	35.2	37.34	40.4	42.59	49.79	55.64	81.7
60	1	8.01	11.61	19.92	25.98	32.1	35.74	40.39	44.17	46.89	50.77	53.58	62.96	70.55	105.01
120	2	12.3	16.21	25.24	31.64	38.05	41.88	46.72	50.67	53.54	57.63	60.6	70.6	79.04	121.52
180	3	14.98	19.04	28.42	35.05	41.64	45.56	50.56	54.62	57.56	61.82	64.93	75.48	84.59	132.84
240	4	16.89	21.06	30.68	37.48	44.21	48.21	53.33	57.48	60.49	64.88	68.09	79.15	88.86	141.5
360	6	19.52	23.86	33.87	40.84	47.82	51.95	57.26	61.59	64.74	69.31	72.7	84.63	95.52	154.18
540	9	22.09	26.6	37	44.23	51.44	55.74	61.25	65.79	69.12	73.98	77.62	90.71	103.02	167.14
720	12	23.91	28.54	39.23	46.67	54.06	58.48	64.18	68.89	72.37	77.5	81.36	95.46	108.93	176.4
900	15	25.29	30.03	40.96	48.55	56.11	60.65	66.53	71.4	75.01	80.37	84.42	99.4	113.9	183.54
1080	18	26.44	31.27	42.42	50.15	57.86	62.5	68.55	73.56	77.28	82.85	87.08	102.84	118.22	189.42
1440	24	28.32	33.32	44.85	52.88	60.91	65.71	72.01	77.3	81.26	87.2	91.73	108.82	125.47	198.95
1800	30	29.83	34.97	46.84	55.1	63.4	68.37	74.91	80.43	84.57	90.82	95.6	113.71	131.23	206.08

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
2160	**36**	31.15	36.42	48.59	57.07	65.6	70.73	77.49	83.2	87.49	93.99	98.99	117.87	135.98	211.7
2880	**48**	33.44	38.96	51.69	60.54	69.49	74.9	82.05	88.06	92.58	99.48	104.79	124.74	143.54	220.2

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Project details

Date	23/07/2025
Calculated by	Roy Lobley
Reference	RLC-1919 (Extension)
Model version	2.0.1

Site details

Site name	Redbourne Road
Site location	Hibaldstow

Infiltration system

Infiltration system	Soakaway
Type	Rectangular soakaway with infiltration from sides and base

Geometry, porosity and infiltration

Width (m)	1	m
Length (m)	1	m
Infiltration coefficient (m/s)	0.000283	m/s
Porosity of fill material	95% eg. High void structure / geocellular structure	

Area to be drained

Total area (m²)	211	m^2
Factor of safety	1.5	

Rainfall

Rainfall input type	FEH22 CSV file
	Hibaldstow Rain Data.csv
Return period (years)	1
Climate change allowance factor	135%

Results

Soakaway minimum height (m)	0.94	m
Time for half-emptying (h)	0.18	h

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30	0.5	8.71	12.66	21.79	28.19	34.86	38.81	43.59	47.52	50.41	54.54	57.5	67.22	75.11	110.3
60	1	10.81	15.67	26.89	35.07	43.34	48.25	54.53	59.63	63.3	68.54	72.33	85	95.24	141.76
120	2	16.6	21.88	34.07	42.71	51.37	56.54	63.07	68.4	72.28	77.8	81.81	95.31	106.7	164.05
180	3	20.22	25.7	38.37	47.32	56.21	61.51	68.26	73.74	77.71	83.46	87.66	101.9	114.2	179.33
240	4	22.8	28.43	41.42	50.6	59.68	65.08	72	77.6	81.66	87.59	91.92	106.85	119.96	191.03
360	6	26.36	32.21	45.72	55.13	64.56	70.13	77.3	83.15	87.4	93.57	98.15	114.25	128.95	208.14
540	9	29.83	35.91	49.95	59.71	69.44	75.25	82.69	88.82	93.31	99.87	104.79	122.46	139.08	225.64
720	12	32.28	38.53	52.96	63	72.98	78.95	86.64	93	97.7	104.63	109.84	128.87	147.06	238.14
900	15	34.15	40.54	55.3	65.54	75.75	81.88	89.82	96.39	101.26	108.5	113.97	134.19	153.77	247.78
1080	18	35.69	42.21	57.27	67.7	78.11	84.38	92.54	99.31	104.33	111.85	117.56	138.83	159.6	255.72
1440	24	38.24	44.98	60.55	71.39	82.23	88.71	97.21	104.36	109.7	117.72	123.84	146.91	169.38	268.58
1800	30	40.27	47.21	63.23	74.39	85.59	92.3	101.13	108.58	114.17	122.61	129.06	153.51	177.16	278.21
2160	36	42.05	49.17	65.6	77.04	88.56	95.49	104.61	112.32	118.11	126.89	133.64	159.12	183.57	285.8
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Rainfall depths (mm) without climate change

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30	0.5	6.45	9.38	16.14	20.88	25.82	28.75	32.29	35.2	37.34	40.4	42.59	49.79	55.64	81.7
60	1	8.01	11.61	19.92	25.98	32.1	35.74	40.39	44.17	46.89	50.77	53.58	62.96	70.55	105.01
120	2	12.3	16.21	25.24	31.64	38.05	41.88	46.72	50.67	53.54	57.63	60.6	70.6	79.04	121.52
180	3	14.98	19.04	28.42	35.05	41.64	45.56	50.56	54.62	57.56	61.82	64.93	75.48	84.59	132.84
240	4	16.89	21.06	30.68	37.48	44.21	48.21	53.33	57.48	60.49	64.88	68.09	79.15	88.86	141.5
360	6	19.52	23.86	33.87	40.84	47.82	51.95	57.26	61.59	64.74	69.31	72.7	84.63	95.52	154.18
540	9	22.09	26.6	37	44.23	51.44	55.74	61.25	65.79	69.12	73.98	77.62	90.71	103.02	167.14
720	12	23.91	28.54	39.23	46.67	54.06	58.48	64.18	68.89	72.37	77.5	81.36	95.46	108.93	176.4
900	15	25.29	30.03	40.96	48.55	56.11	60.65	66.53	71.4	75.01	80.37	84.42	99.4	113.9	183.54
1080	18	26.44	31.27	42.42	50.15	57.86	62.5	68.55	73.56	77.28	82.85	87.08	102.84	118.22	189.42
1440	24	28.32	33.32	44.85	52.88	60.91	65.71	72.01	77.3	81.26	87.2	91.73	108.82	125.47	198.95
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Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
2160	**36**	31.15	36.42	48.59	57.07	65.6	70.73	77.49	83.2	87.49	93.99	98.99	117.87	135.98	211.7
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Project details

Date	23/07/2025
Calculated by	Roy Lobley
Reference	RLC-1919 (Extension)
Model version	2.0.1

Site details

Site name	Redbourne Road
Site location	Hibaldstow

Infiltration system

Infiltration system	Soakaway
Type	Rectangular soakaway with infiltration from sides and base

Geometry, porosity and infiltration

Width (m)	2	m
Length (m)	2	m
Infiltration coefficient (m/s)	0.000283	m/s
Porosity of fill material	95% eg. High void structure / geocellular structure	

Area to be drained

Total area (m²)	211	m^2
Factor of safety	1.5	

Rainfall

Rainfall input type	FEH22 CSV file
	Hibaldstow Rain Data.csv
Return period (years)	5
Climate change allowance factor	135%

Results

Soakaway minimum height (m)	0.64	m
Time for half-emptying (h)	0.23	h

Disclaimer

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Appendix A - Rainfall Depths

Rainfall depths (mm) with climate change

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
15	0.25	6.73	9.83	16.97	21.91	26.93	29.73	33.32	36.23	38.31	41.34	43.51	50.45	56.04	81.03
30	0.5	8.71	12.66	21.79	28.19	34.86	38.81	43.59	47.52	50.41	54.54	57.5	67.22	75.11	110.3
60	1	10.81	15.67	26.89	35.07	43.34	48.25	54.53	59.63	63.3	68.54	72.33	85	95.24	141.76
120	2	16.6	21.88	34.07	42.71	51.37	56.54	63.07	68.4	72.28	77.8	81.81	95.31	106.7	164.05
180	3	20.22	25.7	38.37	47.32	56.21	61.51	68.26	73.74	77.71	83.46	87.66	101.9	114.2	179.33
240	4	22.8	28.43	41.42	50.6	59.68	65.08	72	77.6	81.66	87.59	91.92	106.85	119.96	191.03
360	6	26.36	32.21	45.72	55.13	64.56	70.13	77.3	83.15	87.4	93.57	98.15	114.25	128.95	208.14
540	9	29.83	35.91	49.95	59.71	69.44	75.25	82.69	88.82	93.31	99.87	104.79	122.46	139.08	225.64
720	12	32.28	38.53	52.96	63	72.98	78.95	86.64	93	97.7	104.63	109.84	128.87	147.06	238.14
900	15	34.15	40.54	55.3	65.54	75.75	81.88	89.82	96.39	101.26	108.5	113.97	134.19	153.77	247.78
1080	18	35.69	42.21	57.27	67.7	78.11	84.38	92.54	99.31	104.33	111.85	117.56	138.83	159.6	255.72
1440	24	38.24	44.98	60.55	71.39	82.23	88.71	97.21	104.36	109.7	117.72	123.84	146.91	169.38	268.58
1800	30	40.27	47.21	63.23	74.39	85.59	92.3	101.13	108.58	114.17	122.61	129.06	153.51	177.16	278.21
2160	36	42.05	49.17	65.6	77.04	88.56	95.49	104.61	112.32	118.11	126.89	133.64	159.12	183.57	285.8
2880	48	45.15	52.6	69.78	81.73	93.81	101.12	110.77	118.88	124.98	134.3	141.47	168.4	193.78	297.27

Rainfall depths (mm) without climate change

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
15	0.25	4.99	7.28	12.57	16.23	19.95	22.02	24.68	26.84	28.38	30.62	32.23	37.37	41.51	60.02
30	0.5	6.45	9.38	16.14	20.88	25.82	28.75	32.29	35.2	37.34	40.4	42.59	49.79	55.64	81.7
60	1	8.01	11.61	19.92	25.98	32.1	35.74	40.39	44.17	46.89	50.77	53.58	62.96	70.55	105.01
120	2	12.3	16.21	25.24	31.64	38.05	41.88	46.72	50.67	53.54	57.63	60.6	70.6	79.04	121.52
180	3	14.98	19.04	28.42	35.05	41.64	45.56	50.56	54.62	57.56	61.82	64.93	75.48	84.59	132.84
240	4	16.89	21.06	30.68	37.48	44.21	48.21	53.33	57.48	60.49	64.88	68.09	79.15	88.86	141.5
360	6	19.52	23.86	33.87	40.84	47.82	51.95	57.26	61.59	64.74	69.31	72.7	84.63	95.52	154.18
540	9	22.09	26.6	37	44.23	51.44	55.74	61.25	65.79	69.12	73.98	77.62	90.71	103.02	167.14
720	12	23.91	28.54	39.23	46.67	54.06	58.48	64.18	68.89	72.37	77.5	81.36	95.46	108.93	176.4
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1080	18	26.44	31.27	42.42	50.15	57.86	62.5	68.55	73.56	77.28	82.85	87.08	102.84	118.22	189.42
1440	24	28.32	33.32	44.85	52.88	60.91	65.71	72.01	77.3	81.26	87.2	91.73	108.82	125.47	198.95
1800	30	29.83	34.97	46.84	55.1	63.4	68.37	74.91	80.43	84.57	90.82	95.6	113.71	131.23	206.08

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2160	**36**	31.15	36.42	48.59	57.07	65.6	70.73	77.49	83.2	87.49	93.99	98.99	117.87	135.98	211.7
2880	**48**	33.44	38.96	51.69	60.54	69.49	74.9	82.05	88.06	92.58	99.48	104.79	124.74	143.54	220.2

Infiltration volume design tool

www.uksuds.com | Infiltration volume design tool (https://www.uksuds.com/)

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Project details

Date	23/07/2025
Calculated by	Roy Lobley
Reference	RLC-1919 (Extension)
Model version	2.0.1

Site details

Site name	Redbourne Road
Site location	Hibaldstow

Infiltration system

Infiltration system	Soakaway
Type	Rectangular soakaway with infiltration from sides and base

Geometry, porosity and infiltration

Width (m)	2	m
Length (m)	3	m
Infiltration coefficient (m/s)	0.000283	m/s
Porosity of fill material	95% eg. High void structure / geocellular structure	

Area to be drained

Total area (m^2)	211	m^2
Factor of safety	1.5	

Rainfall

Rainfall input type	FEH22 CSV file
	Hibaldstow Rain Data.csv
Return period (years)	30
Climate change allowance factor	135%

Results

Soakaway minimum height (m)	0.81	m
Time for half-emptying (h)	0.28	h

Disclaimer

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Appendix A - Rainfall Depths

Rainfall depths (mm) with climate change

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1800	30	40.27	47.21	63.23	74.39	85.59	92.3	101.13	108.58	114.17	122.61	129.06	153.51	177.16	278.21
2160	36	42.05	49.17	65.6	77.04	88.56	95.49	104.61	112.32	118.11	126.89	133.64	159.12	183.57	285.8
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Rainfall depths (mm) without climate change

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30	0.5	6.45	9.38	16.14	20.88	25.82	28.75	32.29	35.2	37.34	40.4	42.59	49.79	55.64	81.7
60	1	8.01	11.61	19.92	25.98	32.1	35.74	40.39	44.17	46.89	50.77	53.58	62.96	70.55	105.01
120	2	12.3	16.21	25.24	31.64	38.05	41.88	46.72	50.67	53.54	57.63	60.6	70.6	79.04	121.52
180	3	14.98	19.04	28.42	35.05	41.64	45.56	50.56	54.62	57.56	61.82	64.93	75.48	84.59	132.84
240	4	16.89	21.06	30.68	37.48	44.21	48.21	53.33	57.48	60.49	64.88	68.09	79.15	88.86	141.5
360	6	19.52	23.86	33.87	40.84	47.82	51.95	57.26	61.59	64.74	69.31	72.7	84.63	95.52	154.18
540	9	22.09	26.6	37	44.23	51.44	55.74	61.25	65.79	69.12	73.98	77.62	90.71	103.02	167.14
720	12	23.91	28.54	39.23	46.67	54.06	58.48	64.18	68.89	72.37	77.5	81.36	95.46	108.93	176.4
900	15	25.29	30.03	40.96	48.55	56.11	60.65	66.53	71.4	75.01	80.37	84.42	99.4	113.9	183.54
1080	18	26.44	31.27	42.42	50.15	57.86	62.5	68.55	73.56	77.28	82.85	87.08	102.84	118.22	189.42
1440	24	28.32	33.32	44.85	52.88	60.91	65.71	72.01	77.3	81.26	87.2	91.73	108.82	125.47	198.95
1800	30	29.83	34.97	46.84	55.1	63.4	68.37	74.91	80.43	84.57	90.82	95.6	113.71	131.23	206.08

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
2160	**36**	31.15	36.42	48.59	57.07	65.6	70.73	77.49	83.2	87.49	93.99	98.99	117.87	135.98	211.7
2880	**48**	33.44	38.96	51.69	60.54	69.49	74.9	82.05	88.06	92.58	99.48	104.79	124.74	143.54	220.2

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Project details

Date	23/07/2025
Calculated by	Roy Lobley
Reference	RLC-1919 (Extension)
Model version	2.0.1

Site details

Site name	Redbourne Road
Site location	Hibaldstow

Infiltration system

Infiltration system	Soakaway
Type	Rectangular soakaway with infiltration from sides and base

Geometry, porosity and infiltration

Width (m)	3	m
Length (m)	3	m
Infiltration coefficient (m/s)	0.000283	m/s
Porosity of fill material	95% eg. High void structure / geocellular structure	

Area to be drained

Total area (m^2)	211	m^2
Factor of safety	1.5	

Rainfall

Rainfall input type	FEH22 CSV file
	Hibaldstow Rain Data.csv
Return period (years)	100
Climate change allowance factor	140%

Results

Soakaway minimum height (m)	0.74	m
Time for half-emptying (h)	0.30	h

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15	0.25	6.98	10.19	17.6	22.72	27.93	30.83	34.55	37.58	39.73	42.87	45.12	52.32	58.11	84.03
30	0.5	9.03	13.13	22.6	29.23	36.15	40.25	45.21	49.28	52.28	56.56	59.63	69.71	77.9	114.38
60	1	11.21	16.25	27.89	36.37	44.94	50.04	56.55	61.84	65.65	71.08	75.01	88.14	98.77	147.01
120	2	17.22	22.69	35.34	44.3	53.27	58.63	65.41	70.94	74.96	80.68	84.84	98.84	110.66	170.13
180	3	20.97	26.66	39.79	49.07	58.3	63.78	70.78	76.47	80.58	86.55	90.9	105.67	118.43	185.98
240	4	23.65	29.48	42.95	52.47	61.89	67.49	74.66	80.47	84.69	90.83	95.33	110.81	124.4	198.1
360	6	27.33	33.4	47.42	57.18	66.95	72.73	80.16	86.23	90.64	97.03	101.78	118.48	133.73	215.85
540	9	30.93	37.24	51.8	61.92	72.02	78.04	85.75	92.11	96.77	103.57	108.67	126.99	144.23	234
720	12	33.47	39.96	54.92	65.34	75.68	81.87	89.85	96.45	101.32	108.5	113.9	133.64	152.5	246.96
900	15	35.41	42.04	57.34	67.97	78.55	84.91	93.14	99.96	105.01	112.52	118.19	139.16	159.46	256.96
1080	18	37.01	43.78	59.39	70.21	81	87.5	95.97	102.98	108.19	115.99	121.91	143.98	165.51	265.19
1440	24	39.65	46.65	62.79	74.03	85.27	91.99	100.81	108.22	113.76	122.08	128.42	152.35	175.66	278.53
1800	30	41.76	48.96	65.58	77.14	88.76	95.72	104.87	112.6	118.4	127.15	133.84	159.19	183.72	288.51
2160	36	43.6	50.99	68.03	79.9	91.84	99.02	108.49	116.48	122.49	131.59	138.59	165.02	190.37	296.38
2880	48	46.82	54.54	72.37	84.76	97.29	104.86	114.87	123.28	129.61	139.27	146.71	174.64	200.96	308.28

Rainfall depths (mm) without climate change

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
15	0.25	4.99	7.28	12.57	16.23	19.95	22.02	24.68	26.84	28.38	30.62	32.23	37.37	41.51	60.02
30	0.5	6.45	9.38	16.14	20.88	25.82	28.75	32.29	35.2	37.34	40.4	42.59	49.79	55.64	81.7
60	1	8.01	11.61	19.92	25.98	32.1	35.74	40.39	44.17	46.89	50.77	53.58	62.96	70.55	105.01
120	2	12.3	16.21	25.24	31.64	38.05	41.88	46.72	50.67	53.54	57.63	60.6	70.6	79.04	121.52
180	3	14.98	19.04	28.42	35.05	41.64	45.56	50.56	54.62	57.56	61.82	64.93	75.48	84.59	132.84
240	4	16.89	21.06	30.68	37.48	44.21	48.21	53.33	57.48	60.49	64.88	68.09	79.15	88.86	141.5
360	6	19.52	23.86	33.87	40.84	47.82	51.95	57.26	61.59	64.74	69.31	72.7	84.63	95.52	154.18
540	9	22.09	26.6	37	44.23	51.44	55.74	61.25	65.79	69.12	73.98	77.62	90.71	103.02	167.14
720	12	23.91	28.54	39.23	46.67	54.06	58.48	64.18	68.89	72.37	77.5	81.36	95.46	108.93	176.4
900	15	25.29	30.03	40.96	48.55	56.11	60.65	66.53	71.4	75.01	80.37	84.42	99.4	113.9	183.54
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Project details

Date	23/07/2025
Calculated by	Roy Lobley
Reference	RLC-1919 (New)
Model version	2.0.1

Site details

Site name	Redbourne Road
Site location	Hibaldstow

Infiltration system

Infiltration system	Soakaway
Type	Rectangular soakaway with infiltration from sides and base

Geometry, porosity and infiltration

Width (m)	2	m
Length (m)	4	m
Infiltration coefficient (m/s)	0.000283	m/s
Porosity of fill material	95% eg. High void structure / geocellular structure	

Area to be drained

Total area (m²)	186	m^2
Factor of safety	1.5	

Rainfall

Rainfall input type	FEH22 CSV file
	Hibaldstow Rain Data.csv
Return period (years)	100
Climate change allowance factor	140%

Results

Soakaway minimum height (m)	0.71	m
Time for half-emptying (h)	0.28	h

Disclaimer

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Appendix A - Rainfall Depths

Rainfall depths (mm) with climate change

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
15	0.25	6.98	10.19	17.6	22.72	27.93	30.83	34.55	37.58	39.73	42.87	45.12	52.32	58.11	84.03
30	0.5	9.03	13.13	22.6	29.23	36.15	40.25	45.21	49.28	52.28	56.56	59.63	69.71	77.9	114.38
60	1	11.21	16.25	27.89	36.37	44.94	50.04	56.55	61.84	65.65	71.08	75.01	88.14	98.77	147.01
120	2	17.22	22.69	35.34	44.3	53.27	58.63	65.41	70.94	74.96	80.68	84.84	98.84	110.66	170.13
180	3	20.97	26.66	39.79	49.07	58.3	63.78	70.78	76.47	80.58	86.55	90.9	105.67	118.43	185.98
240	4	23.65	29.48	42.95	52.47	61.89	67.49	74.66	80.47	84.69	90.83	95.33	110.81	124.4	198.1
360	6	27.33	33.4	47.42	57.18	66.95	72.73	80.16	86.23	90.64	97.03	101.78	118.48	133.73	215.85
540	9	30.93	37.24	51.8	61.92	72.02	78.04	85.75	92.11	96.77	103.57	108.67	126.99	144.23	234
720	12	33.47	39.96	54.92	65.34	75.68	81.87	89.85	96.45	101.32	108.5	113.9	133.64	152.5	246.96
900	15	35.41	42.04	57.34	67.97	78.55	84.91	93.14	99.96	105.01	112.52	118.19	139.16	159.46	256.96
1080	18	37.01	43.78	59.39	70.21	81	87.5	95.97	102.98	108.19	115.99	121.91	143.98	165.51	265.19
1440	24	39.65	46.65	62.79	74.03	85.27	91.99	100.81	108.22	113.76	122.08	128.42	152.35	175.66	278.53
1800	30	41.76	48.96	65.58	77.14	88.76	95.72	104.87	112.6	118.4	127.15	133.84	159.19	183.72	288.51
2160	36	43.6	50.99	68.03	79.9	91.84	99.02	108.49	116.48	122.49	131.59	138.59	165.02	190.37	296.38
2880	48	46.82	54.54	72.37	84.76	97.29	104.86	114.87	123.28	129.61	139.27	146.71	174.64	200.96	308.28

Rainfall depths (mm) without climate change

Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
15	0.25	4.99	7.28	12.57	16.23	19.95	22.02	24.68	26.84	28.38	30.62	32.23	37.37	41.51	60.02
30	0.5	6.45	9.38	16.14	20.88	25.82	28.75	32.29	35.2	37.34	40.4	42.59	49.79	55.64	81.7
60	1	8.01	11.61	19.92	25.98	32.1	35.74	40.39	44.17	46.89	50.77	53.58	62.96	70.55	105.01
120	2	12.3	16.21	25.24	31.64	38.05	41.88	46.72	50.67	53.54	57.63	60.6	70.6	79.04	121.52
180	3	14.98	19.04	28.42	35.05	41.64	45.56	50.56	54.62	57.56	61.82	64.93	75.48	84.59	132.84
240	4	16.89	21.06	30.68	37.48	44.21	48.21	53.33	57.48	60.49	64.88	68.09	79.15	88.86	141.5
360	6	19.52	23.86	33.87	40.84	47.82	51.95	57.26	61.59	64.74	69.31	72.7	84.63	95.52	154.18
540	9	22.09	26.6	37	44.23	51.44	55.74	61.25	65.79	69.12	73.98	77.62	90.71	103.02	167.14
720	12	23.91	28.54	39.23	46.67	54.06	58.48	64.18	68.89	72.37	77.5	81.36	95.46	108.93	176.4
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1080	18	26.44	31.27	42.42	50.15	57.86	62.5	68.55	73.56	77.28	82.85	87.08	102.84	118.22	189.42
1440	24	28.32	33.32	44.85	52.88	60.91	65.71	72.01	77.3	81.26	87.2	91.73	108.82	125.47	198.95
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Duration (minutes)	Duration (hours)	1 years	2 years	5 years	10 years	20 years	30 years	50 years	75 years	100 years	150 years	200 years	500 years	1000 years	10000 years
2160	**36**	31.15	36.42	48.59	57.07	65.6	70.73	77.49	83.2	87.49	93.99	98.99	117.87	135.98	211.7
2880	**48**	33.44	38.96	51.69	60.54	69.49	74.9	82.05	88.06	92.58	99.48	104.79	124.74	143.54	220.2

Infiltration volume design tool

www.uksuds.com | Infiltration volume design tool (https://www.uksuds.com/)

This is an estimation of the infiltration volumes and drain-down time to half empty the infiltration system in line with the on CIRIA infiltration drainage R156 guidance (1996) and CIRIA SuDS manual (C753, 2015). This information may be used as the basis for designing an infiltration system for the drainage of surface water runoff from sites.

Project details

Date	23/07/2025
Calculated by	Roy Lobley
Reference	RLC-1919 (Ext)
Model version	2.0.1

Site details

Site name	Redbourne Road
Site location	Hibaldstow

Infiltration system

Infiltration system	Soakaway
Type	Rectangular soakaway with infiltration from sides and base

Geometry, porosity and infiltration

Width (m)	1.5	m
Length (m)	3	m
Infiltration coefficient (m/s)	0.000283	m/s
Porosity of fill material	95% eg. High void structure / geocellular structure	

Area to be drained

Total area (m²)	106	m^2
Factor of safety	1.5	

Rainfall

Rainfall input type	FEH22 CSV file
	Hibaldstow Rain Data.csv
Return period (years)	100
Climate change allowance factor	140%

Results

Soakaway minimum height (m)	0.68	m
Time for half-emptying (h)	0.24	h

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