



Quotation for the supply of Rainwater Harvesting Equipment

Client :

**Andrew Brown
Design Space Architecture**

Site Reference :

**Soakaway Report for site Adj Glebe Farm,
Barnsley Rd, Silkstone Common.**

Prepared by:

Ian Woodcock

ianw@rainwaterharvesting.co.uk

01733 405104 / 07736 45 46 45

Our reference : IMW229256

Date of proposal : 21/02/2019



Your Proposal

Thank you for your enquiry and as requested please find the following information regarding our proposed attenuation system.

Drainage anti-flooding blocks (Graf Bloc) with 300-litre capacity for rapid drainage of land. Surface water is diverted or soaks down into weight resistant crates and from there dissipate into the lower ground clearing water quickly from the surface.

The rigid crates are made in black polypropylene (PP) and measure 1200mm (l) x 600mm (w) x 420mm(h) and will hold a maximum capacity of 300 litres gross or a working volume of 285 litres.

The size of the Attenuation tanks are

3 x Houses - L 4.8 x W 4.2 x D 0.84 m per property

Drive - L 5.4 x W 4.8 x D 0.84 m

Please see calculations on page 4

The crates can be connected together into larger grids or bocks and wrapped in a geo-textile to slow the drainage of the water forming the equivalent of an underground pond.

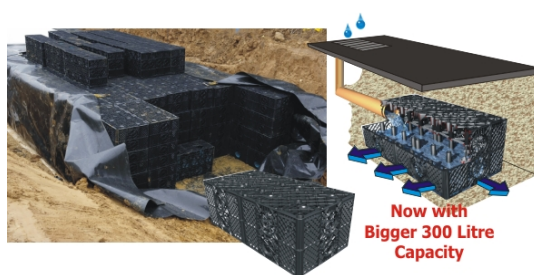
Easy to install

The Graf Rain Bloc can be installed in rows or block form, with 1 to a maximum of 10 layers, depending on the local conditions and the desired storage capacity. installing the module is easy, fast and variable. it can be installed without heavy equipment - a Rain Bloc weighs just 15 kg. The individual modules are connected using practical fast connectors



Components and Prices – Supply Only

Product Code : **RainBloc**



Houses

Product Code	Description	Qty
360014	GRAF RAIN BLOC 300	56
RWH-GT	NON WOVEN GEOTEXTILE TERREX SNW40	67 m2

Per property

Drive

Product Code	Description	Qty
360014	GRAF RAIN BLOC 300	72
RWH-GT	NON WOVEN GEOTEXTILE NW8	90 m2

Price : £8,622.00 (£10,346.40 Inc. VAT)

UK delivery is included in the price (Highlands and islands extra)

Adj Glebe Farm, Barnsley Road, Silkstone Common, Sheffield

TEST PIT 1

Lengh	Width	Height			
1.2	0.6	1.2	Volume=	0.432	
			Surface Area=	3.6	
Time/mins	325		Infiltration rate=	0.0664615	
	0				
	0				
Average Time/hours	1.80555556				

TEST PIT 2

Lengh	Width	Height			
1.2	0.6	1.2	Volume=	0.432	
			Surface Area=	3.6	
Time/mins	260		Infiltration rate=	0.0830769	
	0				
	0				
Average Time/hours	1.44444444				

SITE INFILTRATION RATE 0.0664615



HOUSES

Rainwater Harvesting Ltd				Page 1																																																																																																																																																																																																																			
Unit A Harrier Park Orton Southgate Peterborough PE2 6YQ																																																																																																																																																																																																																							
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Summer</td><td>0.605</td><td>0.605</td><td>0.3</td><td>11.6</td><td>O K</td></tr><tr><td>600 min Summer</td><td>0.595</td><td>0.595</td><td>0.3</td><td>11.4</td><td>O K</td></tr><tr><td>720 min Summer</td><td>0.584</td><td>0.584</td><td>0.3</td><td>11.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>0.560</td><td>0.560</td><td>0.3</td><td>10.7</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>0.512</td><td>0.512</td><td>0.3</td><td>9.8</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>0.444</td><td>0.444</td><td>0.3</td><td>8.5</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>0.383</td><td>0.383</td><td>0.2</td><td>7.3</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>0.279</td><td>0.279</td><td>0.2</td><td>5.4</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>0.199</td><td>0.199</td><td>0.2</td><td>3.8</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>0.139</td><td>0.139</td><td>0.2</td><td>2.7</td><td>O K</td></tr><tr><td>8640 min 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Rainwater Harvesting Ltd					Page 2	
Unit A Harrier Park Orton Southgate Peterborough PE2 6YQ			Designed by RainWater Harves... Checked by			
Date 21/02/2019 09:38 File IMW Adj Glebe Farm.SRCX						
XP Solutions			Source Control 2016.1			
Summary of Results for 100 year Return Period (+40%)						
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status	
30 min Winter	0.437	0.437	0.3	8.4	O K	
60 min Winter	0.546	0.546	0.3	10.5	O K	
120 min Winter	0.644	0.644	0.3	12.4	O K	
180 min Winter	0.687	0.687	0.3	13.2	O K	
240 min Winter	0.704	0.704	0.3	13.5	O K	
360 min Winter	0.710	0.710	0.3	13.6	O K	
480 min Winter	0.698	0.698	0.3	13.4	O K	
600 min Winter	0.687	0.687	0.3	13.2	O K	
720 min Winter	0.673	0.673	0.3	12.9	O K	
960 min Winter	0.639	0.639	0.3	12.3	O K	
1440 min Winter	0.567	0.567	0.3	10.9	O K	
2160 min Winter	0.466	0.466	0.3	8.9	O K	
2880 min Winter	0.376	0.376	0.2	7.2	O K	
4320 min Winter	0.232	0.232	0.2	4.4	O K	
5760 min Winter	0.128	0.128	0.2	2.4	O K	
7200 min Winter	0.061	0.061	0.2	1.2	O K	
8640 min Winter	0.046	0.046	0.2	0.9	O K	
10080 min Winter	0.041	0.041	0.2	0.8	O K	
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)			
30 min Winter	84.003	0.0	40			
60 min Winter	53.779	0.0	68			
120 min Winter	33.258	0.0	124			
180 min Winter	24.745	0.0	180			
240 min Winter	19.923	0.0	238			
360 min Winter	14.625	0.0	346			
480 min Winter	11.743	0.0	438			
600 min Winter	9.896	0.0	474			
720 min Winter	8.600	0.0	552			
960 min Winter	6.886	0.0	706			
1440 min Winter	5.024	0.0	1006			
2160 min Winter	3.658	0.0	1432			
2880 min Winter	2.917	0.0	1844			
4320 min Winter	2.116	0.0	2600			
5760 min Winter	1.683	0.0	3288			
7200 min Winter	1.409	0.0	3832			
8640 min Winter	1.218	0.0	4400			
10080 min Winter	1.078	0.0	5136			
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Unit A Harrier Park Orton Southgate Peterborough PE2 6YQ		
Date 21/02/2019 09:38 File IMW Adj Glebe Farm.SRCX	Designed by RainWater Harves... Checked by	
XP Solutions		Source Control 2016.1

Rainfall Details

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)	19.000	Shortest Storm (mins)	15
Ratio R	0.355	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.025

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To: (ha)		From: To: (ha)		From: To: (ha)	
0 4 0.008		4 8 0.008		8 12 0.008	

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XP Solutions Source Control 2016.1		

Model Details

Storage is Online Cover Level (m) 1.200

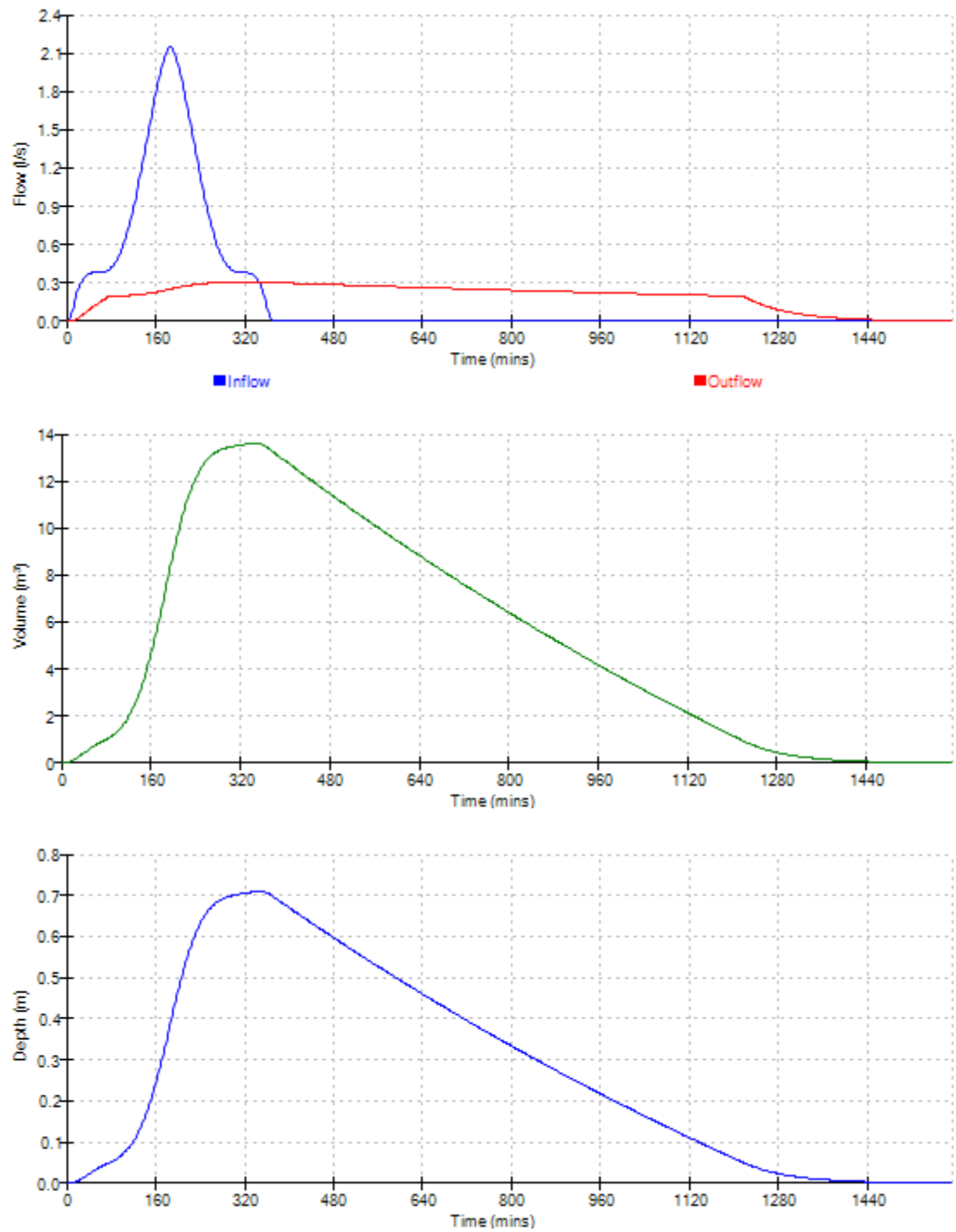
Cellular Storage Structure

Invert Level (m) 0.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.06646 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.06646

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	20.2	20.2	0.841	0.0	35.3
0.840	20.2	35.3			

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Event: 360 min Winter





DRIVE

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Summer</td><td>0.681</td><td>0.681</td><td>0.4</td><td>16.8</td><td>O K</td></tr><tr><td>600 min Summer</td><td>0.671</td><td>0.671</td><td>0.4</td><td>16.5</td><td>O K</td></tr><tr><td>720 min Summer</td><td>0.660</td><td>0.660</td><td>0.4</td><td>16.2</td><td>O K</td></tr><tr><td>960 min Summer</td><td>0.636</td><td>0.636</td><td>0.4</td><td>15.7</td><td>O K</td></tr><tr><td>1440 min Summer</td><td>0.587</td><td>0.587</td><td>0.3</td><td>14.4</td><td>O K</td></tr><tr><td>2160 min Summer</td><td>0.517</td><td>0.517</td><td>0.3</td><td>12.7</td><td>O K</td></tr><tr><td>2880 min Summer</td><td>0.453</td><td>0.453</td><td>0.3</td><td>11.1</td><td>O K</td></tr><tr><td>4320 min Summer</td><td>0.343</td><td>0.343</td><td>0.3</td><td>8.4</td><td>O K</td></tr><tr><td>5760 min Summer</td><td>0.254</td><td>0.254</td><td>0.3</td><td>6.3</td><td>O K</td></tr><tr><td>7200 min Summer</td><td>0.185</td><td>0.185</td><td>0.3</td><td>4.5</td><td>O K</td></tr><tr><td>8640 min 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Unit A Harrier Park Orton Southgate Peterborough PE2 6YQ					
Date 21/02/2019 09:48 File IMW Adj Glebe Farm DRIV...		Designed by RainWater Harves... Checked by			
XP Solutions		Source Control 2016.1			
Summary of Results for 100 year Return Period (+40%)					
Storm Event	Max Level (m)	Max Depth (m)	Max Infiltration (l/s)	Max Volume (m³)	Status
30 min Winter	0.479	0.479	0.3	11.8	O K
60 min Winter	0.600	0.600	0.4	14.8	O K
120 min Winter	0.711	0.711	0.4	17.5	O K
180 min Winter	0.761	0.761	0.4	18.7	O K
240 min Winter	0.784	0.784	0.4	19.3	O K
360 min Winter	0.796	0.796	0.4	19.6	O K
480 min Winter	0.789	0.789	0.4	19.4	O K
600 min Winter	0.776	0.776	0.4	19.1	O K
720 min Winter	0.763	0.763	0.4	18.8	O K
960 min Winter	0.730	0.730	0.4	18.0	O K
1440 min Winter	0.658	0.658	0.4	16.2	O K
2160 min Winter	0.554	0.554	0.3	13.6	O K
2880 min Winter	0.459	0.459	0.3	11.3	O K
4320 min Winter	0.302	0.302	0.3	7.4	O K
5760 min Winter	0.183	0.183	0.3	4.5	O K
7200 min Winter	0.098	0.098	0.3	2.4	O K
8640 min Winter	0.051	0.051	0.2	1.3	O K
10080 min Winter	0.045	0.045	0.2	1.1	O K
Storm Event	Rain (mm/hr)	Flooded Volume (m³)	Time-Peak (mins)		
30 min Winter	84.003	0.0	40		
60 min Winter	53.779	0.0	68		
120 min Winter	33.258	0.0	124		
180 min Winter	24.745	0.0	182		
240 min Winter	19.923	0.0	238		
360 min Winter	14.625	0.0	350		
480 min Winter	11.743	0.0	452		
600 min Winter	9.896	0.0	488		
720 min Winter	8.600	0.0	562		
960 min Winter	6.886	0.0	718		
1440 min Winter	5.024	0.0	1020		
2160 min Winter	3.658	0.0	1456		
2880 min Winter	2.917	0.0	1876		
4320 min Winter	2.116	0.0	2644		
5760 min Winter	1.683	0.0	3352		
7200 min Winter	1.409	0.0	4032		
8640 min Winter	1.218	0.0	4416		
10080 min Winter	1.078	0.0	5136		
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XP Solutions		Source Control 2016.1

Rainfall Details

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)	19.000	Shortest Storm (mins)	15
Ratio R	0.355	Longest Storm (mins)	10080
Summer Storms	Yes	Climate Change %	+40

Time Area Diagram

Total Area (ha) 0.035

Time (mins)	Area	Time (mins)	Area	Time (mins)	Area
From: To:	(ha)	From: To:	(ha)	From: To:	(ha)
0 4	0.012	4 8	0.012	8 12	0.012

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XP Solutions Source Control 2016.1		

Model Details

Storage is Online Cover Level (m) 1.100

Cellular Storage Structure

Invert Level (m) 0.000 Safety Factor 2.0
Infiltration Coefficient Base (m/hr) 0.06646 Porosity 0.95
Infiltration Coefficient Side (m/hr) 0.06646

Depth (m)	Area (m ²)	Inf. Area (m ²)	Depth (m)	Area (m ²)	Inf. Area (m ²)
0.000	25.9	25.9	0.841	0.0	43.0
0.840	25.9	43.0			

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Event: 360 min Winter

