

Date: 18/05/2022

Revision: A (1305)

Page: 1

Client:

Project: San Court

Location: Manchester

Roof Location: R8 - Option 1

Roof Details:

BlueRoof	169 m ²	x 100 %
Additional Area	437 m ²	x 100 %
Effective Area	606 m ²	

Storage Details:

Length	169 m
Width	1 m
Depth	200 mm
Porosity	95 %
Slope	none

Rainfall Details - FEH Method:

Return Period	100 years
Climate Change Factor	40 %

Summer Storm Profile

Duration	Intensity		Required storage(m ³)
	mm	mm/h	
5 min	20.5	246.2	12.1
10 min	30.0	179.9	17.3
15 min	37.4	149.8	21.2
30 min	49.8	99.6	26.8
45 min	57.5	76.7	29.5
60 min	63.2	63.2	30.9
2 hours	75.4	37.7	31.6
6 hours	96.5	16.1	28.3
24 hours	127.9	5.3	15.1

Outflow Details:

Attenuation Control	BlueRoof Outlet
Control	12 holes
Sump Depth	None
Discharge rate	3.26 l/s
Outlet	2 No
Flow Per Outlet	1.63 l/s

Result:

Outcome	Pass
Critical Storm Duration	2 hrs
Hmax	197 mm
Required Volume	31.6 m ³
Time to half empty	1.3 hrs
Roof Loading	186.98 Kg/m ²

All results based on input data. Please check that input data has been correctly interpreted.

The Bauder Blue Flat Roof Rainwater Calculation Software will perform calculations in accordance with industry best practice for blue roof design based upon provided data relating to a specific building's dimensions geographical location and the flow rate performance of the selected Bauder rainwater outlet product.

Whilst the information contained herein is to the best of our knowledge true and accurate we specifically exclude any liability for errors omissions or otherwise arising therefrom.

Details practices principles values and calculations should be verified for accuracy and suitability for the required purpose for use.

NOTE: These calculations are valid for a zero fall roof with minimal variation in levels. Any significant variation will affect the volume of water stored and the roofs ability to attenuate extreme rain events. Typically variations in roof level should be less than 0 to +30mm with no back falls. The H-Max is measured from the mean roof level

Overflow discharge requirements based on a CAT1 storm event to BSEN12056-3:2000.

Total flow rate: $606\text{m}^2 \times 0.018\text{l/s/m}^2 = 10.91\text{l/s}$.

NOTE: Roof loading data shown in the results section is for the blue roof only. For total loading of blue roof and overflows then Hmax + 35mm should be factored in.

Date: 18/05/2022

Revision: A (1305)

Page: 2

Client:

Project: San Court

Location: Manchester

Roof Location: R6 - Option 1

Roof Details:

BlueRoof	173 m ²	x 100 %
Additional Area	317 m ²	x 100 %
Effective Area	490 m ²	

Storage Details:

Length	173 m
Width	1 m
Depth	200 mm
Porosity	95 %
Slope	none

Rainfall Details - FEH Method:

Return Period	100 years
Climate Change Factor	40 %

Summer Storm Profile

Duration	Intensity		Required storage(m ³)
	mm	mm/h	
5 min	20.5	246.2	9.9
10 min	30.0	179.9	14.4
15 min	37.4	149.8	17.8
30 min	49.8	99.6	23.1
45 min	57.5	76.7	26.1
60 min	63.2	63.2	28.1
2 hours	75.4	37.7	30.9
6 hours	96.5	16.1	31.0
24 hours	127.9	5.3	23.3

Outflow Details:

Attenuation Control	BlueRoof Outlet
Control	5 holes
Sump Depth	None
Discharge rate	1.33 l/s
Outlet	2 No
Flow Per Outlet	0.67 l/s

Result:

Outcome	Pass
Critical Storm Duration	4 hrs
Hmax	191 mm
Required Volume	31.4 m ³
Time to half empty	3.3 hrs
Roof Loading	181.5 Kg/m ²

All results based on input data. Please check that input data has been correctly interpreted.

The Bauder Blue Flat Roof Rainwater Calculation Software will perform calculations in accordance with industry best practice for blue roof design based upon provided data relating to a specific building's dimensions geographical location and the flow rate performance of the selected Bauder rainwater outlet product.

Whilst the information contained herein is to the best of our knowledge true and accurate we specifically exclude any liability for errors omissions or otherwise arising therefrom.

Details practices principles values and calculations should be verified for accuracy and suitability for the required purpose for use.

NOTE: These calculations are valid for a zero fall roof with minimal variation in levels. Any significant variation will affect the volume of water stored and the roofs ability to attenuate extreme rain events. Typically variations in roof level should be less than 0 to +30mm with no back falls. The H-Max is measured from the mean roof level

Overflow discharge requirements based on a CAT1 storm event to BSEN12056-3:2000.

Total flow rate: $490\text{m}^2 \times 0.018\text{l/s/m}^2 = 8.82\text{l/s}$.

NOTE: Roof loading data shown in the results section is for the blue roof only. For total loading of blue roof and overflows then Hmax + 35mm should be factored in.

Date: 18/05/2022

Revision: A (1305)

Page: 3

Client:

Project: San Court

Location: Manchester

Roof Location: R6 - Option 1

Roof Details:

BlueRoof	94 m ²	x 100 %
Additional Area	5 m ²	x 100 %
Effective Area	99 m ²	

Storage Details:

Length	94 m
Width	1 m
Depth	200 mm
Porosity	95 %
Slope	none

Rainfall Details - FEH Method:

Return Period	100 years
Climate Change Factor	40 %

Summer Storm Profile

Duration	Intensity		Required storage(m ³)
	mm	mm/h	
5 min	20.5	246.2	2.0
10 min	30.0	179.9	2.9
15 min	37.4	149.8	3.6
30 min	49.8	99.6	4.8
45 min	57.5	76.7	5.5
60 min	63.2	63.2	5.9
2 hours	75.4	37.7	6.7
6 hours	96.5	16.1	7.2
24 hours	127.9	5.3	6.3

Outflow Details:

Attenuation Control	BlueRoof Outlet
Control	1 hole
Sump Depth	None
Discharge rate	0.17 l/s
Outlet	2 No
Flow Per Outlet	0.09 l/s

Result:

Outcome	Pass
Critical Storm Duration	4.78 hrs
Hmax	81 mm
Required Volume	7.2 m ³
Time to half empty	5.8 hrs
Roof Loading	76.6 Kg/m ²

All results based on input data. Please check that input data has been correctly interpreted.

The Bauder Blue Flat Roof Rainwater Calculation Software will perform calculations in accordance with industry best practice for blue roof design based upon provided data relating to a specific building's dimensions geographical location and the flow rate performance of the selected Bauder rainwater outlet product.

Whilst the information contained herein is to the best of our knowledge true and accurate we specifically exclude any liability for errors omissions or otherwise arising therefrom.

Details practices principles values and calculations should be verified for accuracy and suitability for the required purpose for use.

NOTE: These calculations are valid for a zero fall roof with minimal variation in levels. Any significant variation will affect the volume of water stored and the roofs ability to attenuate extreme rain events. Typically variations in roof level should be less than 0 to +30mm with no back falls. The H-Max is measured from the mean roof level

Overflow discharge requirements based on a CAT1 storm event to BSEN12056-3:2000.

Total flow rate: $99\text{m}^2 \times 0.018\text{l/s/m}^2 = 1.78\text{l/s}$.

NOTE: Roof loading data shown in the results section is for the blue roof only. For total loading of blue roof and overflows then Hmax + 35mm should be factored in.

Client:

Project: San Court

Location: Manchester

Roof Location: R7 - Option 2

Roof Details:

BlueRoof

169 m²

x 100 %

Additional Area

437 m²

x 100 %

Effective Area

606 m²

Storage Details:

Length

169 m

Width

1 m

Depth

200 mm

Porosity

95 %

Slope

none

Rainfall Details - FEH Method:

Return Period

100 years

Climate Change Factor

40 %

Summer Storm Profile

Duration

Intensity

Required storage(m³)

mm

mm/h

5 min

20.5

246.2

12.1

10 min

30.0

179.9

17.3

15 min

37.4

149.8

21.2

30 min

49.8

99.6

26.8

45 min

57.5

76.7

29.5

60 min

63.2

63.2

30.9

2 hours

75.4

37.7

31.6

6 hours

96.5

16.1

28.3

24 hours

127.9

5.3

15.1

Outflow Details:

Attenuation Control

BlueRoof Outlet

Control

12 holes

Sump Depth

None

Discharge rate

3.26 l/s

Outlet

2 No

Flow Per Outlet

1.63 l/s

Result:

Outcome

Pass

Critical Storm Duration

2 hrs

Hmax

197 mm

Required Volume

31.6 m³

Time to half empty

1.3 hrs

Roof Loading

186.98 Kg/m²

All results based on input data. Please check that input data has been correctly interpreted.

The Bauder Blue Flat Roof Rainwater Calculation Software will perform calculations in accordance with industry best practice for blue roof design based upon provided data relating to a specific building's dimensions geographical location and the flow rate performance of the selected Bauder rainwater outlet product.

Whilst the information contained herein is to the best of our knowledge true and accurate we specifically exclude any liability for errors omissions or otherwise arising therefrom.

Details practices principles values and calculations should be verified for accuracy and suitability for the required purpose for use.

NOTE: These calculations are valid for a zero fall roof with minimal variation in levels. Any significant variation will affect the volume of water stored and the roofs ability to attenuate extreme rain events. Typically variations in roof level should be less than 0 to +30mm with no back falls. The H-Max is measured from the mean roof level

Overflow discharge requirements based on a CAT1 storm event to BSEN12056-3:2000.

Total flow rate: 606m2x0.018l/s/m2 = 10.91l/s.

NOTE: Roof loading data shown in the results section is for the blue roof only. For total loading of blue roof and overflows then Hmax + 35mm should be factored in.

Date: 18/05/2022

Revision: A (1305)

Page: 5

Client:

Project: San Court

Location: Manchester

Roof Location: R8 - Option 2

Roof Details:

BlueRoof	173 m ²	x 100 %
Additional Area	317 m ²	x 100 %
Effective Area	490 m ²	

Storage Details:

Length	173 m
Width	1 m
Depth	200 mm
Porosity	95 %
Slope	none

Rainfall Details - FEH Method:

Return Period	100 years
Climate Change Factor	40 %

Summer Storm Profile

Duration	Intensity		Required storage(m ³)
	mm	mm/h	
5 min	20.5	246.2	9.7
10 min	30.0	179.9	13.9
15 min	37.4	149.8	17.0
30 min	49.8	99.6	21.4
45 min	57.5	76.7	23.4
60 min	63.2	63.2	24.4
2 hours	75.4	37.7	24.9
6 hours	96.5	16.1	21.9
24 hours	127.9	5.3	11.1

Outflow Details:

Attenuation Control	BlueRoof Outlet
Control	12 holes
Sump Depth	None
Discharge rate	2.86 l/s
Outlet	2 No
Flow Per Outlet	1.43 l/s

Result:

Outcome	Pass
Critical Storm Duration	2 hrs
Hmax	152 mm
Required Volume	24.9 m ³
Time to half empty	1.2 hrs
Roof Loading	143.93 Kg/m ²

All results based on input data. Please check that input data has been correctly interpreted.

The Bauder Blue Flat Roof Rainwater Calculation Software will perform calculations in accordance with industry best practice for blue roof design based upon provided data relating to a specific building's dimensions geographical location and the flow rate performance of the selected Bauder rainwater outlet product.

Whilst the information contained herein is to the best of our knowledge true and accurate we specifically exclude any liability for errors omissions or otherwise arising therefrom.

Details practices principles values and calculations should be verified for accuracy and suitability for the required purpose for use.

NOTE: These calculations are valid for a zero fall roof with minimal variation in levels. Any significant variation will affect the volume of water stored and the roofs ability to attenuate extreme rain events. Typically variations in roof level should be less than 0 to +30mm with no back falls. The H-Max is measured from the mean roof level

Overflow discharge requirements based on a CAT1 storm event to BSEN12056-3:2000.

Total flow rate: $490\text{m}^2 \times 0.018\text{l/s/m}^2 = 8.82\text{l/s}$.

NOTE: Roof loading data shown in the results section is for the blue roof only. For total loading of blue roof and overflows then Hmax + 35mm should be factored in.

Date: 18/05/2022

Revision: A (1305)

Page: 6

Client:

Project: San Court

Location: Manchester

Roof Location: R6 - Option 2

Roof Details:

BlueRoof	94 m ²	x 100 %
Additional Area	5 m ²	x 100 %
Effective Area	99 m ²	

Storage Details:

Length	94 m
Width	1 m
Depth	200 mm
Porosity	95 %
Slope	none

Rainfall Details - FEH Method:

Return Period	100 years
Climate Change Factor	40 %

Summer Storm Profile

Duration	Intensity		Required storage(m ³)
	mm	mm/h	
5 min	20.5	246.2	2.0
10 min	30.0	179.9	2.9
15 min	37.4	149.8	3.6
30 min	49.8	99.6	4.8
45 min	57.5	76.7	5.5
60 min	63.2	63.2	5.9
2 hours	75.4	37.7	6.7
6 hours	96.5	16.1	7.2
24 hours	127.9	5.3	6.3

Outflow Details:

Attenuation Control	BlueRoof Outlet
Control	1 hole
Sump Depth	None
Discharge rate	0.17 l/s
Outlet	2 No
Flow Per Outlet	0.09 l/s

Result:

Outcome	Pass
Critical Storm Duration	4.78 hrs
Hmax	81 mm
Required Volume	7.2 m ³
Time to half empty	5.8 hrs
Roof Loading	76.6 Kg/m ²

All results based on input data. Please check that input data has been correctly interpreted.

The Bauder Blue Flat Roof Rainwater Calculation Software will perform calculations in accordance with industry best practice for blue roof design based upon provided data relating to a specific building's dimensions geographical location and the flow rate performance of the selected Bauder rainwater outlet product.

Whilst the information contained herein is to the best of our knowledge true and accurate we specifically exclude any liability for errors omissions or otherwise arising therefrom.

Details practices principles values and calculations should be verified for accuracy and suitability for the required purpose for use.

NOTE: These calculations are valid for a zero fall roof with minimal variation in levels. Any significant variation will affect the volume of water stored and the roofs ability to attenuate extreme rain events. Typically variations in roof level should be less than 0 to +30mm with no back falls. The H-Max is measured from the mean roof level

Overflow discharge requirements based on a CAT1 storm event to BSEN12056-3:2000.

Total flow rate: $99\text{m}^2 \times 0.018\text{l/s/m}^2 = 1.78\text{l/s}$.

NOTE: Roof loading data shown in the results section is for the blue roof only. For total loading fo blue roof and overflows then Hmax + 35mm should be factored in.