

# Householder Guidance

## Flood Risk & Drainage

Version	Written by	Approved by	Date	Description
3.0	TWH (GCiC)	NC	10 <sup>th</sup> Feb 21	

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## Appendix A

Attenuation (storage) requirements for surface water based on total area of new roofs and driveways / paving

# 1 Overview

- 1.1 This guidance has been produced by Gloucester City Council to advise applicants on the flood risk and drainage information, and associated supporting evidence, that should be submitted with householder planning applications in order to comply with national and local planning policy.
- 1.2 Householder developments are defined as those within the curtilage of a dwellinghouse which require an application for planning permission and are not a change of use. Included in householder developments are extensions, conservatories, loft conversions, dormer windows, alterations, garages, car ports or outbuildings, swimming pools, walls, fences, domestic vehicular accesses including footway crossovers, porches and satellite dishes. Excluded from householder developments are: applications to change the number of dwellings (flat conversions, building a separate house in the garden), changes of use to part or all of the property to non-residential (including business) uses, or anything outside the garden of the property (including stables if in a separate paddock).
- 1.3 This guide is aimed at householder developments which create additional built footprint or additional impermeable area (for example extensions /out buildings / extended driveways), or are in close proximity to a watercourse.
- 1.4 Gloucester has been identified as a 'Flood Risk Area' by the Environment Agency, and, as such, it is important we take a robust approach to managing flooding, drainage and watercourses.
- 1.5 The information in the relevant flood risk and drainage checklist will need to be submitted in order for the application to be validated.

An important point to highlight is that government planning guidance states only 'water compatible' and 'essential infrastructure' are permitted to be built in flood zone 3b (the functional flood plain). Householder development is not water compatible or essential infrastructure and is therefore not permitted in flood zone 3b where it creates additional built footprint.

## ***Flooding***

- 1.6 You must check the Environment Agency flood zone maps to determine if your development is at risk of flooding from rivers. This mapping can be viewed at:

<https://flood-map-for-planning.service.gov.uk/>

- 1.7 If your development is within an area designated as flood zone 3 you will need to review the indicative flood zones within the LLFA (Lead Local Flood Authority) Strategic Flood Risk Assessment to determine if it is classified as Flood Zone 3a or 3b. This mapping can be viewed at the link below. An important point to highlight is that government planning guidance states only 'water compatible' and 'essential infrastructure' are permitted to be built in flood zone 3b (the functional flood plain). Householder development is not water compatible or essential infrastructure and is therefore not permitted in flood zone 3b where it creates additional built footprint.

<https://www.gloucestershire.gov.uk/planning-and-environment/flood-risk-management/flood-planning-information/flood-zones-in-gloucestershire/>

- 1.8 If your development is located within Flood Zone 2 or 3, and building works are outside the existing building footprint, or involve the construction of a basement, you will need to contact the Environment Agency to obtain the latest flood level information. Details of how to obtain this information can be found at:

<https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications#get-information-to-complete-an-assessment>

- 1.9 If your development lies within Flood Zone 2, 3a or 3b a Flood Risk Assessment (FRA) must be submitted with the application.
- 1.10 Details of what to include in the Flood Risk Assessment are detailed in this guidance document. The FRA report should follow the format outlined by the Environment Agency as detailed here:

<https://www.gov.uk/guidance/flood-risk-assessment-standing-advice>

- 1.11 Other sources of flood risk, including from reservoirs and surface water, can be determined from the Environment Agency's Long-term flood risk maps found here:

<https://flood-warning-information.service.gov.uk/long-term-flood-risk>

- 1.12 Details of flood resilience and resistance techniques can be found in 'Improving the Flood Performance of New Buildings - Flood Resilient Construction' (DCLG 2007):

[http://www.planningportal.gov.uk/uploads/br/flood\\_performance.pdf](http://www.planningportal.gov.uk/uploads/br/flood_performance.pdf)

- 1.13 Built development in flood zone 3a or 3b can occupy flood storage area, push water elsewhere, and cause an increase in flood risk for others. Therefore, where there is built development below the design flood level (100 year + climate change) that results in a loss in flood plain storage of more than 5 m<sup>3</sup>, appropriate flood storage compensation should be provided.
- 1.14 It should be noted that property / land owners have a statutory duty to not carry out any works that result in an increase in flood risk or land drainage nuisance to neighbouring properties. Even where planning consent has been granted, if works result in an increase in flood risk, or land drainage nuisance, then the property / land owner will be required to carry out remedial works.

### ***Sustainable Drainage (SuDS)***

- 1.15 The cumulative impact of multiple small developments can be significant. Sustainable drainage should be provided for all developments where there is an increase in impermeable area (roofs and driveways/paving). However, Gloucester City Council is currently only requiring drainage information for householder developments that result in an increase in impermeable area of 50 m<sup>2</sup> or more.
- 1.16 Where this is the case, a simple drainage strategy should be submitted showing that the development will not result in an increase in surface water discharge.
- 1.17 It should be demonstrated that the surface water is being disposed of as far up the hierarchy below as possible:
- Rainwater re-use (rainwater harvesting/greywater recycling)
  - An adequate soakaway or other infiltration system
  - To a surface water body (e.g. an ordinary watercourse)
  - To a surface water sewer, highway drain, or other drainage system
  - To a combined sewer
- 1.18 Raingardens are a preferred, sustainable, environmentally friendly, means of surface water disposal. Guidance on these can be found here:
- <https://raingardens.info/wp-content/uploads/2012/07/UKRainGarden-Guide.pdf>
- 1.19 Infiltration is often not possible in Gloucester due to the clay soils. Where infiltration (a soakaway) is proposed as the means of surface water disposal then BRE 365 infiltration test results and soakaway sizing calculations should be submitted with the application. Gloucester City Council requires that

soakaways are sized to accommodate a 100 year + climate change rainfall event.

- 1.20 In many cases, it will be necessary to connect the surface water to a watercourse or drainage pipe. In these cases, a flow control chamber and attenuation (storage) will be required. For householder developments the flow control should be set at 0.2 l/s. This will require an orifice flow control chamber. These are readily available from a number of suppliers.

In order to help applicants with the calculations, we have provided a 'lookup' table in Appendix A. This shows how much attenuation (storage in m<sup>3</sup>) is required for a range of total roof and hardstanding areas. The best way to provide storage is in the granular material below permeable paving. Alternatively, storage crates may be used.

### **Watercourses**

- 1.21 There should be no development within 8 m of a watercourse (measured from top of bank). This includes culverted (below ground) watercourses, where the 8 m starts from the edge of the culvert. As well as for flood risk reasons, this is to facilitate maintenance access and to act as a green corridor for ecological benefit.
- 1.22 Activity within 8 metres of the bank of a 'main river' needs a separate consent (an environmental permit) from the Environment Agency. Certain works in, or adjacent to, an 'ordinary watercourse', require permission from Gloucestershire County Council. The flood map for planning link in section 2.1 shows whether a watercourse is 'main river' or 'ordinary watercourse'. Please note that some watercourses that look rather small and insignificant may in fact be classified as 'main rivers'.

Environment Agency environmental permit:

<https://www.gov.uk/guidance/flood-risk-activities-environmental-permits>

Gloucestershire County Council land drainage consent:

<https://www.gloucestershire.gov.uk/planning-and-environment/flood-risk-management/land-drainage-consent/>

Flood Zone 1 - Householder Drainage Checklist (required for developments creating 50sqm or more impermeable area)

	Planning Application Validation Requirements	
	<b>Drainage</b>	

	<b>The drainage information below must be submitted for developments resulting in an increase in impermeable area (additional footprint of building and hard surfacing) of 50 m<sup>2</sup> or more</b> (See sections 2.10 to 2.15. of our <i>hyperlink Householder Guidance for Flooding and Drainage</i> for more information)	
1	Provide an outline drainage layout plan showing: <ol style="list-style-type: none"> <li>1. All the proposed new roof / driveway / paving areas marked with sizes in m<sup>2</sup>, <b>and</b>,</li> <li>2. The proposed drainage layout including, where used: the location and size of the flow control; the location and size of the surface water attenuation / storage facility; the locations and sizes of any soakaways</li> </ol>	
2	Where soakaways are proposed, the results of a BRE 365 infiltration test <b>and</b> the soakaway sizing calculations must be provided.	
	<b>Watercourses</b>	
3	Identify any areas of the site that are within 8m of a watercourse (measured from the top of bank). This includes culverted (below ground) watercourses, where the 8 m starts from the edge of the culvert.	

## Flood Zone 2 - Householder Flood Risk & Drainage Checklist

	Planning Application Validation Requirements	
	<b>Flood Risk</b>	<b>Check</b>
	A simple Flood Risk Assessment report. This must provide the information set out below and follow <a href="#">Government Flood Risk Standing Advice Guidance</a>  See the City Council's <i>hyperlink Householder Guidance for Flooding and Drainage</i> for more information. Relevant sections of the guidance are included below.	
1	Identification of the flood zone within which the site is located. Identify whether any part of the site is in the functional floodplain (Flood Zone 3b). Refer to Sections 2.1 and 2.2	
2	An up to date design flood level for the site. Refer to Section 2.3. This should be the 100yr (or 1%) flood level with a 40% climate change allowance.	
3	The finished floor level of the development related to Ordnance Datum (m AOD). For extensions the floor level should be no lower than the existing floor level, but preferably no less than 300 mm above the design flood level.	
4	External ground levels of the site to Ordnance Datum (m AOD).	
5	A brief assessment of the flooding risk from other sources such as surface water, ground water, sewer, reservoir, historic flooding etc. See Section 2.6.	
6	Details of the flood resilience / flood resistance proposals. These are required to a height of 600mm above the design flood level. Refer to Section 2.7.	
	<b>Drainage</b>	

	What is the total impermeable area in square metres (additional footprint of building and hardstanding area) resulting from the proposal?	
	<b>The drainage items in rows 7 and 8 must be submitted for developments resulting in an increase in impermeable area of 50 m<sup>2</sup> or more</b> (See sections 2.10 to 2.15. of the <i>hyperlink Householder Guidance for Flooding and Drainage</i> for more information)	
7	Provide an outline drainage layout plan showing: <ol style="list-style-type: none"> <li>1. All the proposed new roof / driveway / paving areas marked with sizes in m<sup>2</sup>, <b>and</b>,</li> <li>2. The proposed drainage layout including, where used: the location and size of the flow control; the location and size of the surface water attenuation / storage facility; the locations and sizes of any soakaways</li> </ol>	
8	Where soakaways are proposed, the results of a BRE 365 infiltration test <b>and</b> the soakaway sizing calculations must be provided.	
	<b>Watercourses</b>	
9	Identification of any areas of the site that are within 8 m of a watercourse (measured from top of bank). This includes culverted (below ground) watercourses, where the 8 m starts from the edge of the culvert.	

## Flood Zone 3 - Householder Flood Risk & Drainage Checklist

Householder development in <b>Flood Zone 3</b> Planning Application Validation Requirements		
	<b>Flood Risk</b>	<b>Check</b>
	A simple Flood Risk Assessment report. This must provide the information set out below and follow <a href="#">Government Flood Risk Standing Advice Guidance</a>  Reference is also made to the City Council's <i>hyperlink Householder Guidance for Flooding and Drainage</i> for more information	
1	Identification of the flood zone within which the site is located. Identify whether any part of the site is in the functional floodplain (Flood Zone 3b). Refer to Sections 2.1 and 2.2	
2	An up to date design flood level for the site. Refer to Section 2.3. This should be the 100yr (or 1%) flood level with a 40% climate change allowance.	
3	The finished floor level of the development related to Ordnance Datum (m AOD). For extensions the floor level should be no lower than the existing floor level, but preferably no less than 300 mm above the design flood level.	
4	External ground levels of the site to Ordnance Datum (m AOD).	
5	A brief assessment of the flooding risk from other sources such as surface water, ground water, sewer, reservoir, historic flooding etc. See Section 2.6.	



6	Details of the flood resilience / flood resistance proposals. These are required to a height of 600mm above the design flood level. Refer to Section 2.7.	
7	Where a development displaces more than 5 m <sup>3</sup> of flood plain storage volume, then a proposal will need to be submitted to show how this will be compensated for. Refer to Section 2.8.	
	<b>Drainage</b>	
	What is the total impermeable area in square metres (additional building footprint and hardstanding area) resulting from the proposal?	
	<b>The drainage items in rows 8 and 9 must be submitted for developments resulting in an increase in impermeable area of 50 m<sup>2</sup> or more</b> (See sections 2.10 to 2.15. of the <a href="#">hyperlink Householder Guidance for Flooding and Drainage</a> for more information)	
8	Provide an outline drainage layout plan showing: <ol style="list-style-type: none"> <li>1. All the proposed new roof / driveway / paving areas marked with sizes in m<sup>2</sup>, <b>and</b>,</li> <li>2. The proposed drainage layout including, where used: the location and size of the flow control; the location and size of the surface water attenuation / storage facility; the locations and sizes of any soakaways</li> </ol>	
9	Where soakaways are proposed, the results of a BRE 365 infiltration test <b>and</b> the soakaway sizing calculations must be provided.	
	<b>Watercourses</b>	
10	Identification of any areas of the site that are within 8 m of a watercourse (measured from top of bank). This includes culverted (below ground) watercourses, where the 8 m starts from the edge of the culvert.	

## Relevant Policies

1.23 NPPF (National Planning Policy Framework)

1.24 Government Planning Practice Guidance

1.25 JCS (Joint Core Strategy) Policy INF2: Flood Risk Management

1.26 Gloucester City Council's emerging City Plan, policy E6, the key extracts of which are as follows:

- *Development shall be safe from flooding and shall not lead to an increase in flood risk elsewhere. In accordance with the National Planning Policy Framework, flood risk betterment shall be sought through the development process.*
- *Planning permission will not be granted for any development in the functional flood plain (Flood Zone 3b) except for development with 'water compatible' and 'essential infrastructure' flood risk vulnerability development classifications.*

- *All development will be expected to incorporate Sustainable Drainage Systems (SuDS) to reduce surface water discharge rates and address water quality, unless it can be shown, to the satisfaction of the City Council, that this is not feasible.*
- *The most up to date Environment Agency and Local Lead Flood Authority climate change guidance shall be used in the evaluation of fluvial flood risk and for the design of drainage / SuDS.*
- *An 8 metre riparian buffer strip, measured from the top of bank to each side of the watercourse or the outside edge of any culverted watercourses where is necessary for the culvert to remain in situ, shall be kept free of development. As well as for flood risk reasons, this is to facilitate maintenance access and to act as a green corridor for ecological benefit.*
- *Applicants shall demonstrate that all surface water discharge points have been selected in accordance with the principles laid out in within the SuDS/drainage hierarchy. That is, where possible, connections to the public sewerage systems, and in particular the combined sewer network, are to be avoided. Wherever possible, foul drainage from development shall connect to the mains public sewer.*

## Appendix A –

# Surface Water Attenuation (Storage) Volume Requirements For A Range Of Total Roof & Hardstanding Areas

Table for determining the minimum attenuation storage required for the critical 1 in 100 year (0.1%) rainfall event (including an allowance for climate change and a factor of safety).

Impermeable Area <sup>a</sup> (m <sup>2</sup> )	5	10	15	20	25	30	35	40	45	50	75	100	125	150	175	200	225	250	275	300
Storage <sup>b</sup> (m <sup>3</sup> )	0.5	0.5	0.5	0.5	1.0	1.5	2.0	2.0	2.5	3.0	5.5	8.0	11	14	17	20	24	27	30	33
Discharge rate <sup>c</sup> (l/s)	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2

### Notes:

- The total footprint of new impermeable area to be drained. i.e. the sum of the new roof, driveway and paving areas. If the development will create more than 300 m<sup>2</sup> of new impermeable area, then the applicant should provide bespoke calculations.
- The minimum effective storage volume that should be provided. The volume should consider the void ratio of the granular material or storage crates.
- Small discharge rates such as this can be achieved by a, readily available, orifice control chamber. A 'protected orifice' is required to reduce the risk of blockages.
- These volumes are indicative only. GCiC cannot be held responsible for any flooding which results from use of this table; responsibility for the design of the drainage, and the prevention of flooding, lies with the applicant.

