

Application for a Lawful Development Certificate for a Proposed use or development.  
Town and Country Planning Act 1990: Section 192, as amended by section 10 of the Planning and  
Compensation act 1991.  
Town and Country Planning (Development Management Procedure) (England) Order 2015

**Publication of applications on planning authority websites.**

Please note that the information provided on this application form and in supporting documents may be published on the Authority's website. If you require any further clarification, please contact the Authority's planning department.

**1. Site Address**

|                |   |
|----------------|---|
| Number         | <input type="text" value="3"/>            |
| Suffix         | <input type="text"/>                      |
| Property name  | <input type="text"/>                      |
| Address line 1 | <input type="text" value="The Malverns"/> |
| Address line 2 | <input type="text"/>                      |
| Address line 3 | <input type="text"/>                      |
| Town/city      | <input type="text" value="Gloucester"/>   |
| Postcode       | <input type="text" value="GL4 4WN"/>      |

Description of site location must be completed if postcode is not known:

|              |                                     |
|--------------|-------------------------------------|
| Easting (x)  | <input type="text" value="385774"/> |
| Northing (y) | <input type="text" value="216547"/> |

Description

**2. Applicant Details**

|                |   |
|----------------|---|
| Title          | <input type="text" value="Mr"/>             |
| First name     | <input type="text" value="Chandra"/>        |
| Surname        | <input type="text" value="Kapletia"/>       |
| Company name   | <input type="text"/>                        |
| Address line 1 | <input type="text" value="3 The Malverns"/> |
| Address line 2 | <input type="text"/>                        |
| Address line 3 | <input type="text"/>                        |
| Town/city      | <input type="text" value="Gloucester"/>     |

## 2. Applicant Details

|                  |                                      |
|------------------|--------------------------------------|
| Country          | <input type="text"/>                 |
| Postcode         | <input type="text" value="GL4 4WN"/> |
| Primary number   | <input type="text"/>                 |
| Secondary number | <input type="text"/>                 |
| Fax number       | <input type="text"/>                 |
| Email address    | <input type="text"/>                 |

Are you an agent acting on behalf of the applicant?

Yes  No

## 3. Agent Details

|                  |   |
|------------------|---|
| Title            | <input type="text" value="Mr"/>                           |
| First name       | <input type="text" value="Josh"/>                         |
| Surname          | <input type="text" value="Steele"/>                       |
| Company name     | <input type="text" value="Josh Steele Drawing Services"/> |
| Address line 1   | <input type="text" value="Corse Grange"/>                 |
| Address line 2   | <input type="text" value="Corse"/>                        |
| Address line 3   | <input type="text"/>                                      |
| Town/city        | <input type="text" value="Gloucester"/>                   |
| Country          | <input type="text"/>                                      |
| Postcode         | <input type="text" value="GL193RQ"/>                      |
| Primary number   | <input type="text"/>                                      |
| Secondary number | <input type="text"/>                                      |
| Fax number       | <input type="text"/>                                      |
| Email            | <input type="text"/>                                      |

## 4. Description of Proposal

Does the proposal consist of, or include, the carrying out of building or other operations?

Yes  No

If Yes, please give detailed description of all such operations (includes the need to describe any proposal to alter or create a new access, layout any new street, construct any associated hard-standings, means of enclosure or means of draining the land/buildings) and indicate on your plans (in the case of a proposed building the plan should indicate the precise siting and exact dimensions)

Erection of a 3m x 6m single storey rear extension.

Does the proposal consist of, or include, a change of use of the land or building(s)?

Yes  No

Has the proposal been started?

Yes  No

## 5. Grounds for Application

Information about the existing use(s)

## 5. Grounds for Application

Please explain why you consider the existing or last use of the land is lawful, or why you consider that any existing buildings, which it is proposed to alter or extend are lawful

Proposed rear single storey extension meets all permitted development criteria.

Please list the supporting documentary evidence (such as a planning permission) which accompanies this application

See drawing PL03 for details of extension.

If you consider the existing or last use is within a 'Use Class' in the Town and Country Planning (Use Classes) Order 1987 (as amended) state which one:

C3 - Dwellinghouses

### Information about the proposed use(s)

If you consider the proposed use is within a 'Use Class' in the Town and Country Planning (Use Classes) Order 1987 (as amended), state which one:

C3 - Dwellinghouses

Is the proposed operation or use

Permanent  Temporary

Why do you consider that a Lawful Development Certificate should be granted for this proposal?

The extension meets all permitted development criteria.

## 6. Site Visit

Can the site be seen from a public road, public footpath, bridleway or other public land?

Yes  No

If the planning authority needs to make an appointment to carry out a site visit, whom should they contact?

- The agent  
 The applicant  
 Other person

## 7. Pre-application Advice

Has assistance or prior advice been sought from the local authority about this application?

Yes  No

## 8. Authority Employee/Member

With respect to the Authority, is the applicant and/or agent one of the following:

- (a) a member of staff  
(b) an elected member  
(c) related to a member of staff  
(d) related to an elected member

It is an important principle of decision-making that the process is open and transparent.

Yes  No

For the purposes of this question, "related to" means related, by birth or otherwise, closely enough that a fair-minded and informed observer, having considered the facts, would conclude that there was bias on the part of the decision-maker in the Local Planning Authority.

Do any of the above statements apply?

## 9. Interest in the Land

Please state the applicant's interest in the land

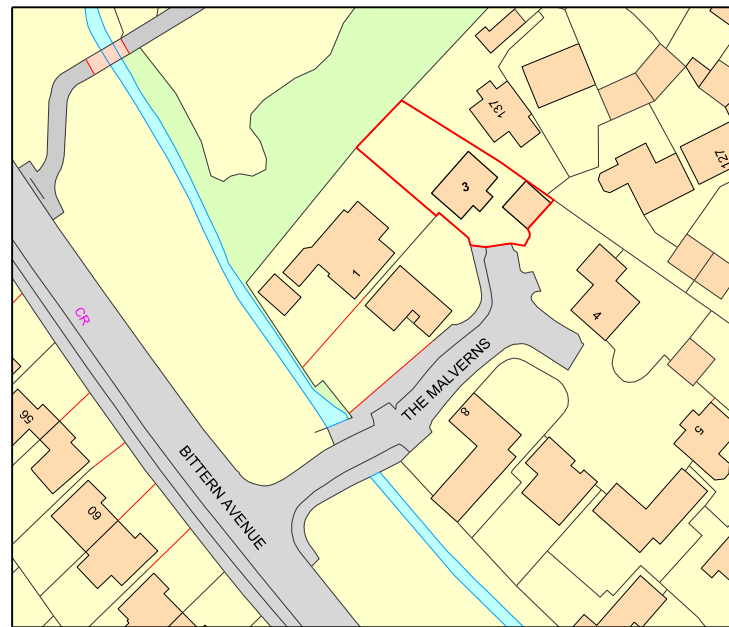
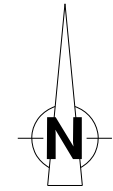
- Owner  
 Lessee  
 Occupier  
 Other

## 10. Declaration

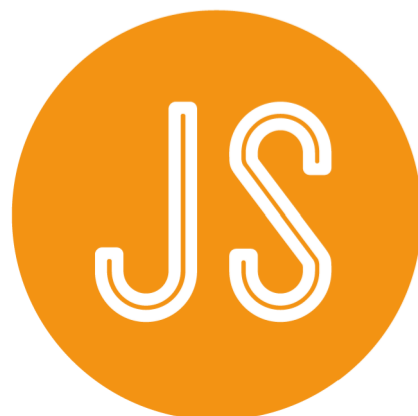
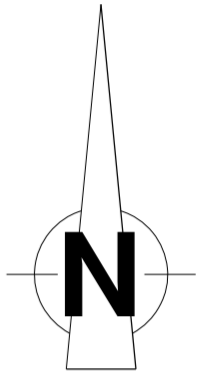
I/we hereby apply for a Lawful Development Certificate as described in this form and the accompanying plans/drawings and additional information. I/we confirm that, to the best of my/our knowledge, any facts stated are true and accurate and any opinions given are the genuine opinions of the person(s) giving them.

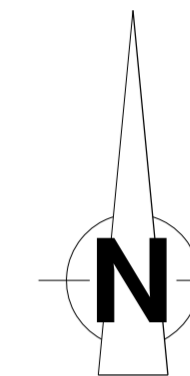
Date (cannot be pre-application)

09/03/2020



Subject to correct printing. See top left.





# AMBIENTAL

## ENVIRONMENTAL ASSESSMENT

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### Flood Risk Assessment 5886

3 The Malverns,  
Abbeydale,  
Gloucester,  
Gloucestershire,  
GL4 4WN

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## Document Issue Record

**Project:** Phase 1 Flood Risk Assessment

**Prepared for:** JS Architectural Services

**Reference:** 5886

**Site Location:** 3 The Malverns, Abbeydale, Gloucester, Gloucestershire, GL4 4WN

**Proposed Development:** It is understood that the development is for the erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing residential dwelling.

|                | Consultant | Date       | Signature |
|----------------|------------|------------|-----------|
| Author         |            | 27/11/2020 |           |
| Document Check |            | 01/12/2020 |           |
| Authorisation  |            | 07/12/2020 |           |

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## 1. Summary

- 1.1 Ambiental Environmental Assessment has been appointed by JS Architectural Services to undertake a National Planning Policy Framework (NPPF) compliant Flood Risk Assessment (FRA) for the proposed development at 3 The Malverns, Abbeydale, Gloucester, Gloucestershire, GL4 4WN.
- 1.2 The existing site currently features a residential dwelling. It is understood that the development is for the erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing residential dwelling.
- 1.3 With reference to the Environment Agency (EA) Flood Map for Planning, the redline site boundary is largely located in Flood Zone 2. A small proportion of the site is located in Flood Zone 1. The whole of the proposed extension is located in Flood Zone 2. The nearest watercourse to the site is the River Twyver which is an EA Main River located approximately 35m southwest of the site.
- 1.4 The site features a dwelling as existing and would subsequently be classified as 'More Vulnerable' under the NPPF vulnerability classification guidelines. The proposed development is for a single storey rear extension and subsequently there will be no change in vulnerability at the site post-development.
- 1.5 Given the proposed development is for a household extension to provide greater habitable space to the existing dwelling, the proposed development could be considered a minor development. Subsequently, under the NPPF, the proposed development would not be subject to first passing the Exception Test or Sequential Test.
- 1.6 With reference to the Environment Agency's Standing Advice for Minor Developments, it is recommended that Finished Floor Levels of the proposed extension are set no lower than existing ground floor levels.
- 1.7 Furthermore, Paragraph 047 of the Planning Practice Guidance (PPG) states that:  
*"Minor developments are unlikely to raise significant flood risk issues unless:*
  - *They would have an adverse effect on a watercourse, floodplain or its flood defences;*
  - *They would impede access to flood defence and management facilities, or;*
  - *Where the cumulative impact of such development would have a significant effect on local flood storage capacity or flood flows."*
- 1.8 Subsequently, it could be argued that any displacement of floodwater, as a result of the proposed development, could be considered negligible.
- 1.9 Ambiental have assessed the EA Risk of Flooding from Surface Water (RoFSW) dataset. The site is shown to be located in an area that remains unaffected from surface water flooding for the 1 in 30 year, 1 in 100 year and 1 in 1,000 year rainfall events. Subsequently, the risk of surface water flooding to the proposed development could be considered **very low**.
- 1.10 Following a review of the Gloucester City Council SFRA, British Geological Survey data and information provided within Severn Trent Water's DG5 register, the risk of groundwater and sewer flooding at the site could also be considered **relatively low**.
- 1.11 The proposed development is for a 3m x 6m single storey rear extension. There will subsequently be an increase in built footprint at the site of 18m<sup>2</sup>. Upon a review of satellite imagery at the site, the extension is to be built over existing permeable land (rear garden). Subsequently, there will be an increase in

hardstanding area at the site (of approximately 18m<sup>2</sup>) as a result of the proposed development. This could, in turn, result in an increase in surface water runoff being generated from the site.

1.12 It is recommended that the developer looks to install small scale sustainable drainage systems (e.g. water butts) at the site. The purpose of this is to manage surface water runoff rates to no greater than the existing runoff rate and to provide betterment, if possible.

1.13 As such and given that:

- The proposals are for the erection of a 3m x 6m single storey rear extension;
- The proposed development is located wholly in Flood Zone 2 (medium risk). It is recommended that Finished Floor Levels in the extension are set no lower than existing ground floor levels to comply with the EA Standing Advice for Minor Developments;
- The site and proposed development are at very low risk of surface water flooding;
- The site and proposed development are at relatively low risk of groundwater and sewer flooding;
- It is recommended that small scale sustainable drainage systems are introduced at the site to manage surface water runoff discharge rates to no greater than the existing runoff rate. If possible, betterment should be provided over the existing situation;
- Internal safe refuge could be provided at upper floor levels to provide a safe place of refuge, should a flood event occur.

Following the guidelines contained within the NPPF, the proposed development is considered to be suitable assuming appropriate mitigation (including adequate warning procedures) can be maintained for the lifetime of the development.

| Development Description                               | Existing   | Proposed  |
|---|--|---|
| <b>Development Type:</b>                              | Residential Dwelling   | Erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing dwelling.   |
| <b>Number of Bedrooms:</b>                            | N/A <sup>2</sup>   | No change – Extension is for a Garden Room and W/C.   |
| <b>EA Vulnerability Classification:</b>               | More Vulnerable  | No change   |
| <b>Ground Floor Level:</b>                            | Elevations on site vary between approximately 36.67mAOD and 37.41mAOD (2m LiDAR data). | No change – it is recommended that Finished Floor Levels in the extension are set no lower than existing ground floor levels at the site to adhere to the EA Standing Advice for Minor Developments.  |
| <b>Level of Sleeping Accommodation:</b>               | N/A <sup>2</sup>   | No change – Extension is for a Garden Room and W/C.   |
| <b>Impermeable Surface Area:</b>                      | N/A <sup>1</sup>   | There will be an increase in impermeable surface area of approximately 18m <sup>2</sup> as a result of the proposed development.  |
| <b>Surface Water Drainage:</b>                        | N/A <sup>1</sup>   | Given the increase in impermeable surface area at the site, there may be an increase in surface water runoff generated. It is recommended that small scale SuDS measures are introduced on site to manage surface water runoff to no greater than existing rates.               |
| <b>Site Size:</b>                                     | Approx. 328m <sup>2</sup>  | No change   |
| Risk to Development                                   | Summary  | Comment   |
| <b>EA Flood Zone:</b>                                 | 1 and 2  | Proposed development is located wholly in Flood Zone 2.   |
| <b>Flood Source:</b>                                  | Fluvial  | River Twyver  |
| <b>1:100 Year Flood Level</b>                         | Unaffected   | No detailed model data has been provided at the time of writing this report.  |
| <b>1:100 Year Flood Level &amp; Climate Change</b>    | Unaffected   | Gloucestershire County Council Level 1 SFRA Online Flood Mapping shows the site to be located outside of Flood Zone 3b, Flood Zone 3a and Flood Zone 3a + CC, but within Flood Zone 2.  |
| <b>1:1000 Year Flood Level</b>                        | Affected – Level unknown   | Regardless, the proposed works are for a minor development and is to adhere to the EA Standing Advice for Minor Developments.   |
| <b>Recorded Flood Events in Area:</b>                 | No   | Neither the Environment Agency nor Gloucester City Council have provided any evidence to suggest that the site or wider area has historically flooded.  |
| <b>Recorded Flood Events at Site:</b>                 | No   |   |
| <b>SFRA Available:</b>                                | Yes  | Gloucester City Council SFRA (2008)   |
| Management Measures                                   | Summary  | Comment   |
| <b>Ground floor level above extreme flood levels:</b> | No   | Proposed development is located wholly in Flood Zone 2, which is representative of the 1 in 1,000 year design event.  |
| <b>Safe Access/Egress Route:</b>                      | Yes  | See Section 7 of the report.  |
| <b>Flood Resilient Design:</b>                        | Yes  | See Section 7 of the report.  |
| <b>Site Drainage Plan:</b>                            | N/A <sup>1</sup>   | It is recommended that small scale SuDS measures are introduced on site to manage surface water runoff to no greater than existing rates.   |
| <b>Flood Warning &amp; Evacuation Plan:</b>           | No   | Site is located outside of the the EA Flood Alert and Flood Warning Service Areas.  |
| Offsite Impacts                                       | Summary  | Comment   |
| <b>Displacement of floodwater:</b>                    | Negligible   | Proposed development can be considered a minor development. With reference to the PPG, minor developments are unlikely to raise significant flood risk issues. Furthermore, the site is located outside of the Flood Zone 3a CC extent.   |
| <b>Increase in surface run-off generation:</b>        | Yes  | There will be an increase in impermeable surface area at the site that could result in an increase in surface water runoff generated. It is recommended that small scale SuDS measures are introduced on site to manage surface water runoff to no greater than existing rates. |
| <b>Impact on hydraulic performance of channels:</b>   | None   | Does not affect channel   |

Table 1 Summary of flood risks, impacts and proposed flood mitigation measures.  
 N/A<sup>1</sup> not required for this assessment; N/A<sup>2</sup> data not available.

## 2. Development Description and Site Area

### Proposed Development and Location

- 2.1 The proposed development is located at 3 The Malverns, Abbeydale, Gloucester, Gloucestershire, GL4 4WN (Figures 1 and 2).
- 2.2 The existing site currently features a residential dwelling. It is understood that the development is for the erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing residential dwelling.



Figure 1 Location Map, identifying the location of the proposed development (Source: OS)



Figure 2 Aerial Map, identifying the location of the proposed development (Source: Google)

## Site Topography

2.3 Ambiental have assessed 2m resolution EA LiDAR data at the site. Topographic levels have been assessed to vary between approximately 36.67mAOD and 37.41mAOD. Analysis of topographic levels in the wider area indicate that the ground levels generally fall to the south west, towards the River Twyver.

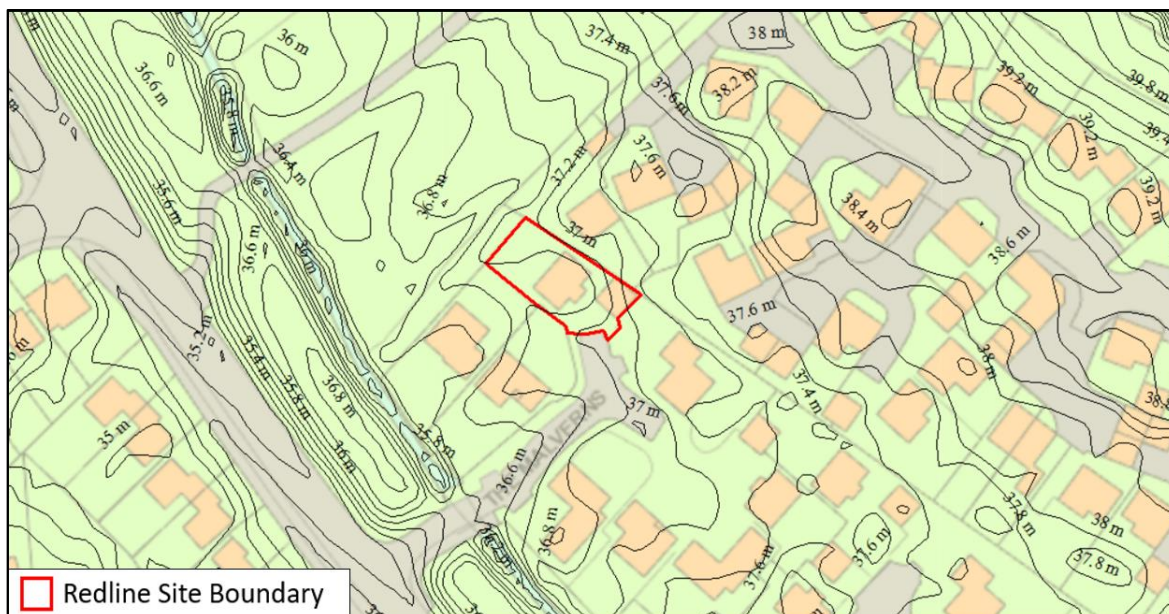


Figure 3 Topographic Contour Map at 0.2m Intervals, Derived by EA 2m LiDAR Data (Source: EA)

## Environment Agency Flood Map for Planning

2.4 The EA Flood Map for Planning demonstrates that the redline site boundary is largely located in Flood Zone 2. A small proportion of the site is located in Flood Zone 1. The whole of the proposed extension is located in Flood Zone 2 (Figure 4). The Environment Agency's Flood Zones are defined as follows:

- Flood Zone 1 = Land at less than a 0.1% annual risk of river or sea flooding in any given year;
- Flood Zone 2 = Land at greater than a 0.1% annual risk, but less than a 1% annual risk of flooding from river sources in any year, and/or less than a 0.5% annual risk of flooding from seas in any given year;
- Flood Zone 3 = Land at greater than a 1% annual risk of flooding from river sources or greater than a 0.5% annual risk of flooding from seas in any given year.

2.5 A higher resolution image of the EA Flood Zones at the site have been provided in Figure 5.

2.6 The nearest watercourse to the site is the River Twyver which is an EA Main River located approximately 35m southwest of the site.

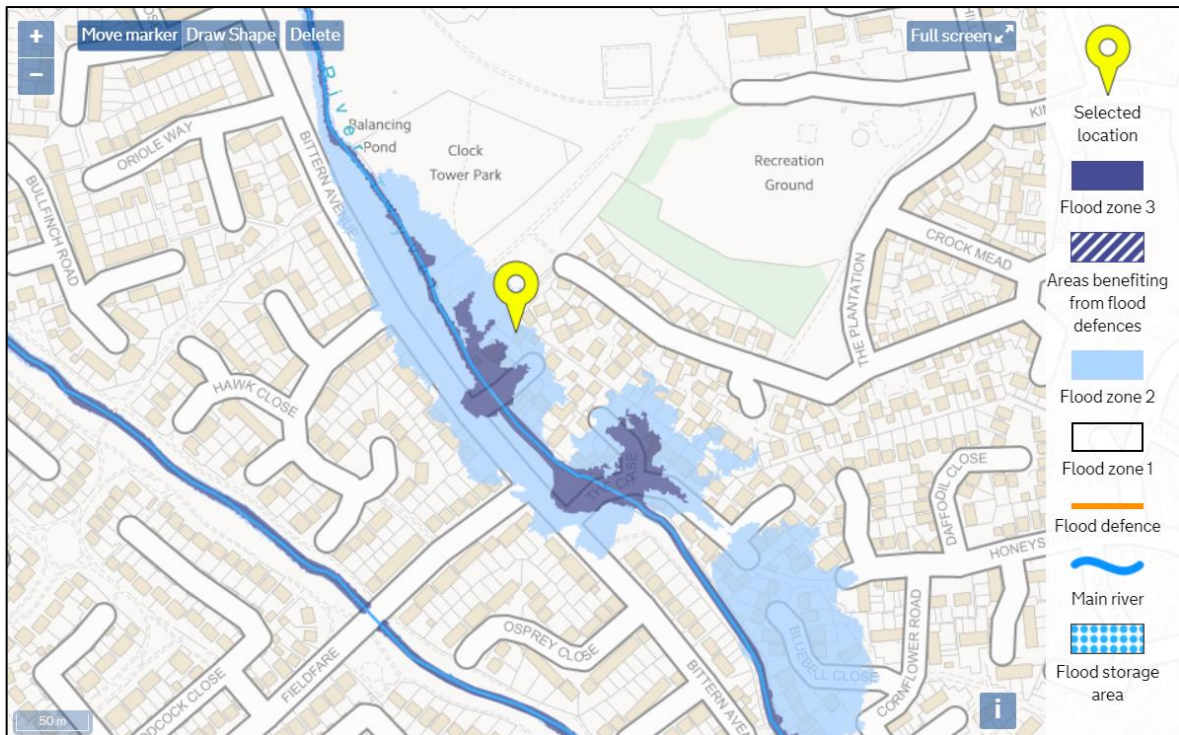


Figure 4 EA Flood Map for Planning (Source: EA)

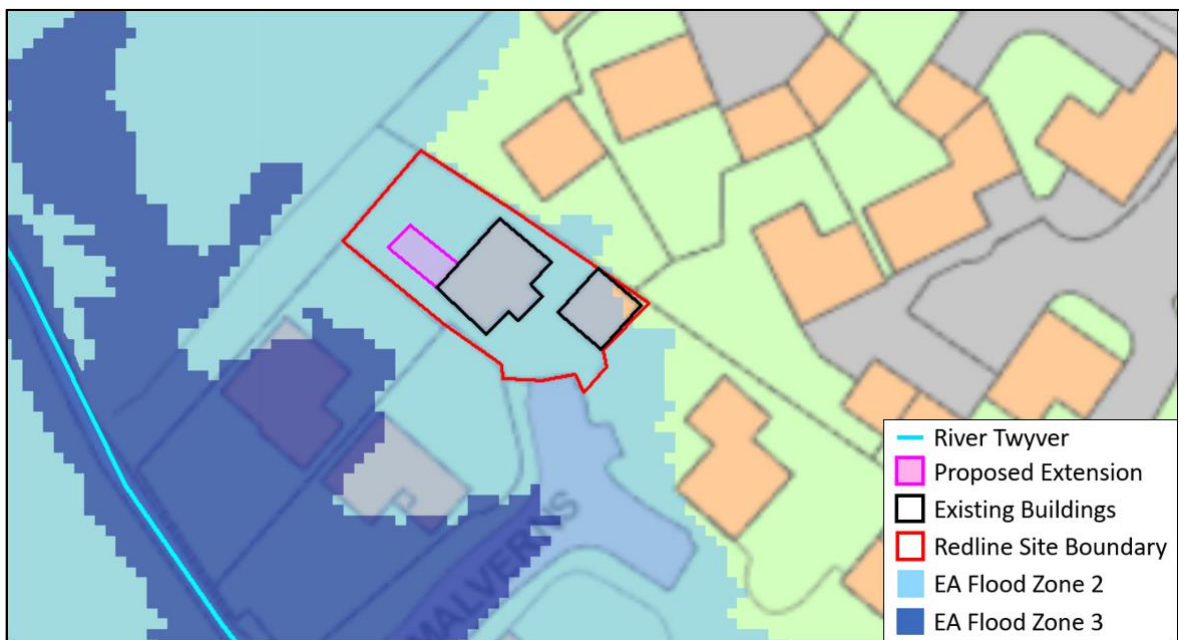


Figure 5 EA Flood Zones at the Site (Source: EA)

## Vulnerability Classification

- 2.7 The site features a dwelling as existing and would subsequently be classified as ‘More Vulnerable’ under the NPPF vulnerability classification guidelines.
- 2.8 The proposed development is for a single storey rear extension and subsequently there will be no change in vulnerability at the site post-development.



## Geology

2.9 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site is of the Charmouth Mudstone Formation, comprised of mudstone (Source: BGS) (Figure 6).

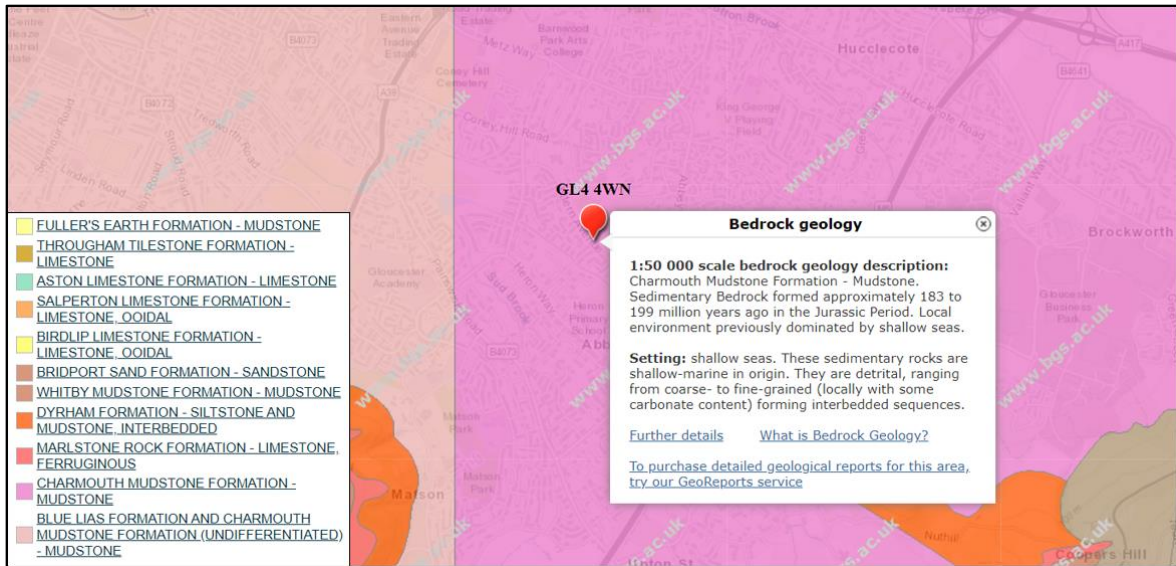


Figure 6 Underlying Bedrock Geology (Source BGS)

2.10 The BGS Geology of Britain Viewer indicates that there are 'River Terrace Deposits' underlying the site. These superficial deposits are comprised of clay, silt, sand and gravel (Figure 7).

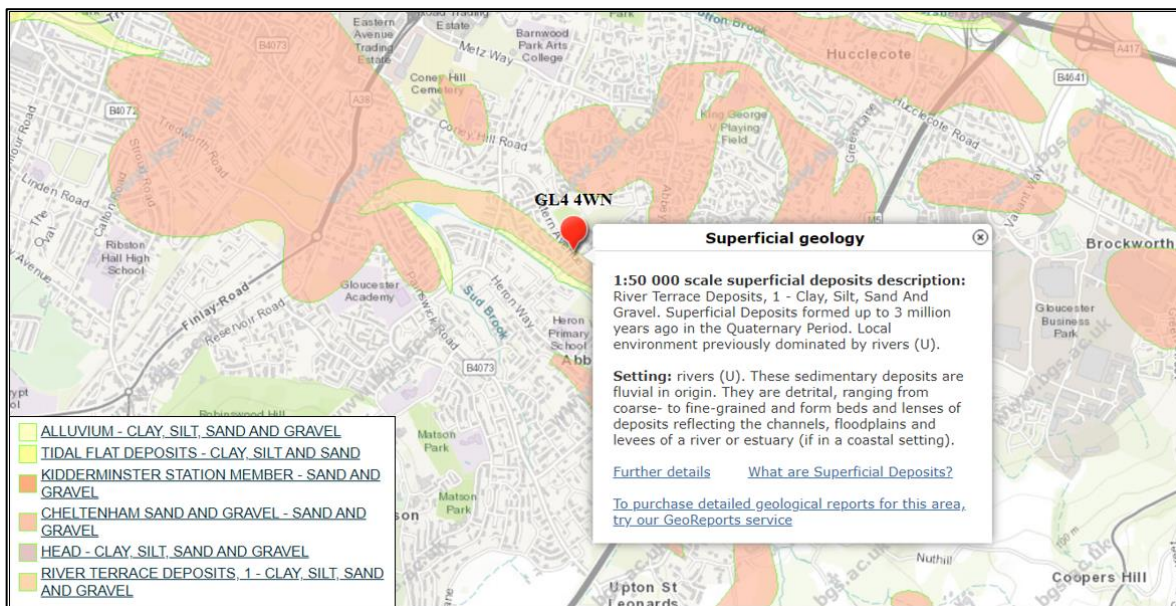


Figure 7 Underlying Superficial Deposits (Source BGS)

2.11 Soil information from the Soilsapes website indicates that the soils are loamy and clayey soils with impeded drainage. Soils that are defined as having 'impeded drainage' typically feature a tight and compact subsoil that impedes downward water movement. After heavy rainfall, particularly during the winter, this can result in waterlogging.

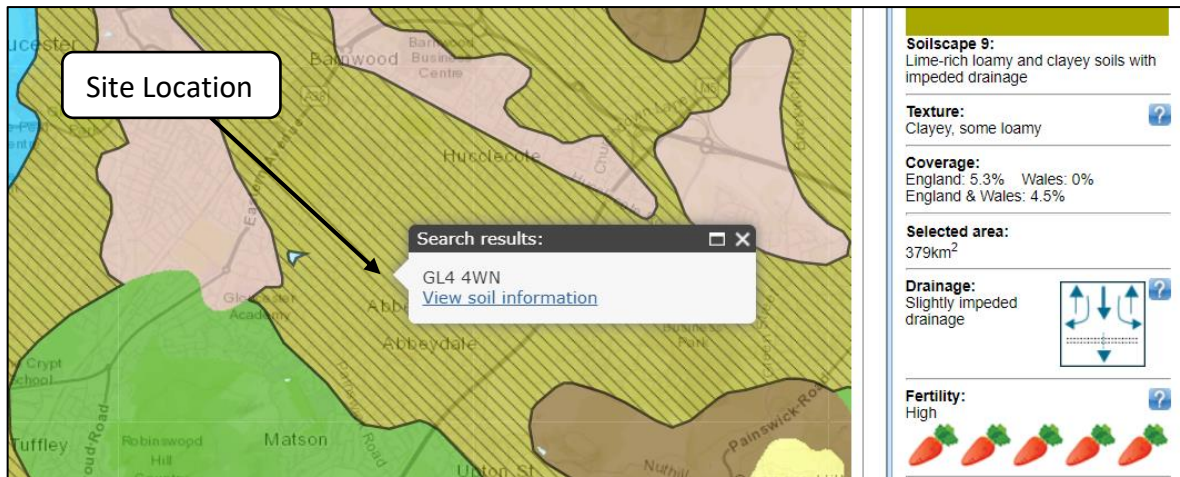


Figure 8 Underlying Soil Groups at the Site (Source: SoilScapes)

### 3. Sequential Test/Exception Test

- 3.1 Under the NPPF, all new planning applications should undergo a *Sequential Test*. This test should be implemented by local planning authorities with a view to locating particularly vulnerable new developments (e.g. residential, hospitals, mobile homes etc.) outside of the floodplain.
- 3.2 The NPPG *Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table* is reproduced below;

| Flood Risk Vulnerability Classification |   | Essential Infrastructure | Water Compatible | Highly Vulnerable       | More Vulnerable         | Less Vulnerable |
|---|---|--------------------------|------------------|-------------------------|-------------------------|-----------------|
| Flood Zone                              | Zone 1                                  | ✓                        | ✓                | ✓                       | ✓                       | ✓               |
|   | Zone 2                                  | ✓                        | ✓                | Exception Test Required | ✓                       | ✓               |
|   | Zone 3a                                 | Exception Test Required  | ✓                | ✘                       | Exception Test Required | ✓               |
|   | Zone 3b<br><i>Functional Floodplain</i> | Exception Test Required  | ✓                | ✘                       | ✘                       | ✘               |

Table 2 The Sequential Test: Flood Risk Vulnerability and Flood Zone 'Compatibility' Table as specified by NPPF.  
 Please note: ✓ means development is appropriate; ✘ means the development should not be permitted.

- 3.3 Using the principles of the Sequential Test outlined above, the proposed development is 'More Vulnerable'. The site is located within Flood Zones 1 and 2 (as defined by the EA) and therefore, under the NPPF, does not require the application of the Exception Test.
- 3.4 It is understood that the development is for the erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing residential dwelling.
- 3.5 Given the proposed development is for a household extension to provide greater habitable space to the existing dwelling, the proposed development could be considered a minor development.
- 3.6 It should be noted that the revised NPPF states:

*"Applications for some **minor developments** and changes of use should not be subject to the sequential or exception tests but should still meet the requirements for the site-specific flood risk assessments."*

*(Source: NPPF)*

- 3.7 As such, the proposed development is not required to pass the Sequential Test or Exception Test.
- 3.8 The redline site boundary is located largely within Flood Zone 2. As such, the planning application submitted by the client is required to be accompanied by an FRA which shows the development can be achieved in a sustainable manner, with an overall reduction of flood risk to the site and the surrounding area.

## 4. Site Flood Hazards

### Sources of Flooding

- 4.1 The proposed development is located within Flood Zone 2 (medium risk of flooding) and is considered to be 'More Vulnerable' according to NPPF guidelines. Table 3 summarises the potential sources of flooding to the site:

| Source             | Description   |
|--------------------|---|
| <b>Fluvial</b>     | Site and proposed development are in Flood Zone 2 (medium risk) |
| <b>Surface</b>     | Site and proposed development are at very low risk              |
| <b>Groundwater</b> | Site and proposed development are at relatively low risk        |
| <b>Sewer</b>       | Site and proposed development are at relatively low risk        |

Table 3 Summary of flood sources.

### Fluvial

- 4.2 With reference to the Environment Agency (EA) Flood Map for Planning, the redline site boundary is largely located in Flood Zone 2. A small proportion of the site is located in Flood Zone 1. The whole of the proposed extension is located in Flood Zone 2.
- 4.3 The nearest watercourse to the site is the River Twyver which is an EA Main River located approximately 35m southwest of the site.
- 4.4 It is understood that the development is for the erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing residential dwelling.
- 4.5 Ambiental have assessed the Gloucestershire County Council Flood Zone online flood zone mapping tool. This provides flood extents for Flood Zone 3b, Flood Zone 3a, Flood Zone 3a CC (accounting for climate change) and Flood Zone 2. The extents are provided in Figure 9.



Figure 9 Flood Zone Extents at the Site (3b, 3a, 3a CC, 2) (Source: Gloucestershire County Council)

- 4.6 Subsequently the site and proposed development are shown to be located outside of the extents of Flood Zone 3b, Flood Zone 3a and Flood Zone 3a CC (accounting for the impacts of climate change).
- 4.7 No information has been provided with regards to the modelling techniques that have been used to derive these flood extents and the date which the flood extents were produced. Therefore, it is unknown if the Flood Zone 3a CC takes into consideration the latest EA climate change allowances on a regional basis, as opposed to the national +20% increase in peak flows that was used prior to February 2016.
- 4.8 Given the proposed development is for a household extension to provide greater habitable space to the existing dwelling, the proposed development could be considered a minor development.
- 4.9 With reference to the Environment Agency's Standing Advice for Minor Developments, it is recommended that Finished Floor Levels of the proposed extension are set no lower than existing ground floor levels.
- 4.10 Furthermore, Paragraph 047 of the Planning Practice Guidance (PPG) states that:
- "Minor developments are unlikely to raise significant flood risk issues unless:*
- *They would have an adverse effect on a watercourse, floodplain or its flood defences;*
  - *They would impede access to flood defence and management facilities, or;*
  - *Where the cumulative impact of such development would have a significant effect on local flood storage capacity or flood flows."*
- 4.11 Subsequently, it could be argued that any displacement of floodwater, as a result of the proposed development, could be considered negligible.
- 4.12 Neither the Environment Agency nor Gloucester City Council have provided any evidence to suggest that the site has historically flooded from fluvial sources.
- 4.13 As such, the risk of fluvial flooding to the proposed development could be considered as **moderate**.

### Surface Water (Pluvial)

- 4.14 The Environment Agency Flood Risk from Surface Water website shows the proposed development to be within an area of 'Very Low' risk of flooding from surface water (Figure 10). Areas identified to be at 'Very Low' risk have less than a 0.1% annual risk of flooding from this source.

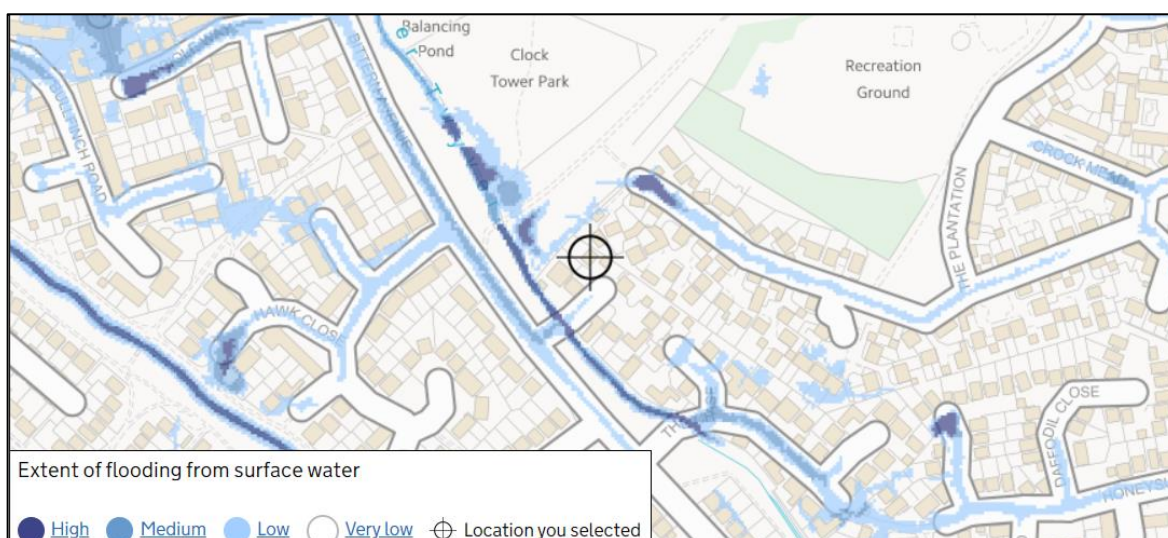


Figure 10 EA Surface Water Flood Risk Map (Source: EA)

- 4.15 Ambiental have assessed the EA Risk of Flooding from Surface Water (RoFSW) dataset. The site is shown to be located in an area that remains unaffected from surface water flooding for the 1 in 30 year, 1 in 100 year and 1 in 1,000 year rainfall events. The predicted flood extent and depths at the site and in the wider area for the 1 in 1,000 year event is provided in Figure 11. This is indicative of the Low Risk Scenario on the EA Surface Water Flooding website.



Figure 11 EA 1 in 1000 Year RoFSW Map (Source: EA)

- 4.16 Neither the Environment Agency nor Gloucester City Council have provided any evidence to suggest that the site has historically flooded from surface water sources.
- 4.17 As such, the risk of surface water flooding to the proposed development could be considered as **very low**.

## Groundwater

- 4.18 The British Geological Survey (BGS) Geology of Britain Viewer indicates that the bedrock underlying the site is of the Charmouth Mudstone Formation, comprised of mudstone. The Magic Maps online resource tool recognises a 'Secondary (Undifferentiated)' aquifer beneath the surface (Figure 12). These are layers that have the potential to support water supplies at a local scale.
- 4.19 The BGS Geology of Britain Viewer indicates that there are 'River Terrace Deposits' underlying the site. These superficial deposits are comprised of clay, silt, sand and gravel. This is not identified as being a superficial aquifer of any sort.
- 4.20 Soil information from the Soilscape website indicates that the soils are loamy and clayey soils with impeded drainage. Soils that are defined as having 'impeded drainage' typically feature a tight and compact subsoil that impedes downward water movement. After heavy rainfall, particularly during the winter, this can result in waterlogging.
- 4.21 Furthermore, the Magic Maps online resource tool demonstrates that the site is located outside of all groundwater source protection zones.

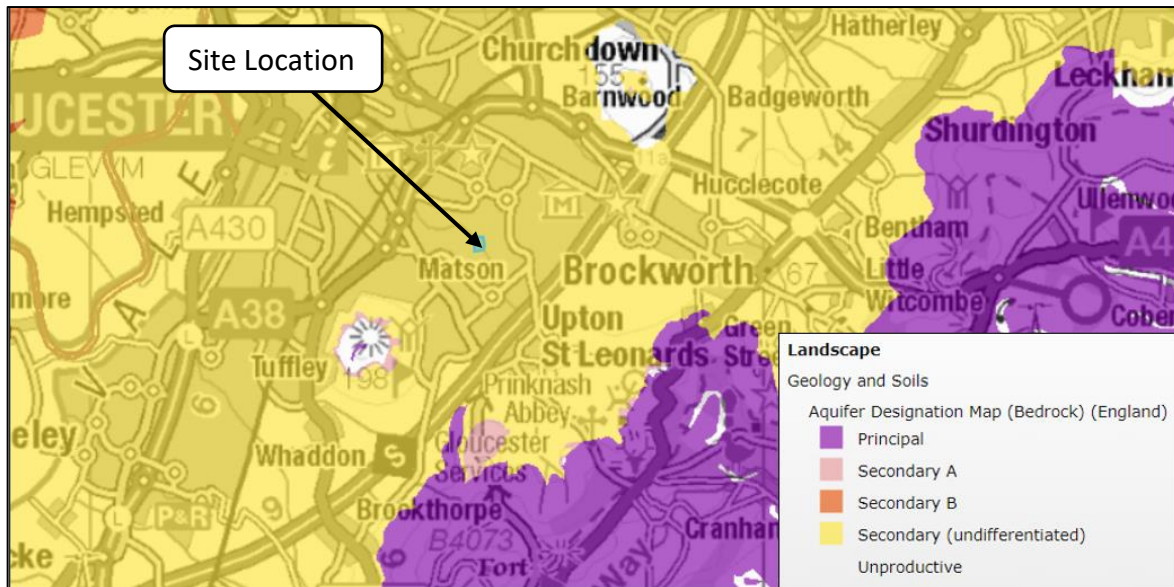


Figure 12 Underlying Bedrock Aquifers. (Source: DEFRA Magic Maps)

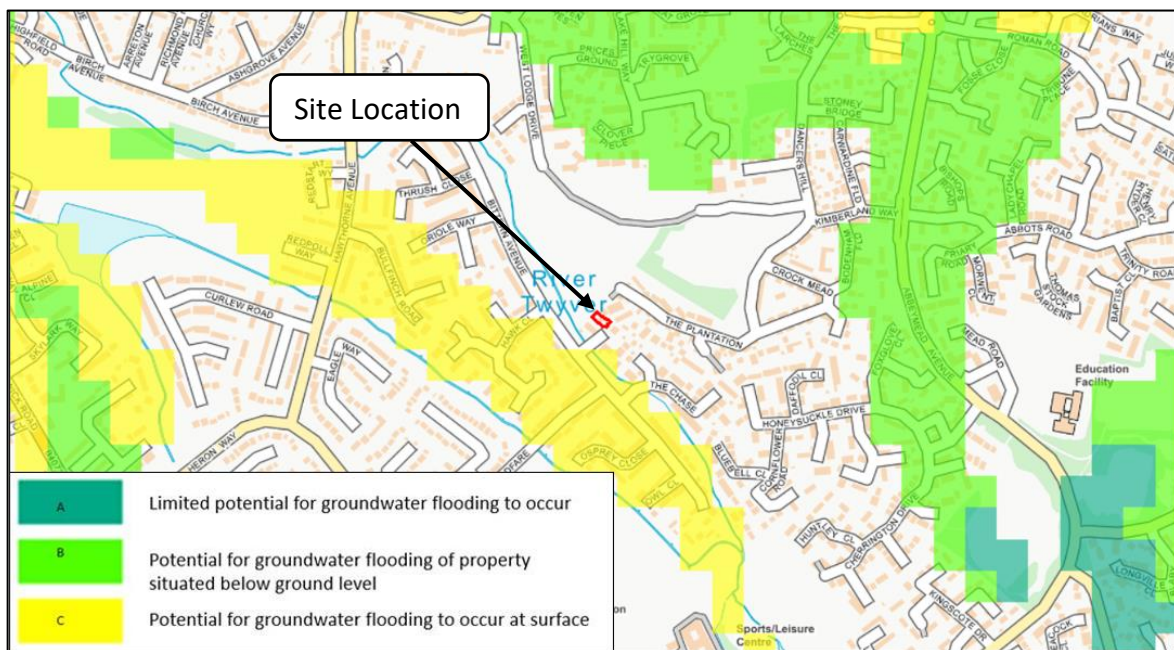


Figure 13 Underlying Bedrock Aquifers. (Source: BGS)

4.22 Neither the Environment Agency nor Gloucester City Council have provided any evidence to suggest that the site has historically flooded from groundwater sources.

4.23 As such, the risk of groundwater flooding to the proposed development could be considered as **relatively low**.

**Sewer**

4.24 Information from the Severn Trent Water DG5 register has been provided to Gloucestershire County Council. The Gloucester City Council SFRA states that there is no sewer data in this area, therefore suggesting that there are no historic records of sewer flooding in the wider area.

- 4.25 Ultimately, no sewer flooding information has been provided by the EA or Gloucester City Council either at the site or within the wider area.
- 4.26 Subsequently, the risk of sewer flooding to the proposed development could be considered **relatively low**.

### Surface Water Drainage Strategy

- 4.27 The existing site currently features a residential dwelling. It is understood that the development is for the erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing residential dwelling. There will subsequently be an increase in built footprint at the site of 18m<sup>2</sup>.
- 4.28 Upon a review of satellite imagery at the site, the extension is to be built over existing permeable land (rear garden). Subsequently, there will be an increase in hardstanding area at the site (of approximately 18m<sup>2</sup>) as a result of the proposed development. This could, in turn, result in an increase in surface water runoff being generated from the site.
- 4.29 It is recommended that the developer looks to install small scale sustainable drainage systems (e.g. water butts) at the site. The purpose of this is to manage surface water runoff rates to no greater than the existing runoff rate and to provide betterment, if possible.

### Records of Historical Flooding

- 4.30 Neither the Environment Agency nor Gloucester City Council have provided any evidence to suggest that the site has historically flooded from fluvial, surface water, groundwater or sewer sources.



## 5. Probability of Flooding

### Flood Zones

- 5.1 According to the EA Flood Map for Planning, the proposed development is located within Flood Zone 2 (medium risk of flooding).
- 5.2 The EA Flood Map for Planning has been produced in part using a relatively coarse, national scale flood modelling strategy, and in part by detailed modelling. It is important to note that only the potential floodplain is modelled; **the mitigating effects of any flood defences currently in place are not considered.** For reference, the definition of the NPPF flood risk zones is included below.

| Zone | Description  |
|------|--|
| 1    | <b>Low Probability.</b> This zone comprises land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (<0.1%).   |
| 2    | <b>Medium Probability.</b> This zone comprises land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% – 0.1%) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0.5% – 0.1%) in any year.   |
| 3a   | <b>High Probability.</b> This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%) or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.  |
| 3b   | <b>The Functional Floodplain.</b> This zone comprises land where water has to flow or be stored in times of flood. SFRA's should identify this Flood Zone (land which would flood with an annual probability of 1 in 20 (5%) or greater in any year or is designed to flood in an extreme (0.1%) flood, or at another probability to be agreed between the LPA and the EA, including water conveyance routes). |

Table 4 Definition of the NPPF Flood Zones. (Source: EA)

### Climate Change on Site

- 5.3 Climate change is likely to increase the flow in rivers, raise sea levels and increase storm intensity. The range of allowances in Table 5 is based on percentiles. A percentile is a measure used in statistics to describe the proportion of possible scenarios that fall below an allowance level. The 50th percentile is the point at which half of the possible scenarios for peak flows fall below it and half fall above it.
- 5.4 The:
- central allowance is based on the 50th percentile
  - higher central is based on the 70th percentile
  - upper end is based on the 90th percentile
- 5.5 So, if the central allowance is 30%, scientific evidence suggests that it is just as likely that the increase in peak river flow will be more than 30%, as less than 30%.
- 5.6 At the higher central allowance 70% of the possible scenarios fall below this value. So, if the higher allowance is 40%, then current scientific evidence suggests that there is a 70% chance that peak flows will increase by less than this value, but there remains a 30% chance that peak flows will increase by more (Source: EA).

5.7 The risk of flooding to the site would, therefore, be expected to increase following the effects of climate change. The likely increases in peak rainfall intensity would also lead to an increased risk of surface water flooding. The increase in river flows for the Severn basin has been provided below in Table 6.

| Flood Zone | Essential Infrastructure | Highly Vulnerable            | More Vulnerable              | Less Vulnerable            | Water Compatible |
|------------|--------------------------|------------------------------|------------------------------|----------------------------|------------------|
| 1          | Central                  | Central                      | Central                      | Central                    | None             |
| 2          | Upper End                | Higher Central and Upper End | Higher Central and Upper End | Central and Higher Central | Central          |
| 3a         | Upper End                | Development Not Permitted    | Higher Central and Upper End | Central and Higher Central | Central          |
| 3b         | Upper End                | Development Not Permitted    | Development Not Permitted    | Development Not Permitted  | Central          |

Table 5: Allowance and Flood Zone Table (Source EA, incorporating Dec 2019 updates)

| Allowance category | Total potential change anticipated for the 2020's (2015 to 2039) | Total potential change anticipated for the 2050's (2040 to 2069) | Total potential change anticipated for the 2080's (2070 to 2115) |
|--------------------|--|--|--|
| Upper end          | 25%  | 40%  | 70%  |
| Higher central     | 15%  | 25%  | 35%  |
| Central            | 10%  | 20%  | 25%  |

Table 6: Peak river flow allowances for the Severn River Basin district (Source EA)

- 5.8 It is understood that the development is for the erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing residential dwelling.
- 5.9 The proposed development is therefore classified as 'More Vulnerable' (residential use) and is located within Flood Zone 2.
- 5.10 With reference to Table 5, the 'Higher Central' and 'Upper End' climate change allowances are to be considered. These equate to an increase in peak flows of +35% and +70% respectively (Table 6).
- 5.11 At the time of writing, no data has been provided by the Environment Agency. Ambiental have subsequently assessed the Gloucestershire County Council Flood Zone online flood zone mapping tool. This provides flood extents for Flood Zone 3b, Flood Zone 3a, Flood Zone 3a CC (accounting for climate change) and Flood Zone 2.
- 5.12 The site and proposed development are shown to be located outside of the extents of Flood Zone 3b, Flood Zone 3a and Flood Zone 3a CC (accounting for the impacts of climate change).
- 5.13 No information has been provided with regards to the modelling techniques that have been used to derive these flood extents and the date which the flood extents were produced. Therefore, it is unknown if the

Flood Zone 3a CC takes into consideration the latest EA climate change allowances on a regional basis, as opposed to the national +20% increase in peak flows that was used prior to February 2016.

5.14 Given the proposed development is for a household extension to provide greater habitable space to the existing dwelling, the proposed development could be considered a minor development.

5.15 With reference to the Environment Agency's Standing Advice for Minor Developments, it is recommended that Finished Floor Levels of the proposed extension are set no lower than existing ground floor levels.

5.16 Furthermore, Paragraph 047 of the Planning Practice Guidance (PPG) states that:

*"Minor developments are unlikely to raise significant flood risk issues unless:*

- *They would have an adverse effect on a watercourse, floodplain or its flood defences;*
- *They would impede access to flood defence and management facilities, or;*
- *Where the cumulative impact of such development would have a significant effect on local flood storage capacity or flood flows."*

5.17 Subsequently, it could be argued that any displacement of floodwater, as a result of the proposed development, could be considered negligible.

## 6. Residual Risks

### Identification of Residual Risks

6.1 Residual risks are those remaining after applying the sequential approach to the location of development and taking mitigating actions. Examples of residual flood risk include:

- the failure of flood management infrastructure such as a breach of a raised flood defence, blockage of a surface water conveyance system, overtopping of an upstream storage area, or failure of a pumped drainage system;
- failure of a reservoir, or;
- a severe flood event that exceeds a flood management design standard, such as a flood that overtops a raised flood defence, or an intense rainfall event which the drainage system cannot cope with.

### Defence Breach

6.2 The EA have not provided evidence to suggest that the site benefits from the presence of fluvial flood defences. Furthermore, the EA Flood Map for Planning indicates that the proposed development site is located not in an area that benefits from defences. As such there is no residual risk of defence failure.

### Reservoir Failure

6.3 The EA Risk from Reservoir Flooding Map demonstrates that the site is outside flood extents in the event of reservoir flooding.

### Drainage Exceedance

6.4 In the event of drainage exceedance/failure, overland flows will be dictated by external topography. The proposed development is for an extension of the existing dwelling. Topographic levels in the wider area are shown to fall towards the River Twyver. Subsequently, flows during a drainage exceedance event would be directed away from the site. The existing finished floor levels are set approximately 150mm above the surrounding ground level. To comply with the EA Standing Advice for Minor Developments, the extension is to feature floor levels that are set no lower than existing ground floor levels. Subsequently, this would provide additional mitigation during a drainage exceedance event.

## 7. Flood Risk Management Measures

### Flood Risks

- 7.1 With reference to the Environment Agency (EA) Flood Map for Planning, the redline site boundary is largely located in Flood Zone 2. A small proportion of the site is located in Flood Zone 1. The whole of the proposed extension is located in Flood Zone 2.
- 7.2 The existing site currently features a residential dwelling. It is understood that the development is for the erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing residential dwelling.
- 7.3 Given the proposed development is for a household extension to provide greater habitable space to the existing dwelling, the proposed development could be considered a minor development. Subsequently, under the NPPF, the proposed development would not be subject to first passing the Exception Test or Sequential Test.
- 7.4 With reference to the Environment Agency's Standing Advice for Minor Developments, it is recommended that Finished Floor Levels of the proposed extension are set no lower than existing ground floor levels.
- 7.5 Furthermore, in accordance with Paragraph 047 of the Planning Practice Guidance (PPG), it could be argued that any displacement of floodwater, as a result of the proposed development, could be considered negligible.
- 7.6 Ambiental have assessed the EA Risk of Flooding from Surface Water (RoFSW) dataset. The site is shown to be located in an area that remains unaffected from surface water flooding for the 1 in 30 year, 1 in 100 year and 1 in 1,000 year rainfall events. Subsequently, the risk of surface water flooding to the proposed development could be considered **very low**.
- 7.7 Following the review of the Gloucester City Council SFRA, British Geological Survey data and information provided within Severn Trent Water's DG5 register, the risk of groundwater and sewer flooding at the site could also be considered **relatively low**.
- 7.8 The proposed development is for a 3m x 6m single storey rear extension. There will subsequently be an increase in built footprint at the site of 18m<sup>2</sup>. Upon a review of satellite imagery at the site, the extension is to be built over existing permeable land (rear garden). Subsequently, there will be an increase in hardstanding area at the site (of approximately 18m<sup>2</sup>) as a result of the proposed development. This could, in turn, result in an increase in surface water runoff being generated from the site.
- 7.9 It is recommended that the developer looks to install small scale sustainable drainage systems (e.g. water butts) at the site. The purpose of this is to manage surface water runoff rates to no greater than the existing runoff rate and to provide betterment, if possible.

### Flood Warning Service

- 7.10 The proposed development site is located outside of both the EA Flood Alert and EA Flood Warning Service Areas. Should either of these services become available at the site, it is recommended that site users sign up to these services.
- 7.11 The EA operates a 24-hour telephone service on 0345 988 1188 that provides frequently updated flood warnings and associated floodplain information. Further information can be found on [www.environment-agency.gov.uk/floodline](http://www.environment-agency.gov.uk/floodline). Floodline Warnings Direct is a free service operated by the EA that provides flood warnings direct to occupants by telephone, mobile phone, fax or pager.

- 7.12 If flood waters at the site exceed 25cm, site users are advised, if possible, to seek refuge at upper floor levels whilst they await assistance from the emergency services.

## 8. Off Site Impacts

### Impact to Flood Risk Elsewhere

- 8.1 With reference to the Environment Agency (EA) Flood Map for Planning, the redline site boundary is largely located in Flood Zone 2. A small proportion of the site is located in Flood Zone 1. The whole of the proposed extension is located in Flood Zone 2.
- 8.2 It is understood that the development is for the erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing residential dwelling.
- 8.3 Ambiental have assessed the Gloucestershire County Council Flood Zone online flood zone mapping tool. This provides flood extents for Flood Zone 3b, Flood Zone 3a, Flood Zone 3a CC (accounting for climate change) and Flood Zone 2.
- 8.4 The site and proposed development are shown to be located outside of the extents of Flood Zone 3b, Flood Zone 3a and Flood Zone 3a CC (accounting for the impacts of climate change). Subsequently the proposed development could be considered safe for its lifetime. Any flood water displacement as a result of the proposed development could be considered to be negligible.
- 8.5 Furthermore, given the proposed development is for a household extension to provide greater habitable space to the existing dwelling, the proposed development could be considered a minor development.
- 8.6 Paragraph 047 of the Planning Practice Guidance (PPG) states that:
- “Minor developments are unlikely to raise significant flood risk issues unless:*
- *They would have an adverse effect on a watercourse, floodplain or its flood defences;*
  - *They would impede access to flood defence and management facilities, or;*
  - *Where the cumulative impact of such development would have a significant effect on local flood storage capacity or flood flows.”*
- 8.7 It could therefore be argued that any displacement of floodwater, as a result of the proposed development, could be considered negligible.

### Generation of Runoff

- 8.8 The existing site currently features a residential dwelling. It is understood that the development is for the erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing residential dwelling. There will subsequently be an increase in built footprint at the site of 18m<sup>2</sup>.
- 8.9 Upon a review of satellite imagery at the site, the extension is to be built over existing permeable land (rear garden). Subsequently, there will be an increase in hardstanding area at the site (of approximately 18m<sup>2</sup>) as a result of the proposed development. This could, in turn, result in an increase in surface water runoff being generated from the site.
- 8.10 It is recommended that the developer looks to install small scale sustainable drainage systems (e.g. water butts) at the site. The purpose of this is to manage surface water runoff rates to no greater than the existing runoff rate and to provide betterment, if possible.

## 9. Conclusion

- 9.1 Ambiental Environmental Assessment has been appointed by JS Architectural Services to undertake a National Planning Policy Framework (NPPF) compliant Flood Risk Assessment (FRA) for the proposed development at 3 The Malverns, Abbeydale, Gloucester, Gloucestershire, GL4 4WN.
- 9.2 The existing site currently features a residential dwelling. It is understood that the development is for the erection of a 3m x 6m single storey rear extension to provide greater habitable space to the existing residential dwelling.
- 9.3 With reference to the Environment Agency (EA) Flood Map for Planning, the redline site boundary is largely located in Flood Zone 2. A small proportion of the site is located in Flood Zone 1. The whole of the proposed extension is located in Flood Zone 2. The nearest watercourse to the site is the River Twyver, which is an EA Main River located approximately 35m southwest of the site.
- 9.4 The site features a dwelling as existing and would subsequently be classified as 'More Vulnerable' under the NPPF vulnerability classification guidelines. The proposed development is for a single storey rear extension and subsequently there will be no change in vulnerability at the site post-development.
- 9.5 Given the proposed development is for a household extension to provide greater habitable space to the existing dwelling, the proposed development could be considered a minor development. Subsequently, under the NPPF, the proposed development would not be subject to first passing the Exception Test or Sequential Test.
- 9.6 With reference to the Environment Agency's Standing Advice for Minor Developments, it is recommended that Finished Floor Levels of the proposed extension are set no lower than existing ground floor levels.
- 9.7 Furthermore, Paragraph 047 of the Planning Practice Guidance (PPG) states that:
- "Minor developments are unlikely to raise significant flood risk issues unless:*
- *They would have an adverse effect on a watercourse, floodplain or its flood defences;*
  - *They would impede access to flood defence and management facilities, or;*
  - *Where the cumulative impact of such development would have a significant effect on local flood storage capacity or flood flows."*
- 9.8 Subsequently, it could be argued that any displacement of floodwater, as a result of the proposed development, could be considered negligible.
- 9.9 Ambiental have assessed the EA Risk of Flooding from Surface Water (RoFSW) dataset. The site is shown to be located in an area that remains unaffected from surface water flooding for the 1 in 30 year, 1 in 100 year and 1 in 1,000 year rainfall events. Subsequently, the risk of surface water flooding to the proposed development could be considered **very low**.
- 9.10 Following the review of the Gloucester City Council SFRA, British Geological Survey data and information provided within Severn Trent Water's DG5 register, the risk of groundwater and sewer flooding at the site could also be considered **relatively low**.
- 9.11 The proposed development is for a 3m x 6m single storey rear extension. There will subsequently be an increase in built footprint at the site of 18m<sup>2</sup>. Upon a review of satellite imagery at the site, the extension is to be built over existing permeable land (rear garden). Subsequently, there will be an increase in



hardstanding area at the site (of approximately 18m<sup>2</sup>) as a result of the proposed development. This could, in turn, result in an increase in surface water runoff being generated from the site.

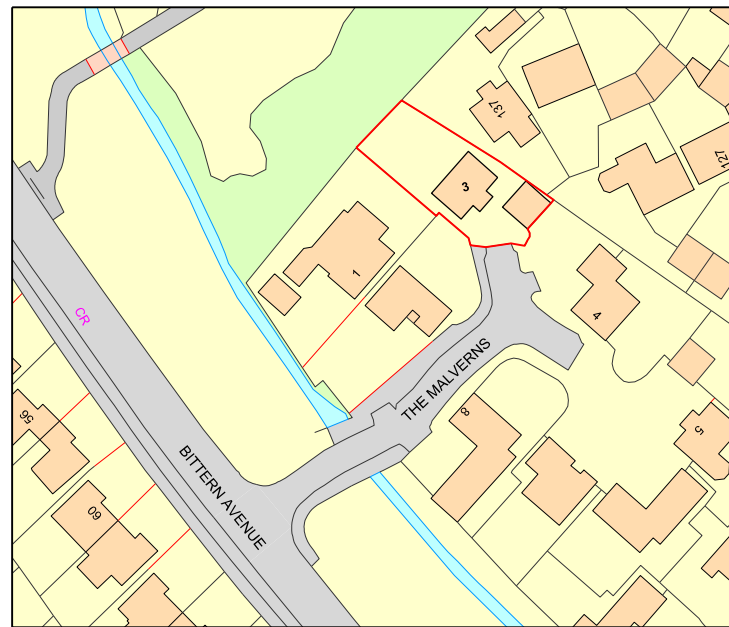
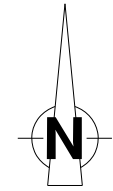
9.12 It is recommended that the developer looks to install small scale sustainable drainage systems (e.g. water butts) at the site. The purpose of this is to manage surface water runoff rates to no greater than the existing runoff rate and to provide betterment, if possible.

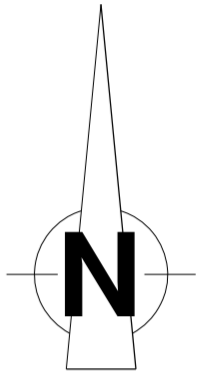
9.13 As such and given that:

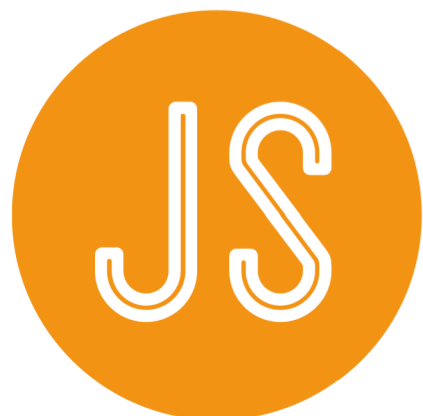
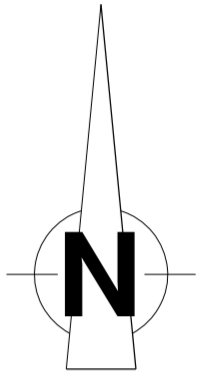
- The proposals are for the erection of a 3m x 6m single storey rear extension;
- The proposed development is located wholly in Flood Zone 2 (medium risk). It is recommended that Finished Floor Levels in the extension are set no lower than existing ground floor levels to comply with the EA Standing Advice for Minor Developments;
- The site and proposed development are at very low risk of surface water flooding;
- The site and proposed development are at relatively low risk of groundwater and sewer flooding;
- It is recommended that small scale sustainable drainage systems are introduced at the site to manage surface water runoff discharge rates to no greater than the existing runoff rate. If possible, betterment should be provided over the existing situation;
- Internal safe refuge could be provided at upper floor levels to provide a safe place of refuge, should a flood event occur.

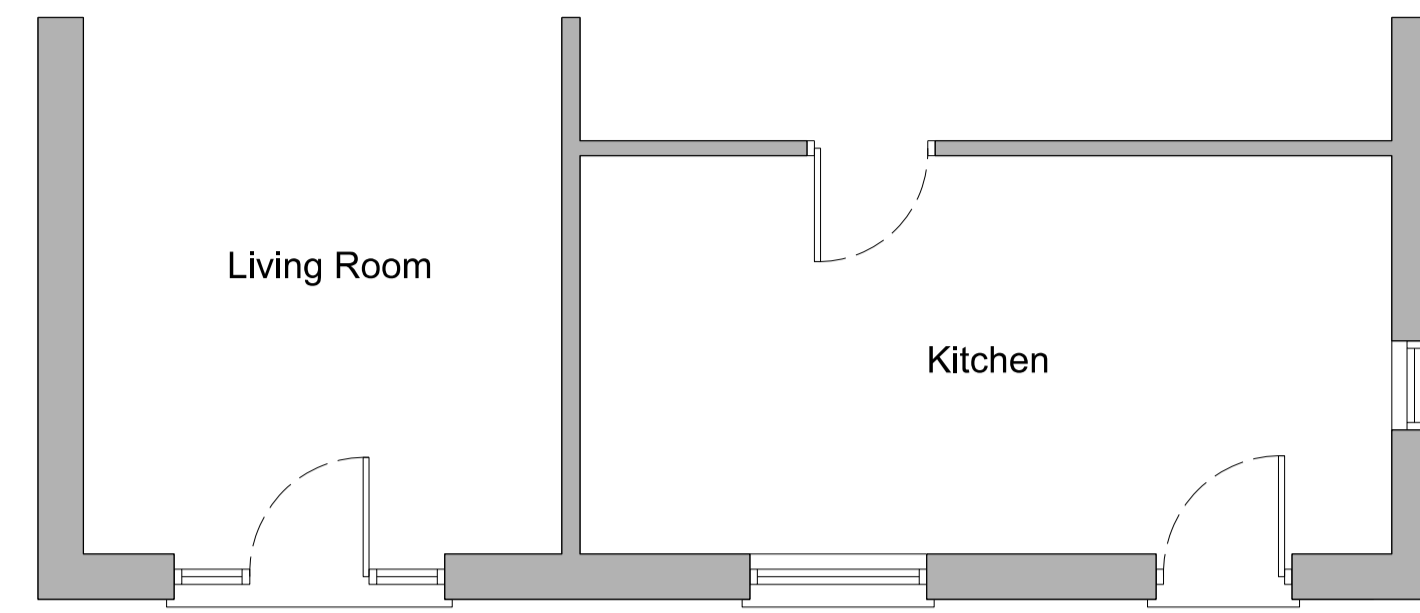
Following the guidelines contained within the NPPF, the proposed development is considered to be suitable assuming appropriate mitigation (including adequate warning procedures) can be maintained for the lifetime of the development.

## Appendix I - Site Plans

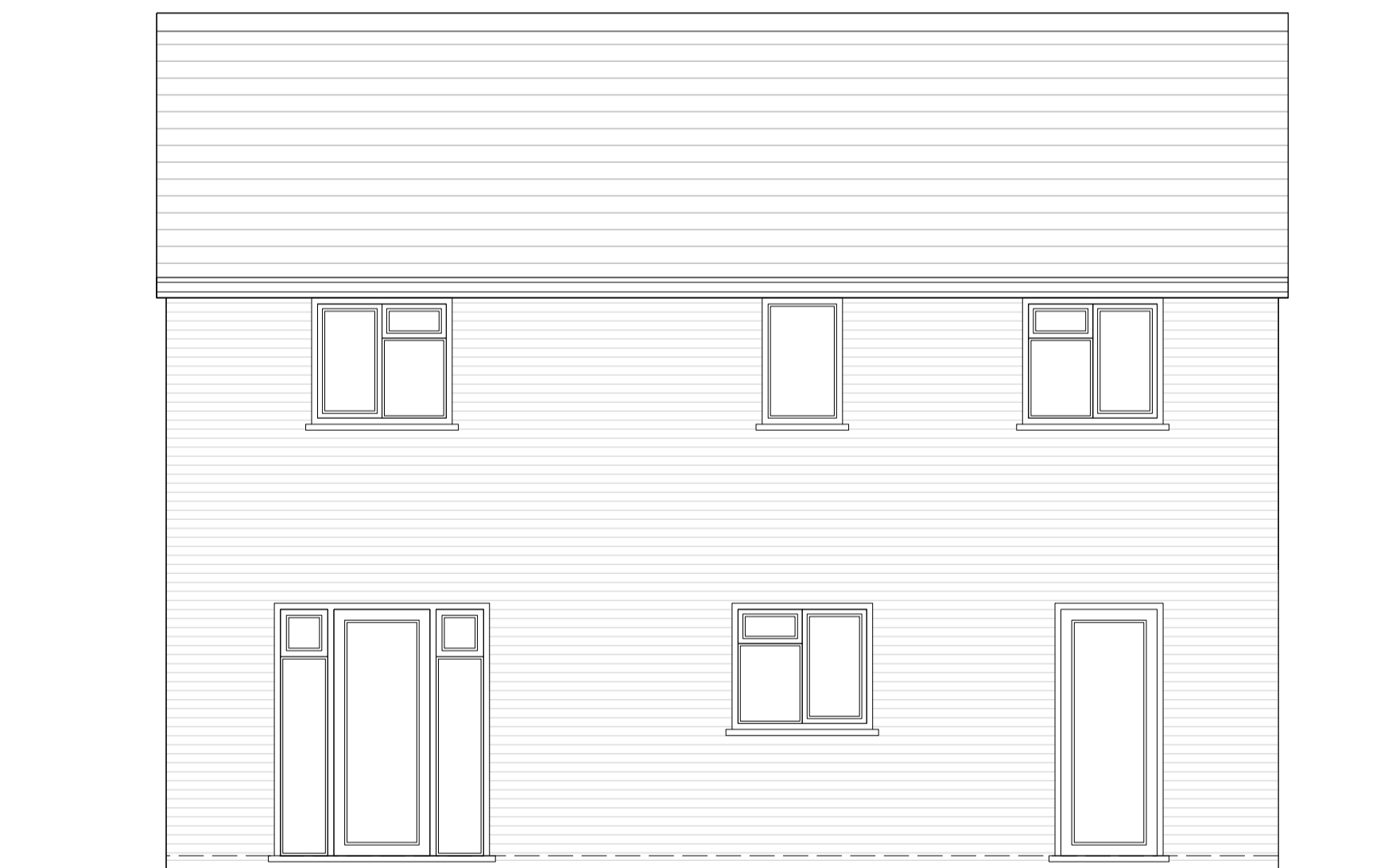




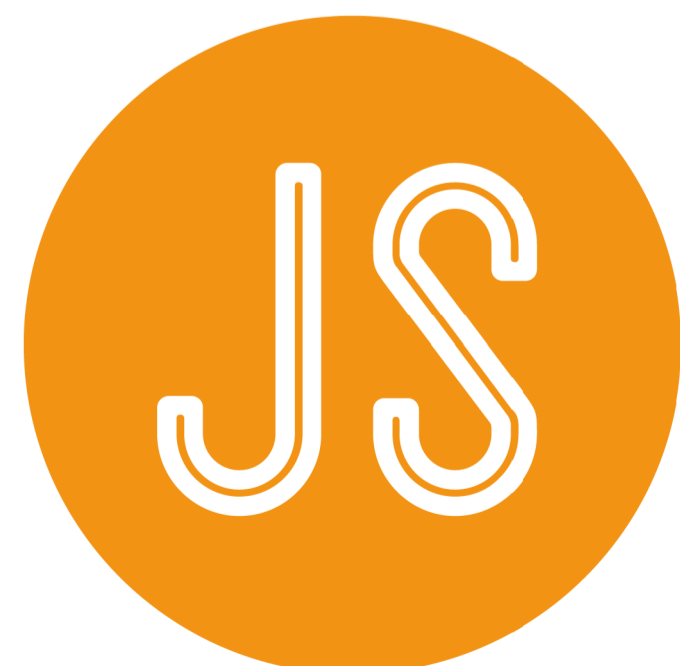




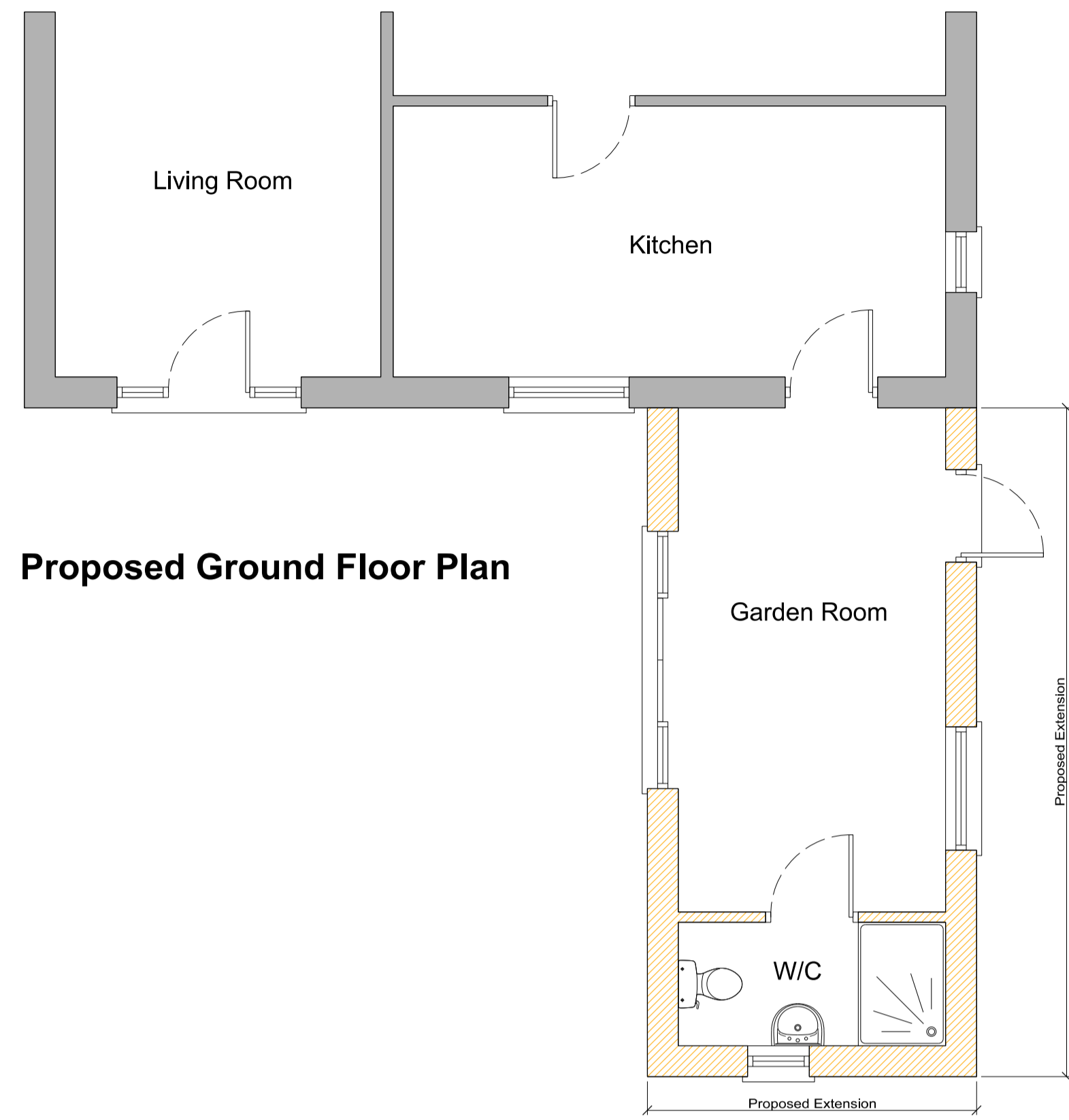
**Existing Ground Floor Plan**



**Existing Rear Elevation**



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CHECK PRINTED SIZE



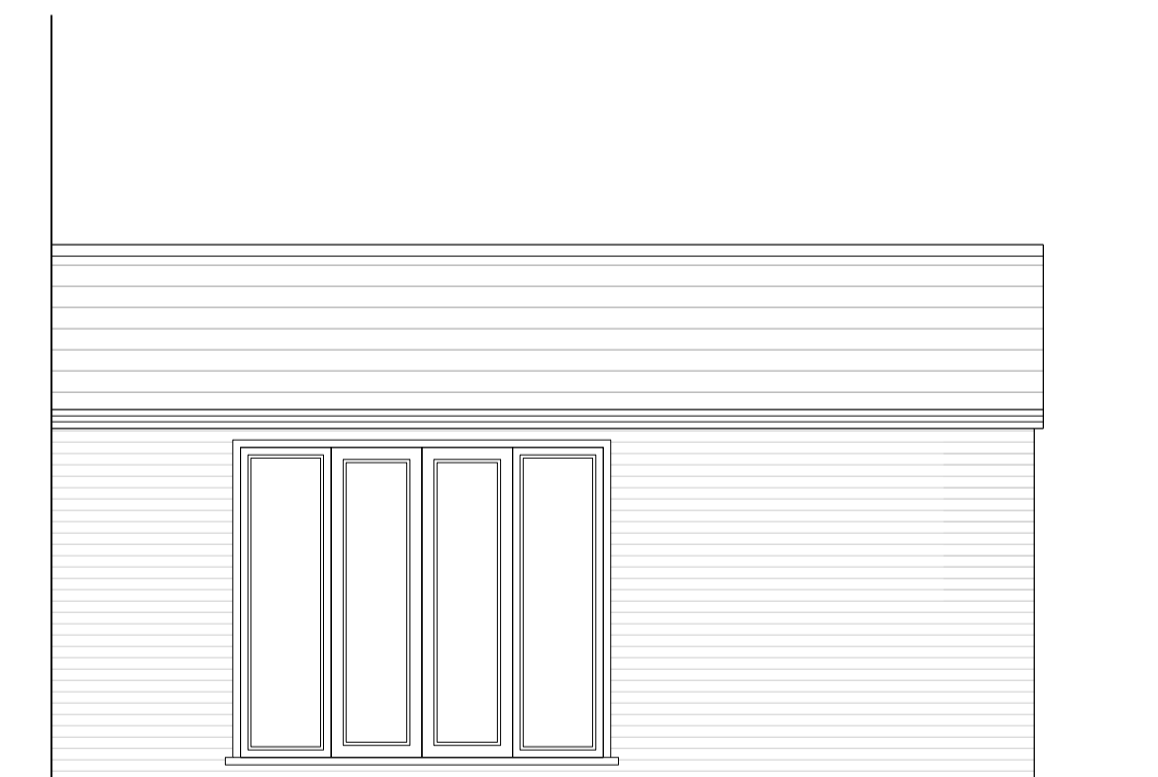
**Proposed Ground Floor Plan**



**Proposed Rear Elevation**



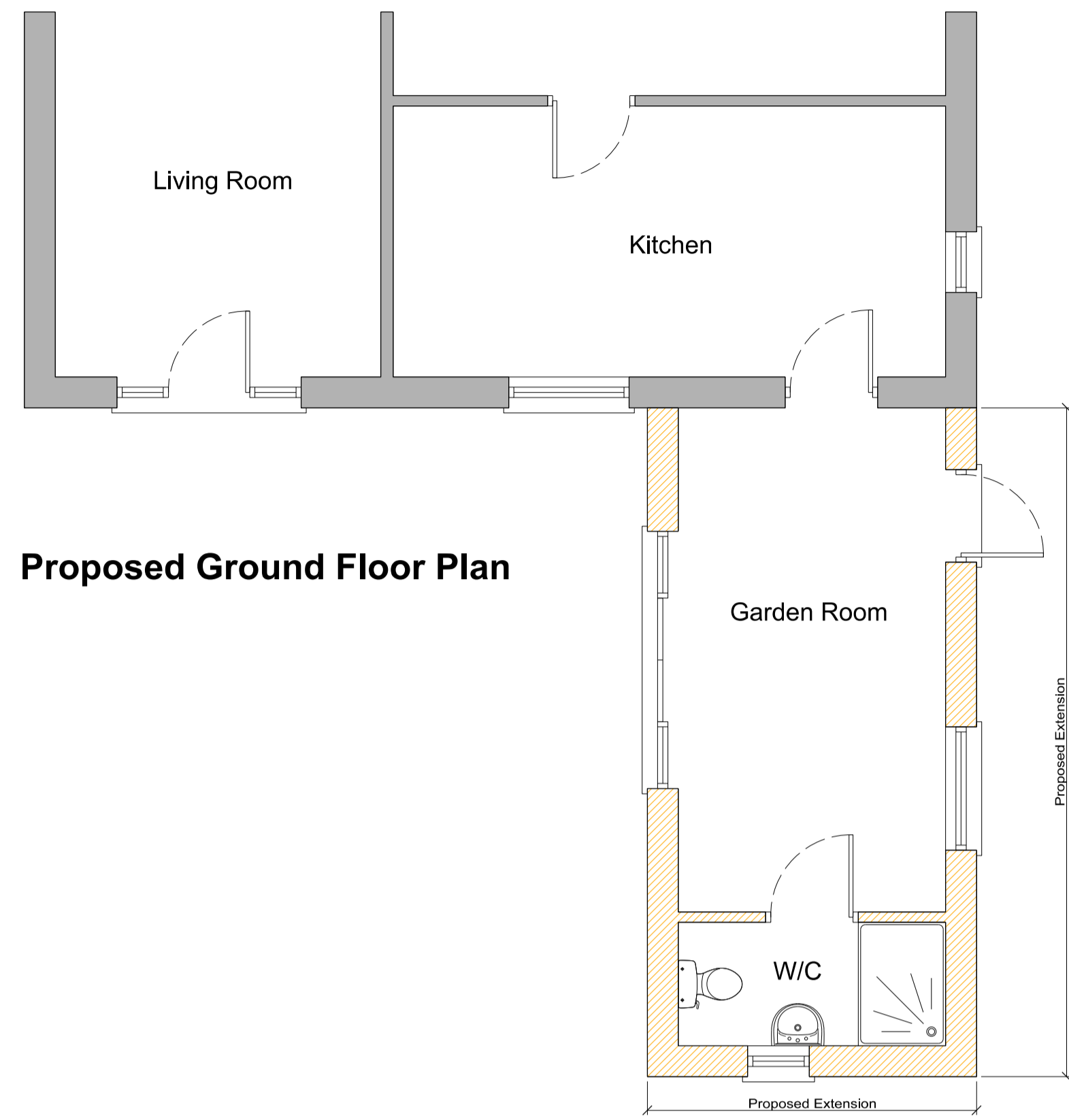
**Proposed Side Elevation**



**Proposed Side Elevation**



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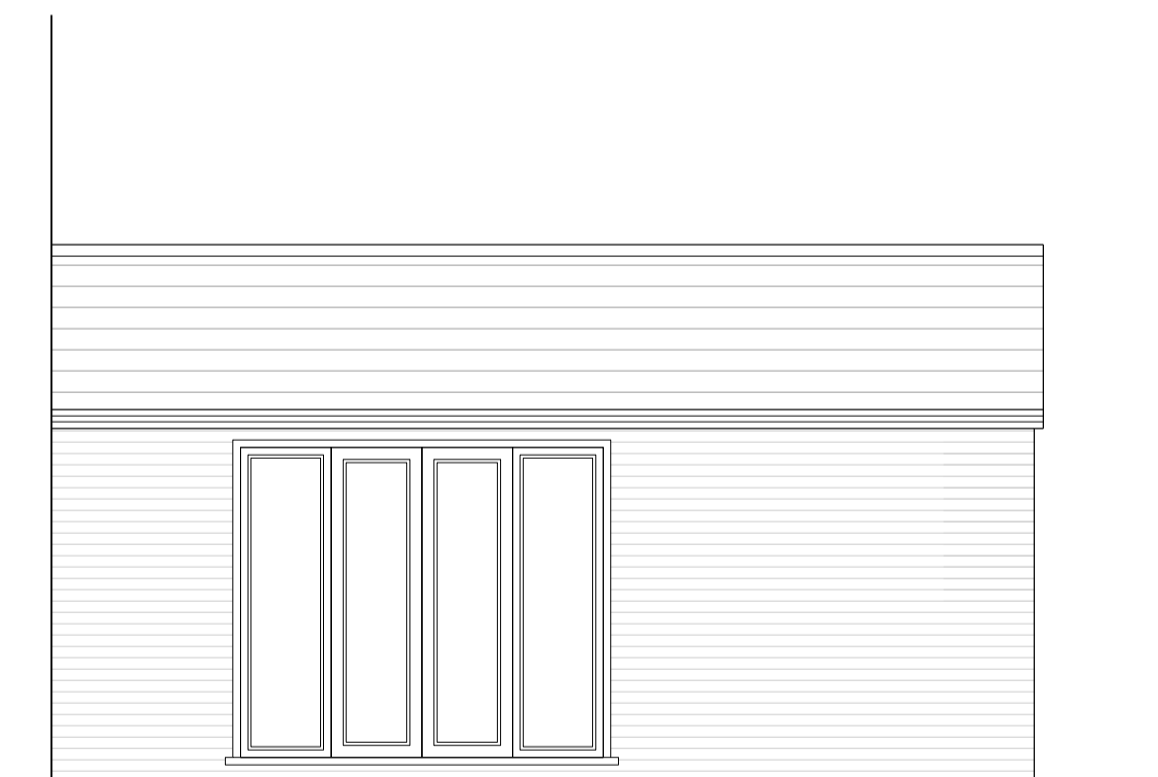
**Proposed Ground Floor Plan**



**Proposed Rear Elevation**



**Proposed Side Elevation**



**Proposed Side Elevation**

