

# Flood Risk Assessment

Development at  
20-22 Beeches Road, Cirencester, Gloucestershire, GL7 1BW



On behalf of  
Rob Walsh

Date: 11<sup>th</sup> February 2024

Reference: WTFR-FRA-2024/01/Q27

WTFR-FRA-2024/01/Q27

Issue sheet

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<b>1. Introduction</b>	1
<b>2. Site Description</b>	1
<b>3. Flood Risk Assessment</b>	3
3.1 National Planning Policy	3
3.2 Local Planning Policy	4
3.3 Flood Risk Zones, Vulnerability and Classification	4
<b>4. Sources of flooding</b>	8
4.1 Fluvial/Tidal	8
4.2 Surface Water Flooding	9
4.3 Historic Flooding	9
4.4 Reservoir	10
4.5 Groundwater	11
4.6 Geology	12
<b>5. Proposed development</b>	13
<b>6. Surface Water Drainage</b>	14
<b>7. Hierarchy of disposing surface water</b>	15
7.1 Infiltration	15
7.2 Surface Water Body	15
7.3 Surface Water or Combined Sewer	15
<b>8. Use of SuDS</b>	15
<b>9. Management of flood risk</b>	16
9.1 Fluvial	16
9.2 Surface Water	16
9.3 Safe access and egress	17
9.4 Flood Resistance and Resilience Measures	17
9.5 Flood plan	18
<b>10. Conclusions</b>	20

## 1. Introduction

WtFR Ltd has been commissioned by Rob Walsh to undertake a Flood Risk Assessment (FRA) in connection with the planning application for the proposed development at 20-22 Beeches Road, Cirencester, Gloucestershire, GL7 1BW.

This FRA has been produced to demonstrate how risks from all sources of flooding to the site and flood risk to others from the development will be managed, in order to satisfy the requirements set out in the National Planning Policy Framework (NPPF).

A full assessment of the flood risk to the site and consideration of the surface water management as a result of the development has been considered as part of this analysis.

Data has been gathered from a number of other sources including: the Environment Agency (EA), the British Geological Society (BGS), National Soil Research Institute (NSRI), aerial photographs, Ordnance Survey (OS), commercially available historical mapping and relevant strategic documents developed by Cotswold District Council and Gloucestershire Council, in their capacity as both the Local Planning Authority and Lead Local Flood Authority.

## 2. Site Description

Area Size: 250m<sup>2</sup> (total) 150m<sup>2</sup> (impermeable)

Grid reference: SP 02922 01849

The proposals are for the demolition of the existing conservatory and the construction of a two-storey extension to existing dwelling at 20-22 Beeches Road, Cirencester, Gloucestershire, GL7 1BW.

Figures 1 and 2 below show location details of the development site. Figure 3 shows an aerial photograph of the development site.

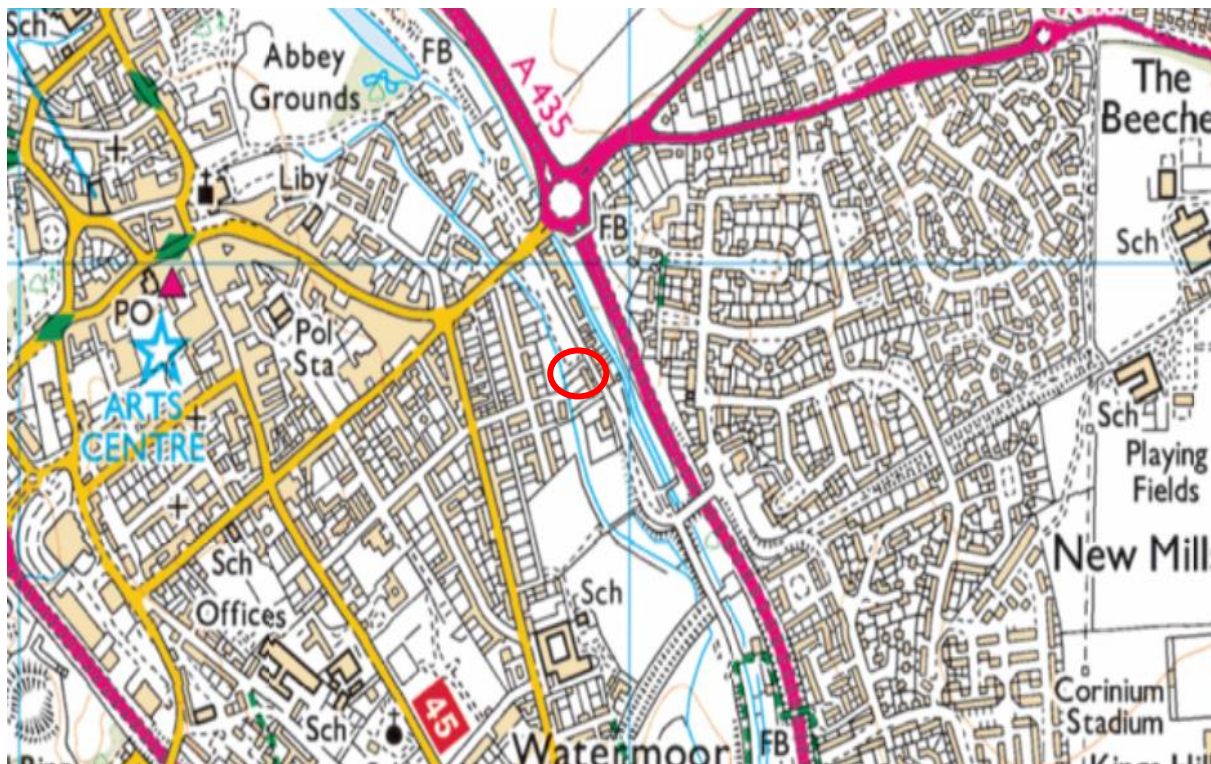


Figure 1 – Location of the site, highlighted.



WTFR-FRA-2024/01/O27



Figure 2 – detailed location of the development site, highlighted.



Figure 3 – aerial photograph of the development site.

### **3. Flood Risk Assessment**

#### **3.1 National Planning Policy**

Paragraph 173 of the NPPF states “When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment<sup>59</sup>. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (the sequential and exception tests, as applicable) it can be demonstrated that:

- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
- b) the development is appropriately flood resistant and resilient;
- c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;
- d) any residual risk can be safely managed; and
- e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan”.

Footnote 59 states “A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use”.

Furthermore paragraph 30 of the Planning Practice Guide on Flood Risk and Climate Change states “A site-specific flood risk assessment is carried out by (or on behalf of) a developer to assess the flood risk to and from a development site. Where necessary, the assessment should accompany a planning application submitted to the local planning authority. The assessment should demonstrate to the decision-maker how flood risk will be managed now and over the development’s lifetime, taking climate change into account, and with regard to the vulnerability of its users.

The objectives of a site-specific flood risk assessment are to establish:

- whether a proposed development is likely to be affected by current or future flooding from any source;
- whether it will increase flood risk elsewhere;
- whether the measures proposed to deal with these effects and risks are appropriate;
- evidence for the local planning authority to apply (necessary) the Sequential Test, and;
- whether the development will be safe and pass the Exception Test, if applicable”.

Continuing paragraph 31 of the Planning Practice Guidance quotes “The information provided in the flood risk assessment should be credible and fit for purpose. Site-specific flood risk assessments should always be proportionate to the degree of flood risk and make optimum use of information already available, including information in a Strategic Flood Risk Assessment for the area, and the interactive flood risk maps available on the Environment Agency’s web site.

WTFR-FRA-2024/01/Q27

A flood risk assessment should also be appropriate to the scale, nature and location of the development. For example, where the development is an extension to an existing house (for which planning permission is required) which would not significantly increase the number of people present in an area at risk of flooding, the local planning authority would generally need a less detailed assessment to be able to reach an informed decision on the planning application. For a new development comprising a greater number of houses in a similar location, or one where the flood risk is greater, the local planning authority would need a more detailed assessment”.

### 3.2 Local Planning Policy

Local Authorities consider flood risk through relevant environmental and climate change policies which enforce the requirements of the NPPF. Relevant local policy, as outlined by Cotswold District Council and Gloucestershire Council, is contained within the;

- i) Strategic Flood Risk Assessment
- ii) Local Flood Risk Management Strategy

The Strategic Flood Risk Assessment (SFRA) and the Local Flood Risk Management Strategy (LFRMS) are key sources of flood risk specific information for the area. The SFRA provides a more detailed review of flood risks and recommendations for ensuring developments can be constructed and operated safely in accordance with the NPPF.

### 3.3 Flood Risk Zones, Vulnerability and Classification

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency’s Flood Map for Planning available on the Environment Agency’s web site, as indicated in the table below.

*Table 1 – Flood Zones*

<b>Flood Zone</b>	<b>Definition</b>
Zone 1 <i>Low Probability</i>	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 <i>Medium Probability</i>	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or Land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a <i>High Probability</i>	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b <i>The Functional Floodplain</i>	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Table 2 – Flood Risk Vulnerability Classification

<p><b>Essential Infrastructure</b></p> <ul style="list-style-type: none"> <li>• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.</li> <li>• Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.</li> <li>• Wind turbines.</li> </ul>
<p><b>Highly Vulnerable</b></p> <ul style="list-style-type: none"> <li>• Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.</li> <li>• Emergency dispersal points.</li> <li>• Basement dwellings.</li> <li>• Caravans, mobile homes and park homes intended for permanent residential use.</li> <li>• Installations requiring hazardous substances consent (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').</li> </ul>
<p><b>More Vulnerable</b></p> <ul style="list-style-type: none"> <li>• Hospitals</li> <li>• Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.</li> <li>• Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.</li> <li>• Non-residential uses for health services, nurseries and educational establishments.</li> <li>• Landfill* and sites used for waste management facilities for hazardous waste.</li> <li>• Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.</li> </ul>
<p><b>Less Vulnerable</b></p> <ul style="list-style-type: none"> <li>• Police, ambulance and fire stations which are <b>not</b> required to be operational during flooding.</li> <li>• Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'More Vulnerable' class; and assembly and leisure.</li> <li>• Land and buildings used for agriculture and forestry.</li> <li>• Waste treatment (except landfill* and hazardous waste facilities).</li> <li>• Minerals working and processing (except for sand and gravel working).</li> <li>• Water treatment works which do not need to remain operational during times of flood.</li> <li>• Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.</li> </ul>
<p><b>Water Compatible Development</b></p>



WTFR-FRA-2024/01/Q27

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

\* Landfill as defined in Schedule 10 to the Environmental Permitting (England and Wales) Regulations 2010.

Table 3 - Flood risk vulnerability and flood zone 'compatibility'

Flood Zones	Flood Risk Vulnerability Classification				
	Essential Infrastructure	Highly Vulnerable	More Vulnerable	Less Vulnerable	Water Compatible
<b>Zone 1</b>	✓	✓	✓	✓	✓
<b>Zone 2</b>	✓	Exception Test required	✓	✓	✓
<b>Zone 3a†</b>	Exception Test required†	✗	Exception Test required	✓	✓
<b>Zone 3b*</b>	Exception Test required*	✗	✗	✗	✓*

**Key:**

- ✓ Development is appropriate
- ✗ Development should not be permitted.

Notes to table 3:

- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;

WTFR-FRA-2024/01/Q27

- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

\* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

### **Minor development in context of Planning Practice Guidance**

Section 17 of the Planning Practice Guidance for Flood Risk and Coastal Change states:

Minor development means:

- minor non-residential extensions: industrial/commercial/leisure etc. extensions with a footprint less than 250 square metres.
- alterations: development that does not increase the size of buildings e.g. alterations to external appearance.
- householder development: For example; sheds, garages, games rooms etc. within the curtilage of the existing dwelling, in addition to physical extensions to the existing dwelling itself. This definition excludes any proposed development that would create a separate dwelling within the curtilage of the existing dwelling e.g. subdivision of houses into flats.

Furthermore section 18 of the Planning Practice Guidance for Flood Risk and Coastal Change looks at whether minor developments likely to raise flood risk issues. It states:

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 developments would have a significant effect on local flood storage capacity or flood flows.

The Environment Agency's advice on flood risk assessment is helpful for ensuring extensions or alterations are designed and constructed to conform to any flood protection already incorporated in the property and include flood resilience measures in the design.

The Environment Agency's advice for minor developments – household extensions is to ensure floor levels are either no lower than existing floor levels or 300 millimetres (mm) above the estimated flood level. If floor levels are not going to be 300mm above existing flood levels, the local planning authority may require flood resistance and resilience measures to be included within the proposals.

WTFR-FRA-2024/01/Q27

## 4. Sources of flooding

### 4.1 Fluvial/Tidal

The Environment Agency's Flood Map for Planning (Rivers and Sea) identifies fluvial and tidal flood zones, and provides an indication of whether or not these zones are protected, due to the presence of flood defences (also highlighted). Figure 4, below, presents the Flood Map for the surrounding area.

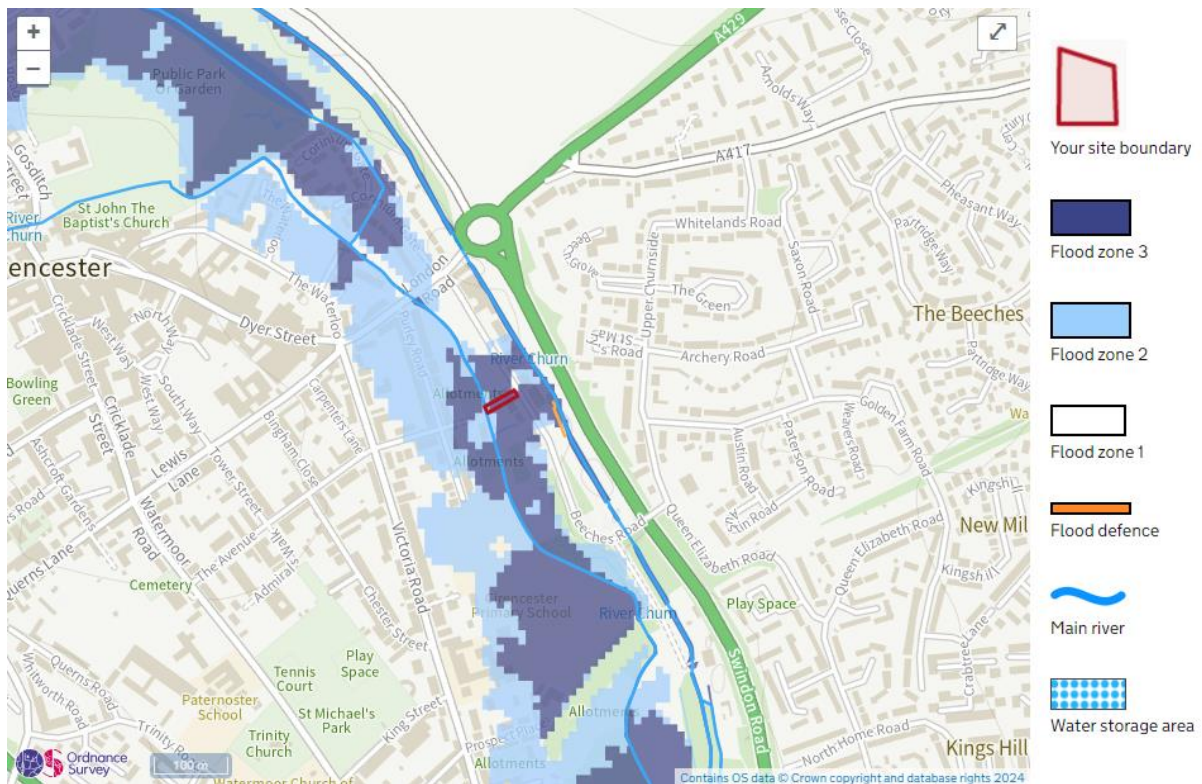


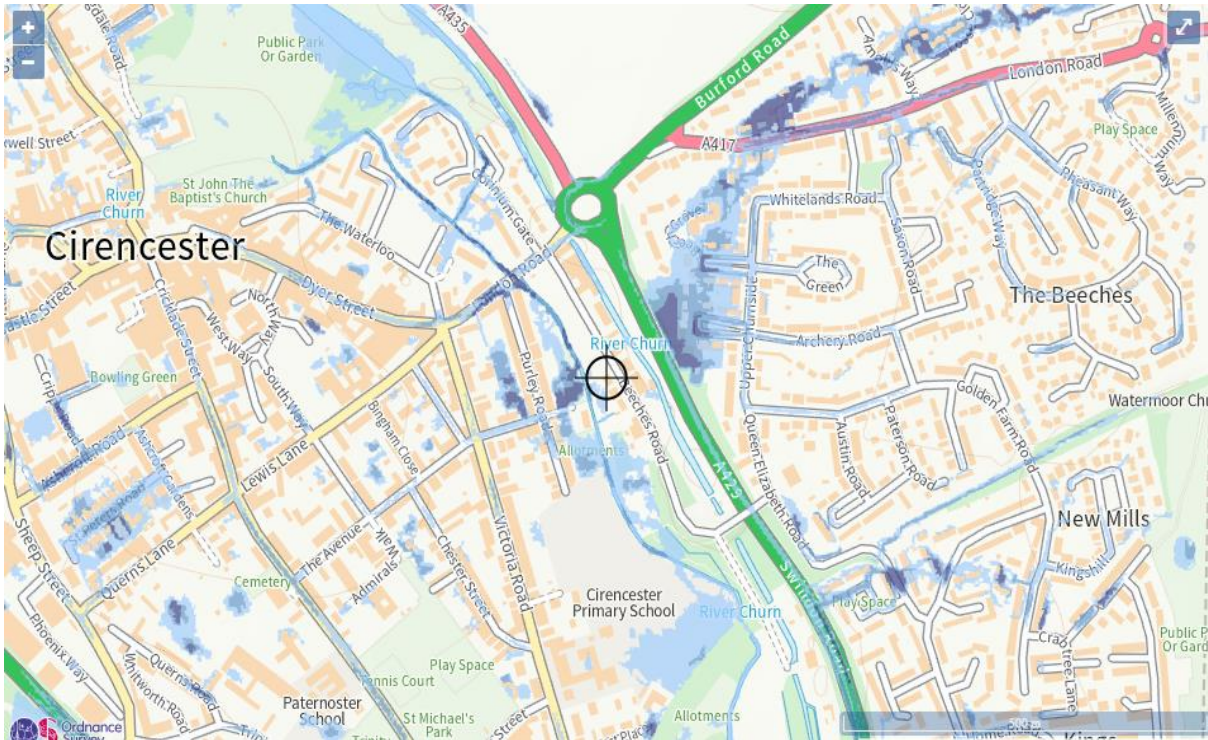
Figure 4 – Fluvial/tidal flood risk – EA Flood Map.

The EA Flood Map identifies the development site to be in Flood Zone 3, where the chance of flooding in any given year is greater than 1 in 100 (1%)

WTFR-FRA-2024/01/Q27

## 4.2 Surface Water Flooding

The Environment Agency's updated Flood Map for Surface Water (uFMfSW) identifies pluvial flood risk. Figure 5, below, presents the uFMfSW for the development site and the surrounding area.



Extent of flooding from surface water

● High 
 ● Medium 
 ● Low 
   Very low 
 + Location you selected

Figure 5 – Flooding from surface water sources, uFMfSW, site highlighted.

The uFMfSW shows that area in the vicinity of the development site is at low risk of surface water flooding. Low risk means that the probability of flooding in any given year is between 1 in 1000 (0.1%) and 1 in 100 (1%).

## 4.3 Historic Flooding

Analysis of strategic flood risk documents developed by Cotswold District Council and Gloucestershire Council does not indicate any historic flooding.



WTFR-FRA-2024/01/Q27

#### 4.4 Reservoir

The Environment Agency's Risk of Reservoir Flooding Map identifies the maximum extent of flooding that may be expected in the unlikely event that a reservoir dam failed. Figure 6 below, presents the risk map for development site and the surrounding area. The development is at risk of flooding.

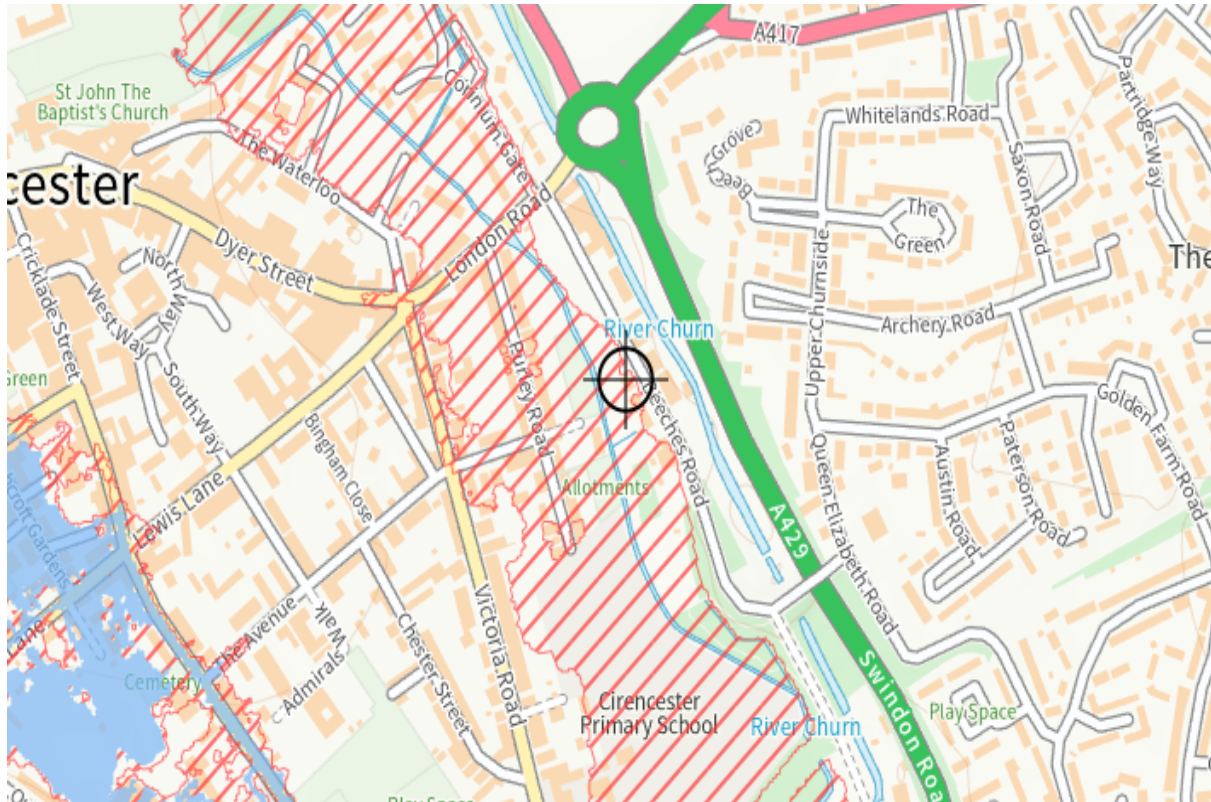


Figure 6 – Reservoir flood map.

The development is at risk of flooding from reservoir flooding. Reservoir flooding is extremely unlikely to happen. There has been no loss of life in the UK from reservoir flooding since 1925. All large reservoirs must be inspected and supervised by reservoir panel engineers. As the enforcement authority for the Reservoirs Act 1975 in England, the Environment Agency ensures that reservoirs are inspected regularly, and essential safety work is carried out.



## 4.5 Groundwater

The Environment Agency's Groundwater Vulnerability Map indicates that the development site is situated over a medium-high groundwater vulnerability area, as shown in Figure 7. Further analysis shows that the development site is not situated over a Groundwater Source Protection Zone as shown in Figure 8.

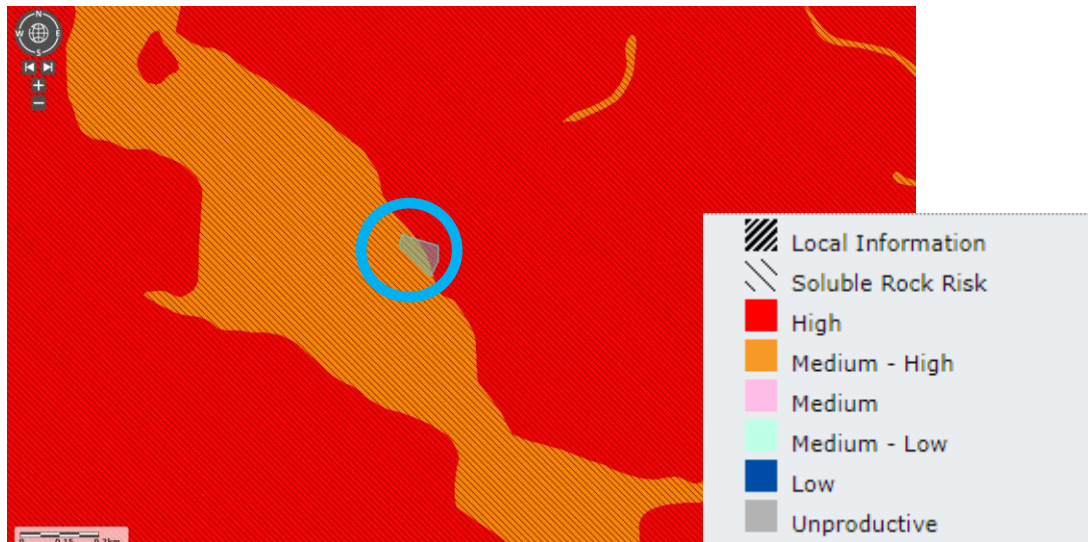


Figure 7 – Groundwater vulnerability map, site highlighted.

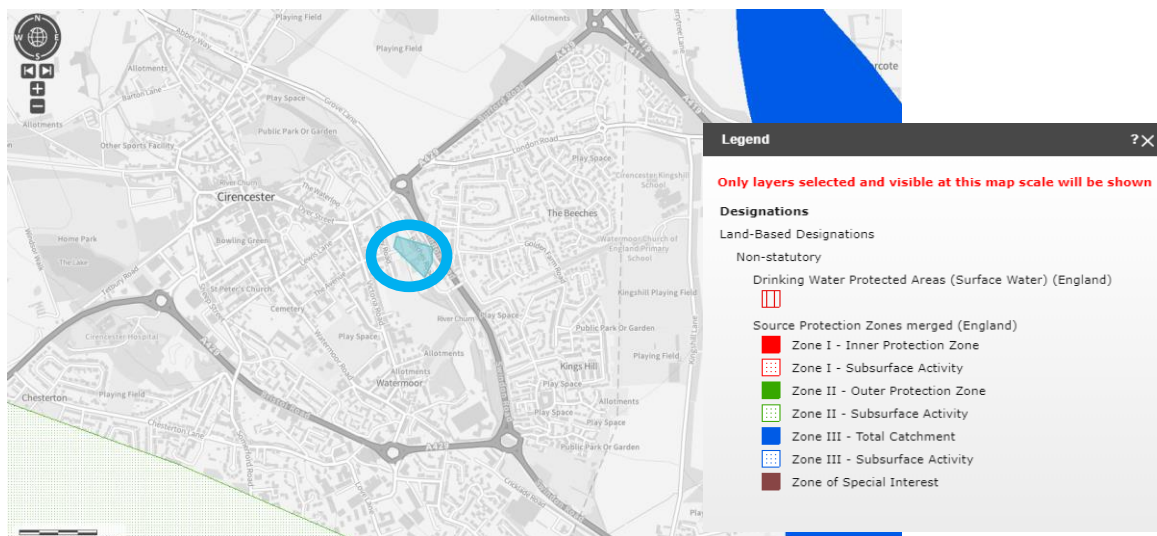


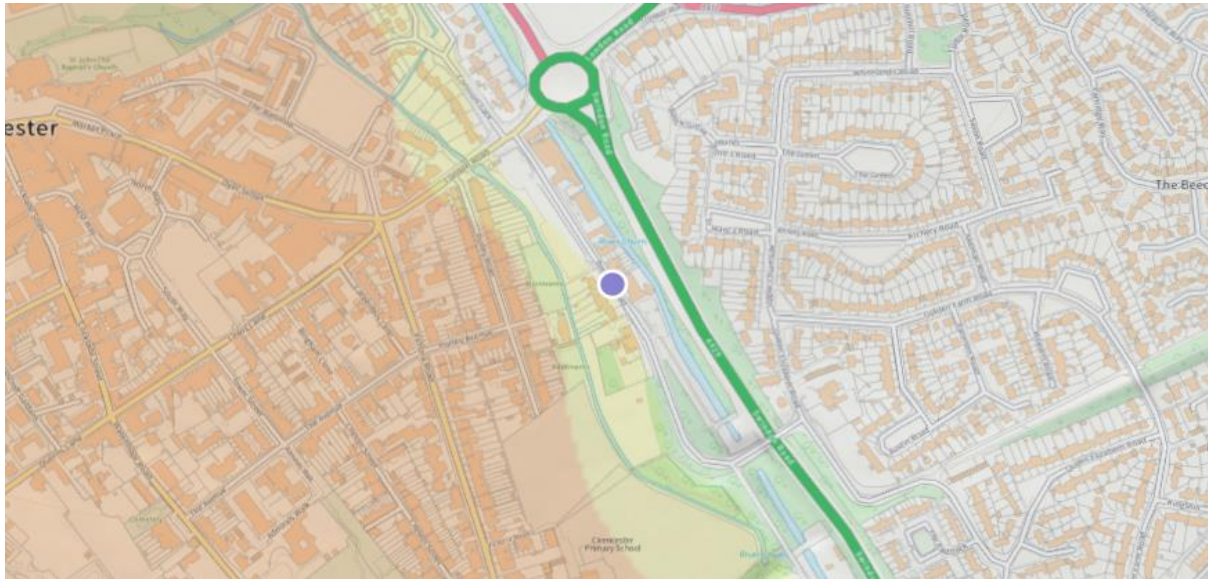
Figure 8 – Groundwater source protection zones, site highlighted.

Due to the minimal groundworks required for this development the impact on groundwater is considered to be negligible. However, it is recommended that a groundwater mitigation plan is developed that may be implemented if groundwater is encountered during construction.

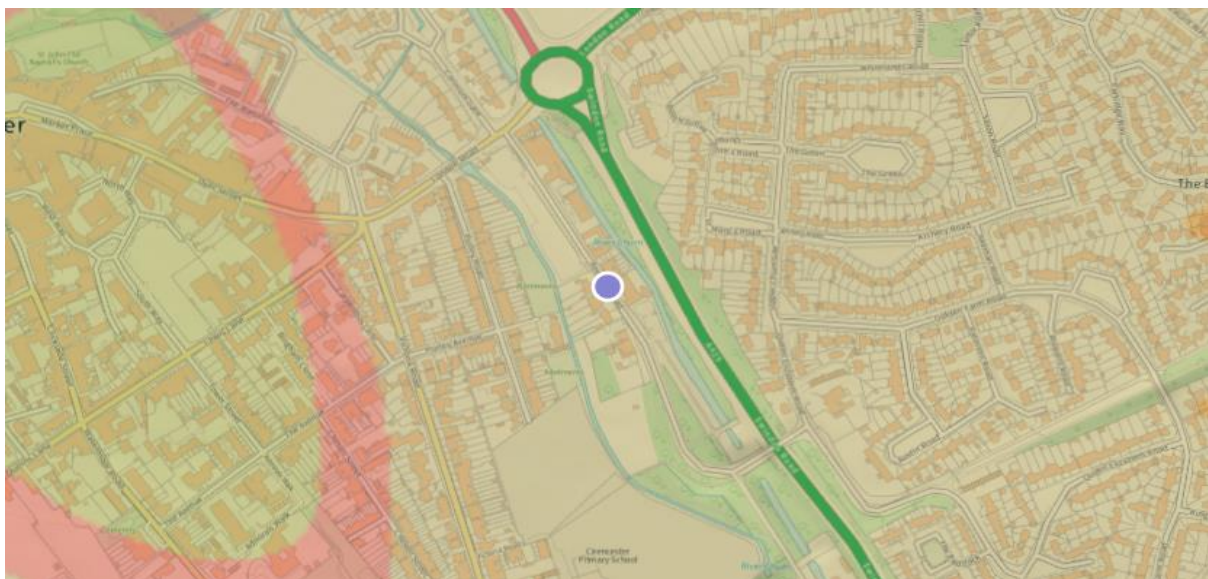
WTFR-FRA-2024/01/Q27

## 4.6 Geology

Figures 9 and 10 present information from the British Geological Survey.



*Figure 9 – Superficial Geology of the development.*



*Figure 10 – Bedrock geology of the development.*

The superficial deposit records at the development site are described as Alluvium - Clay, Silt, Sand and Gravel. The superficial deposits formed up to 2 million years ago in the Quaternary Period. The local environment was previously dominated by rivers (U).

With regards to the bedrock, the site is underlain by the Forest Marble Formation - Mudstone. The sedimentary bedrock formed approximately 166 to 168 million years ago in the Jurassic Period. The local environment was previously dominated by shallow seas.



WTFR-FRA-2024/01/Q27

## 5. Proposed development

This FRA is prepared to support a planning application for the demolition of the existing conservatory and the construction of a two-storey extension to existing dwelling at 20-22 Beeches Road, Cirencester, Gloucestershire, GL7 1BW.

Buildings used for residential dwellings are classified as being **More Vulnerable** development within Table 2 of the National Planning Practice Guidance. More Vulnerable minor developments are acceptable within Flood Zone 3.

Figures 11 and 12 show the existing floor layouts and Figures 13 and 14 show the proposed floor layouts.

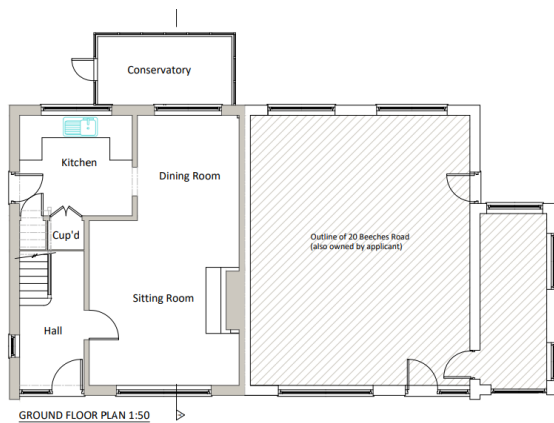


Figure 11 – Existing ground floor plan.

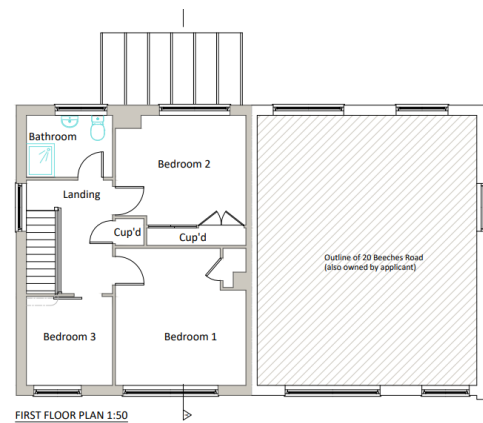


Figure 12 – Existing first floor plan.

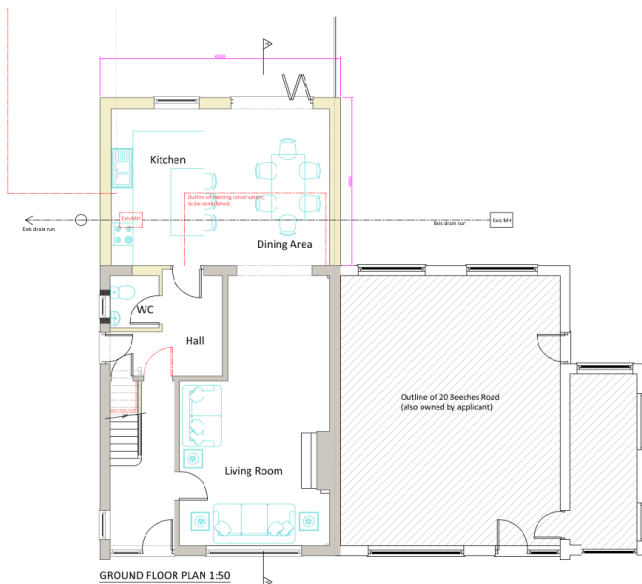


Figure 13 – Proposed ground floor plan.

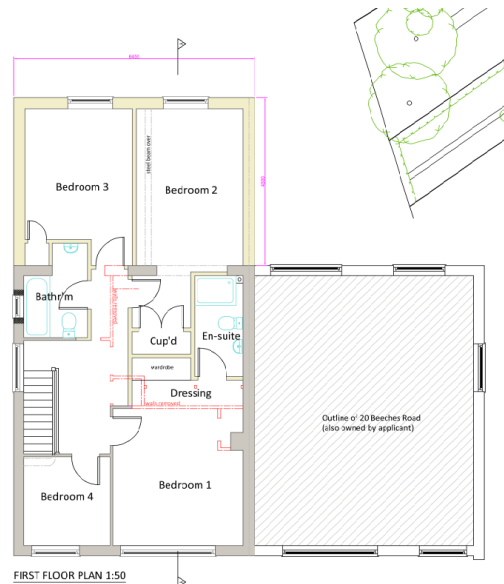


Figure 14 – Proposed first floor plan.



WTFR-FRA-2024/01/Q27

On this basis, the proposed discharge of surface water from the development will not see any surface water flooding on site in the 1 in 30 year and 1 in 100 year plus climate change events. Therefore, it will not increase the risk of surface water / sewer flooding elsewhere.

## **7. Hierarchy of disposing surface water**

The Planning Practice Guidance and part H of the Building Regulations state that “generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable:

- into the ground (infiltration);
- to a surface water body;
- to a surface water sewer, highway drain, or another drainage system;
- to a combined sewer”.

### 7.1 Infiltration

Due to the limited amount of permeable ground infiltration is not a viable option.

### 7.2 Surface Water Body

There is a watercourse to the West of the development, if this is the current method of surface water disposal it is proposed this is continued post development.

### 7.3 Surface Water or Combined Sewer

If surface water is not disposed of via the watercourse then it is assumed that a public surface water or combined sewer is available and serves the existing property, therefore it is proposed that surface water is continued to be disposed of via the public sewer.

## **8. Use of SuDS**

The NPPF, Planning Practice Guide and the Ministerial Statement all look at the use of SuDS as a priority to aid the disposal of surface water from new developments.

Due to the minor nature of the development proposal there is limited capacity to include SuDS measures although permeable paving and the use of water butts may be considered for use, where appropriate, to minimise surface water runoff from the site.



## **9. Management of flood risk**

### 9.1 Fluvial

The analysis of flooding from fluvial and tidal sources shows that the site is within Flood Zone 3, where the chance of flooding in any given year is greater than 1 in 100 (1%).

Buildings used for residential dwellings are classified as being More Vulnerable development within Table 2 of the National Planning Practice Guidance. More Vulnerable minor developments are acceptable within Flood Zone 3.

The development is such that flood flows will not be impeded and current flow routes will remain post-development.

The floor level should be set as high as possible but no lower than existing, as is in line with Environment Agency guidance.

Some ground will be raised to create parking spaces for users of the development. The volume of this ground will need to be compensated from fluvial flood events.

The area of the parking spaces is 50m<sup>2</sup> and the average ground raising within the flood zone will be 300mm. As such 15m<sup>3</sup> (50x0.3) of flood compensation storage will need to be provided. The rear garden covers an extensive area and the exact location, plan area and depth of the displacement storage will be determined by the client and details shown in accompanying drawings (provided separately to this report).

To mitigate against extreme events, it is recommended that flood resistance and resilience measures are incorporated in the development. Suitable measures are specified in section 9.3 of this report.

### 9.2 Surface Water

The vicinity of the development site is described as being at low risk from surface water flooding, which means that the flood risk is between 1 in 1000 (0.1%) and 1 in 100 (1%) in any year.

There is a watercourse to the West of the development, if this is the current method of surface water disposal it is proposed this is continued post development. If surface water is not disposed of via the watercourse then it is assumed that a public surface water or combined sewer is available and serves the existing property, therefore it is proposed that surface water is continued to be disposed of via the public sewer.

Due to the small scale of the development, on-site attenuation is not necessary.

Appropriate SuDS features and measures may be considered within the development to minimise surface water discharges. Due to the small-scale nature of the development this would be limited to permeable paving and water butts, if appropriate.

Due to the minor nature of the proposed development it will not increase the risk of flooding elsewhere from surface water sources.

WTFR-FRA-2024/01/Q27

### 9.3 Safe access and egress

In the event of flooding, all residents will have access to safe refuge on the first floor of the dwelling.

It is recommended that residents of the property register for the EA Flood Warning Service, which is available within the area and which aims to give a minimum 2 hours advance notification of potential flooding, giving adequate time to implement safety procedures.

In the event of having to evacuate the building, a suitable emergency egress route is available by turning south onto Beeches Road and travelling for approximately 100m to reach Flood Zond 1.

### 9.4 Flood Resistance and Resilience Measures

It is recommended that the proposed works incorporate flood resilience and resistance measures. This would ensure that flooding in exceedance events could be mitigated against. Such measures could include:




- External walls rendered resistant to flooding to higher level;
- External ventilation outlets, utility points and air bricks fitted with removable waterproof covers;
- Ground level electrical main ring run from higher level; and on separately switched circuit from first floor;
- Plumbing insulation of closed-cell design;
- Non-return valves fitted to all drain and sewer outlets;
- Manhole covers secured;
- Anti-siphon fitted to all toilets;
- Kitchen units of solid, water resistant material;
- Use of MDF carpentry (i.e. skirting, architrave, built-in storage) avoided at ground floor level.

WTFR-FRA-2024/01/Q27

## 9.5 Flood plan

As the development site is situated on the boundary of Flood Zone 3 it would be prudent for a flood warning and evacuation plan to be set up and implemented post development. This plan would include residents signing up to the Environment Agency flood warning service.

The flood warning service has three types of warning that will help you to prepare for flooding and take action.

Flood Warning	Flood Alert	Flood Warning	Severe Flood Warning
			
What it means?	Flooding is possible. Be prepared.	Flooding is expected. Immediate action required.	Severe flooding. Danger to life.
When it's used?	Two hours to two days in advance of flooding.	Half an hour to one day in advance of flooding.	When flooding poses a significant threat to life.
What to do?	Be prepared to act on your flood plan.  Prepare a flood kit of essential items.  Monitor local water levels and the flood forecast on our website.	Move family, pets and valuables to a safe place.  Turn off gas, electricity and water supplies if safe to do so.  Put flood protection equipment in place.	Stay in a safe place with a means of escape.  Be ready should you need to evacuate from your home.  Co-operate with the emergency services.  Call 999 if you are in immediate danger.

### Recommended Flood Plan:

#### Before a flood

- Find out if you are at risk of flooding;
- Find out if you can receive flood warnings;
- Prepare and keep a list of all your contacts to hand or save them on your mobile phone/tablet;
- Think about what items you can move now and what you would want to move to safety during a flood such as pets, cars, furniture and electrical equipment;
- Know how to turn off gas, electricity and water supplies;
- Prepare a flood kit of essential items and keep it handy. It can include copies of important documents, a torch, a battery-powered or wind-up radio, blankets and warm clothing, waterproofs, rubber gloves and a first aid kit including all essential medication.

#### On receipt of a flood warning

- Tune into your local radio station on a battery or wind-up radio;
- Fill jugs and saucepans with water;
- Grab your already prepared flood kit;
- Collect blankets, torch, first aid kit, medication and food;
- Move important documents, personal items, valuables and lightweight belongings upstairs or to high shelves;

*WTFR-FRA-2024/01/Q27*

- Raise large items of furniture, or put them in large bags if you have them;
- Move people, outdoor belongings, cars and pets to higher ground;
- Switch off water, gas and electricity at mains when water is about to enter your home. Do not touch sources of electricity when in standing water;
- Fit flood protection products, if you have them, for example flood boards, airbrick covers and sandbags;
- If you do not have non-return valves fitted, plug water inlet pipes with towels or cloths; Know your means of escape;
- Listen to the advice of the emergency service and evacuate if told to do so;
- Avoid walking or driving through flood water. 300mm of fast flowing water can knock over an adult and two feet of water can move a car.

#### After a flood

- If you have flooded, contact your insurance company as soon as possible;
- Take photographs and videos of your damaged property as a record for your insurance company;
- If you don't have insurance, contact your local authority for information on grants and charities that may help you;
- Flood water can contain sewage, chemicals and animal waste. Always wear waterproof outdoor gear, including gloves, wellington boots and a face mask;
- Have your electrics, central heating and water checked by qualified engineers before switching them back on.

WTFR-FRA-2024/01/Q27

## 10. Conclusions

The analysis of flooding from fluvial and tidal sources shows that the site is on the boundary of Flood Zone 3, where the chance of flooding in any given year is greater than 1 in 100 (1%).

The floor level should be set as high as possible but no lower than existing, as is in line with Environment Agency guidance.

The development is such that flood flows will not be impeded and current flow routes will remain post-development.

15m<sup>3</sup> of flood compensation storage will need to be provided. The rear garden covers an extensive area and the exact location, plan area and depth of the displacement storage will be determined by the client and details shown in accompanying drawings (provided separately to this report).

The development site is at low risk of surface water flooding.

There is a watercourse to the West of the development, if this is the current method of surface water disposal it is proposed this is continued post development. If surface water is not disposed of via the watercourse then it is assumed that a public surface water or combined sewer is available and serves the existing property, therefore it is proposed that surface water is continued to be disposed of via the public sewer.

Due to the small scale of the development, on-site attenuation is not necessary.

It is recommended that appropriate flood resistance and resilience measures are incorporated into the development.

The proposed development will not increase the risk of flooding elsewhere from surface water sources.

There is no evidence of historic flooding of the development site.

It is recommended that a mitigation plan is developed and implemented should groundwater be encountered during construction.

The development is at risk of reservoir flooding.

In the event of flooding, all residents will have access to safe refuge on the first floor of the dwelling.

It is recommended that residents of the property register for the EA Flood Warning Service, which is available within the area and which aims to give a minimum 2 hours advance notification of potential flooding, giving adequate time to implement safety procedures.

In the event of having to evacuate the building, a suitable emergency egress route is available by turning south onto Beeches Road and travelling for approximately 100m to reach Flood Zone 1.

Based on the likely flooding risk, it is considered that the proposed development can be operated safely in flood risk terms, without increasing flood risk elsewhere and is therefore appropriate development in accordance with the NPPF.



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