



Flood Risk Assessment for Planning

February 2024

Our reference:

93898-Rowe-FishersClis

Prepared for:

Mr Roy Rowe

Location:

4 Fishers Close

Puckeridge

Hertfordshire

SG11 1TD



Document Issue Record

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Client: Mr Roy Rowe
Location: 4 Fishers Close, Puckeridge, Hertfordshire, SG11 1TD
Application: Two storey side extension
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Lead Consultant: Ms Ellen Webb
Authorisation: Ms Jackie Stone

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1. Key Facts

1.1 Flood Risk Posed:

- The site is situated within Flood Zone 3 when using the Environment Agency Flood Map for Planning (Rivers and Sea).
- The site is outside of Flood Zone 3b.
- EA mapping suggests that the site is within an area of “Low” to “High” risk of flooding from surface water.
- The EA risk of flooding from surface water depth maps show:
 - For the 1:30 year event (High), on the site there is a maximum flood depth of 0.3-0.6m on site. However, in the area of the proposed side extension, there are maximum flood depths of between 0.15-0.3m.
 - For the 1:100 year event (Medium), on the site there is a maximum flood depth of between 0.3-0.6m on site.
 - For the 1:1000 year event (Low), on the site there is a maximum flood depth of between 0.9-1.2m on site.
- No records of flooding at the site previously have been provided.
- There are no records of previous groundwater, sewer or reservoir flooding having previously affected the site.

1.2 Flood Risk Mitigation:

- Proposed development fits within EA standing advice for domestic extensions.
- No additional residential units will be created as part of the development.
- The additional footprint created by the development will not exceed 250m².
- Floor levels within the extension will be set no lower than existing floor levels.
- Flood proofing of the development will be incorporated as appropriate.
- The applicant will register with the Environment Agency Floodline Alert/Warnings Direct service.
- Due to the scale of the development, a full Surface Water Drainage Strategy is not required at this stage of planning.

2. Introduction

Unda Consulting Limited have been appointed by Mr Roy Rowe (hereinafter referred to as “the applicant”) to undertake a Site Specific Flood Risk Assessment (FRA) for Planning at 4 Fishers Close, Puckeridge, Hertfordshire, SG11 1TD (hereinafter referred to as “the site”). The FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF) and the associated technical guidance.

The site appears to be located within Flood Zone 3 as defined by the Environment Agency (EA) on their Flood Map for Planning. Under the National Planning Policy Framework (NPPF), a FRA is required if a proposed development:

- Includes building or engineering works in Flood Zone 2 or 3;
- Includes building or engineering works on land classified by the Environment Agency as having critical drainage problem;
- Changes the use of land or buildings in a location at risk of flooding from rivers or the sea, or with critical drainage problems;
- Changes the use of land or buildings in a way that increases the flood vulnerability of the development where it may be subject to other sources of flooding;
- Is larger than 1 hectare.

The assessment should demonstrate to the Local Planning Authority (LPA) and EA 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 potential users.

The objectives of a FRA to support a planning application are to establish:

- Whether the 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.

3. Existing Situation

3.1. Site Usage:

The site is currently occupied by a single two-storey residential dwelling accompanied by a garage outbuilding. The site is understood to have lawful planning permission for residential use.

A site location and existing plans are provided in the report Appendix.



Figure 1: Aerial Photograph of Site and Surrounding Area (Source: Google Earth)



Figure 2: Existing Floor Plans (Source: Rightmove)

3.2. Topography:

Environment Agency LiDAR has been used to assess the topography across the site and wider area. Light Detection and Ranging (LiDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground surface. Up to 100,000 measurements per second are made of the ground, allowing highly detailed terrain models to be generated at high spatial resolutions. The EA's LiDAR data archive contains digital elevation data derived from surveys carried out by the EA's specialist remote sensing team. Accurate elevation data is available for over 70% of England. The LiDAR technique records an elevation accurate to +/-5cm to 15cm with spatial resolutions ranging from 25cm to 2 metres. This dataset is derived from a combination of the EA's full dataset which has been merged and re-sampled to give the best possible coverage. The dataset can be supplied as a Digital Surface Model (DSM) produced from the signal returned to the LIDAR (which includes heights of objects, such as vehicles, buildings and vegetation, as well as the terrain surface) or as a Digital Terrain Model (DTM) produced by removing objects from the Digital Surface Model. 1m horizontal resolution DTM LiDAR data has been used for the purposes of this study.

Data suggests that the ground topography on site ranges from approximately 68.09mAOD to 68.85mAOD.

3.3. Geology and Soil:

The British Geological Survey (BGS) Map indicates that the bedrock underlying the site is the Lewes Nodular Chalk Formation and Seaford Chalk Formation, comprised of Chalk.

The British Geological Survey (BGS) Map has records superficial deposits of Head – Clay, Silt. Sand and Gravel overlying the site.

Data sourced from the UK Soil Observatory shows the soil type of the site is relatively deep soils from Colluvium parent material with clayey loam to sandy loam texture.

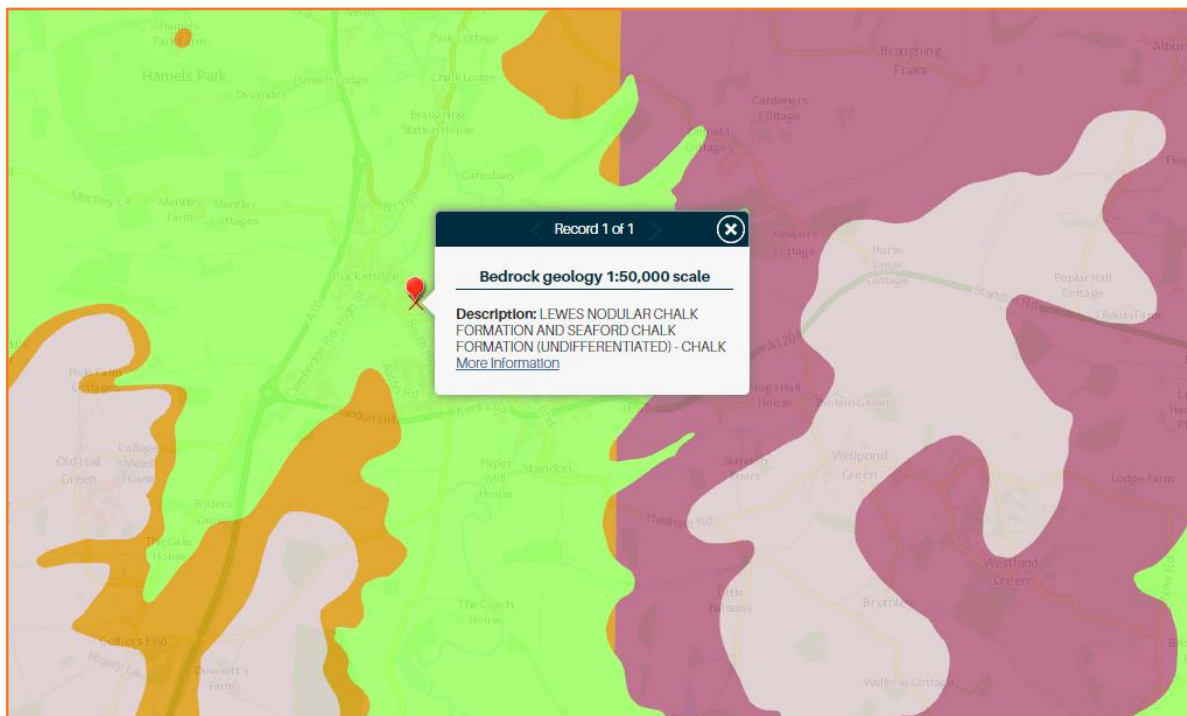


Figure 3: Local bedrock geology (Source: BGS)

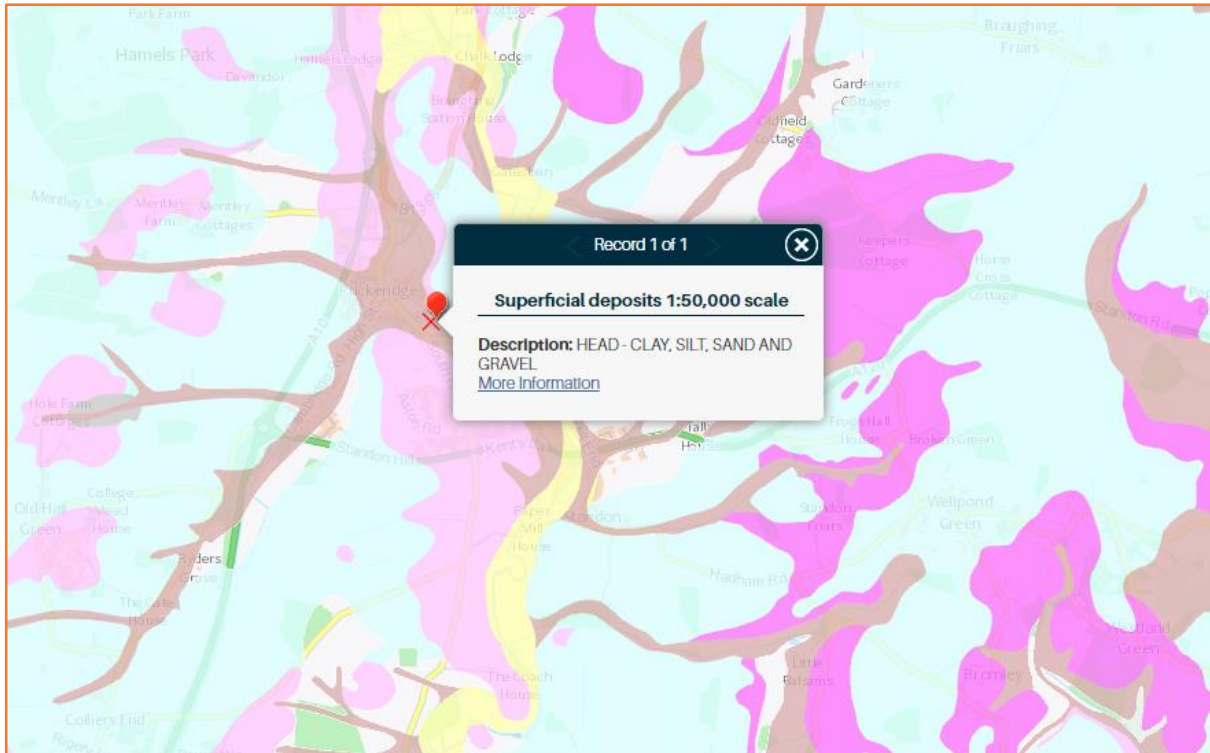


Figure 4: Local Superficial Geology (Source: BGS)

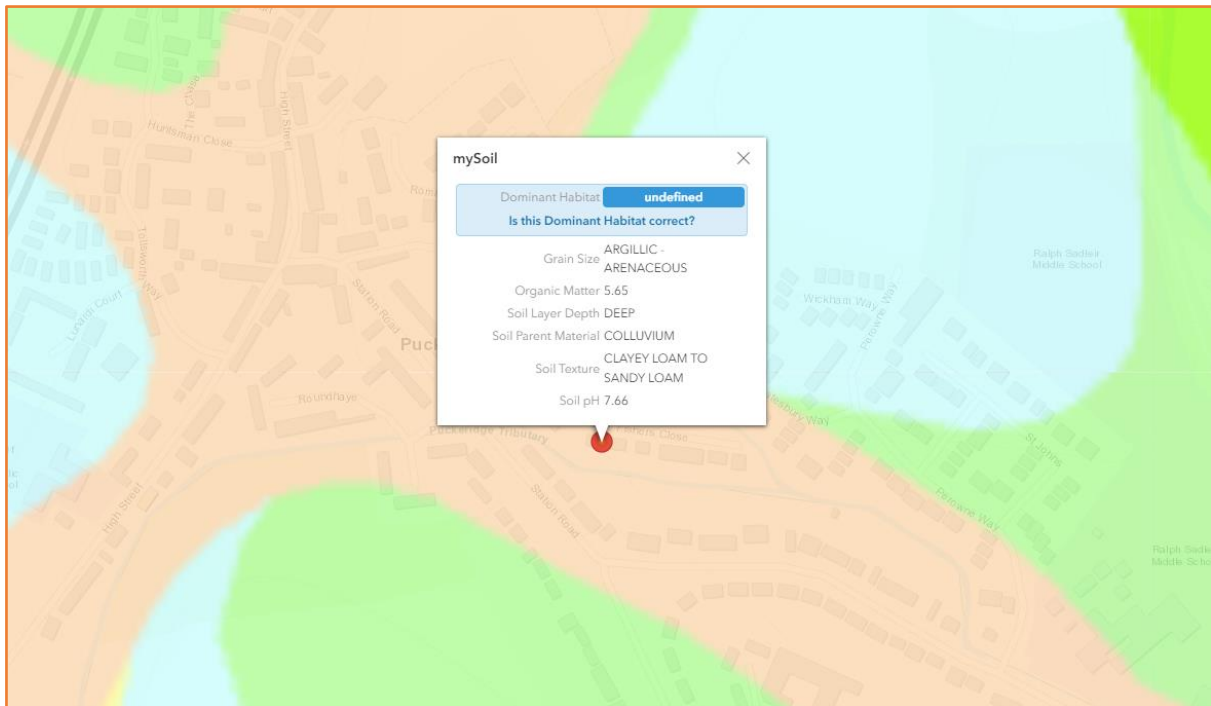


Figure 5: Local Soil Types (Source: UKSO)

4. Proposed Development

The development proposal is for the erection of a two storey side extension on the existing residential dwelling.

The extension is for a playroom and utility room on the ground floor. An additional bedroom and additional space for one of the existing bedrooms, including an en-suite, will be situated on the first floor.

Proposed plans are provided within the report Appendix.

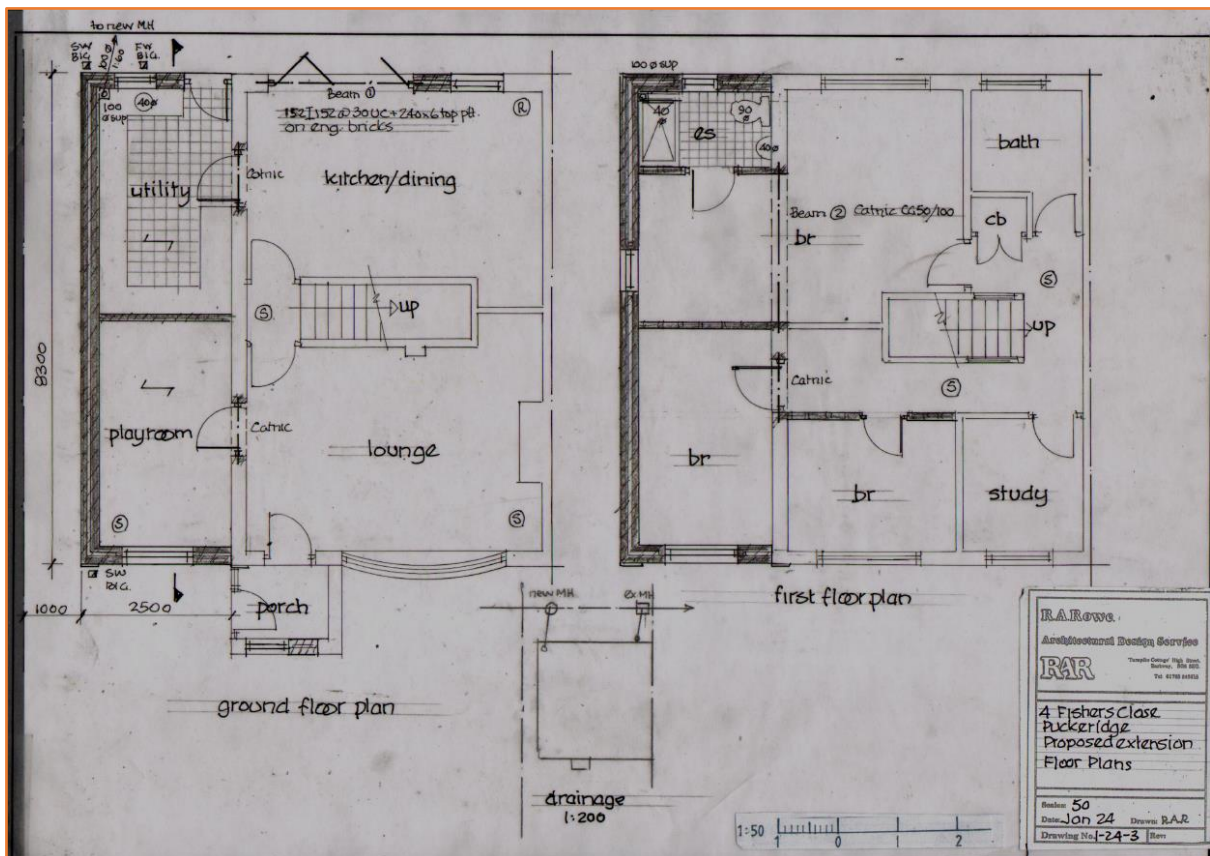


Figure 6: Proposed Floor Plans (Source: Applicant)

5. Assessment of Flood Risk

5.1. Flood Zones:

Within planning, 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 (Rivers and Sea), available on the Environment Agency's web site.

Flood Zone	Definition
Zone 1 Low Probability	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 Medium Probability	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 High Probability	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 The Functional Floodplain	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 1: Flood Zones

The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding.

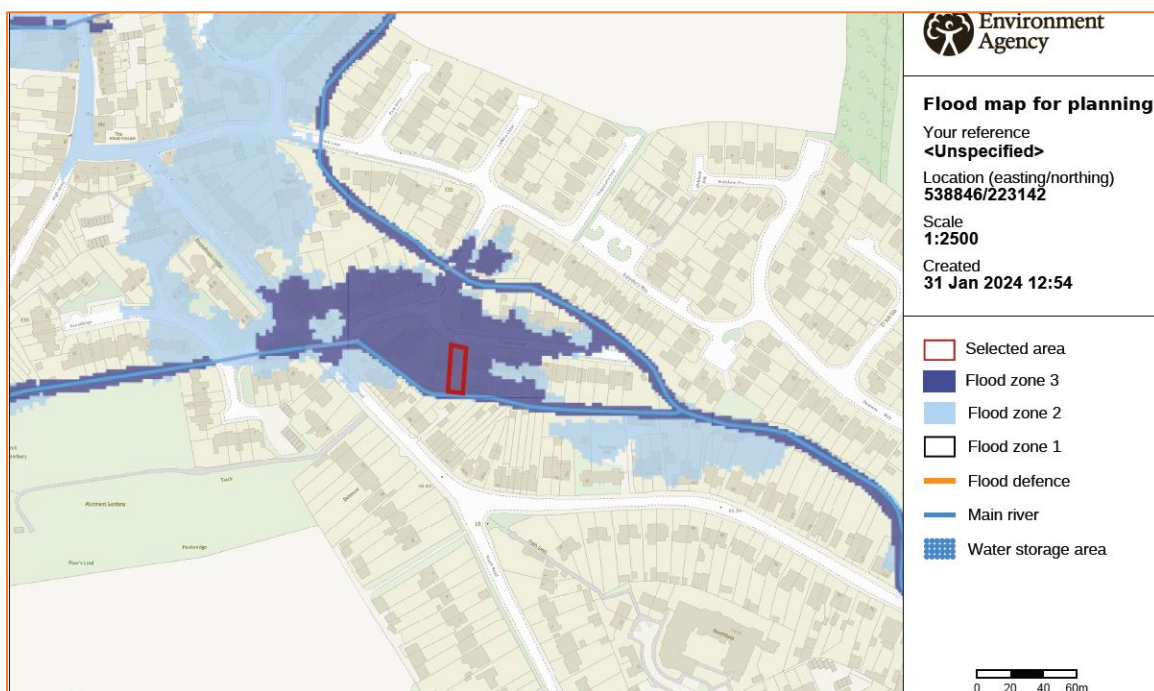


Figure 7: Environment Agency Flood Map for Planning (Rivers and Sea) (Source: EA)

The site is located within Flood Zone 3 (High Probability), which means it is defined as land having a 1 in 100 or greater annual probability of river flooding.

5.2. Fluvial / Tidal:

The site is located within Flood Zone 3 (High Probability), which means it is defined as land having a 1 in 100 or greater annual probability of river flooding.

The nearest watercourse is the Puckeridge Tributary which borders the site's southern boundary.

5.2.1 Modelled flood levels and extents:

Product 4 modelled flood levels and extents have been requested from the Environment Agency for use within this report.

5.2.1. Flood Defences:

Flood defences are typically raised structures that alter natural flow patterns and prevent floodwater from entering property in times of flooding. They are generally categorised as either 'formal' or 'informal' defences. A 'formal' flood defence is a structure that was built specifically for the purpose of flood defence, and is maintained by its respective owner, which could be the Environment Agency, Local Authority, or an individual. An 'informal' flood defence is a structure that has not been specifically built to retain floodwater, and is not maintained for this specific purpose, but may afford some protection against flooding.

Asset inspections are undertaken on average every six months, although some critical assets are assessed on a more regular basis. It is possible that adjacent assets are inspected on different dates, which may result in two assets of a similar state of repair having different condition ratings. It is unclear when both assets were last inspected.

Condition ratings of assets may also be affected by the time of year the surveys are conducted, as vegetation may obscure the asset in the summer months, or accessibility may be an issue during winter months. These factors would not usually affect the recorded condition rating of an asset unless the asset is on a borderline between two ratings.

There are no EA owned or maintained flood defences in the vicinity of the site.

5.2.4 Residual risk (breach or overtopping of flood defences):

Breaching of flood defences can cause rapid inundation of areas behind flood defences as flow in the river channel discharges through the breach. A breach can occur with little or no warning, although they are much more likely to concur with extreme river levels or tides when the stresses on flood defences are highest. Flood water flowing through a breach will normally discharge at a high velocity, rapidly filling up the areas behind the defences, resulting in significant damage to buildings and a high risk of loss of life. Breaches are most likely to occur in soft defences such as earth embankments although poorly maintained hard defences can also be a potential source of breach.

Overtopping of flood defences occurs when water levels exceed the protection level of raised flood defences. The worst case occurs when the fluvial or tidal levels exceed the defence level as this can lead to prolonged flooding. Less severe overtopping can occur when flood levels are below defence levels, but wave action causes cyclic overtopping, with intermittent discharge over the crest level of the defence. Flood defences are commonly designed with a freeboard to provide protection against overtopping from waves. The risk from overtopping due to exceedance of the flood defence level is much more significant than the risk posed by wave overtopping. Exceedance of the flood defence level can lead to prolonged and rapid flooding with properties immediately behind the defences at highest risk.

The site is not shown to benefit to any significant degree from the presence of flood defences.

5.2.2. Historical Flood Events:

The site is outside of historical flood extents reported by the EA and the 2016 East Hertfordshire SFRA mapping.

No records of flooding at the site previously have been provided.

5.2.3. Functional Floodplain

This zone comprises land where water is required to flow or be stored in times of flood. The functional floodplain designation encompasses land which would flood with an annual probability of 1 in 30 or greater in any year; and includes areas of land required for water conveyance routes.

According to the 2016 East Hertfordshire SFRA, the site is not located within Flood Zone 3b, the functional floodplain. The site is located within Flood Zone 3a.

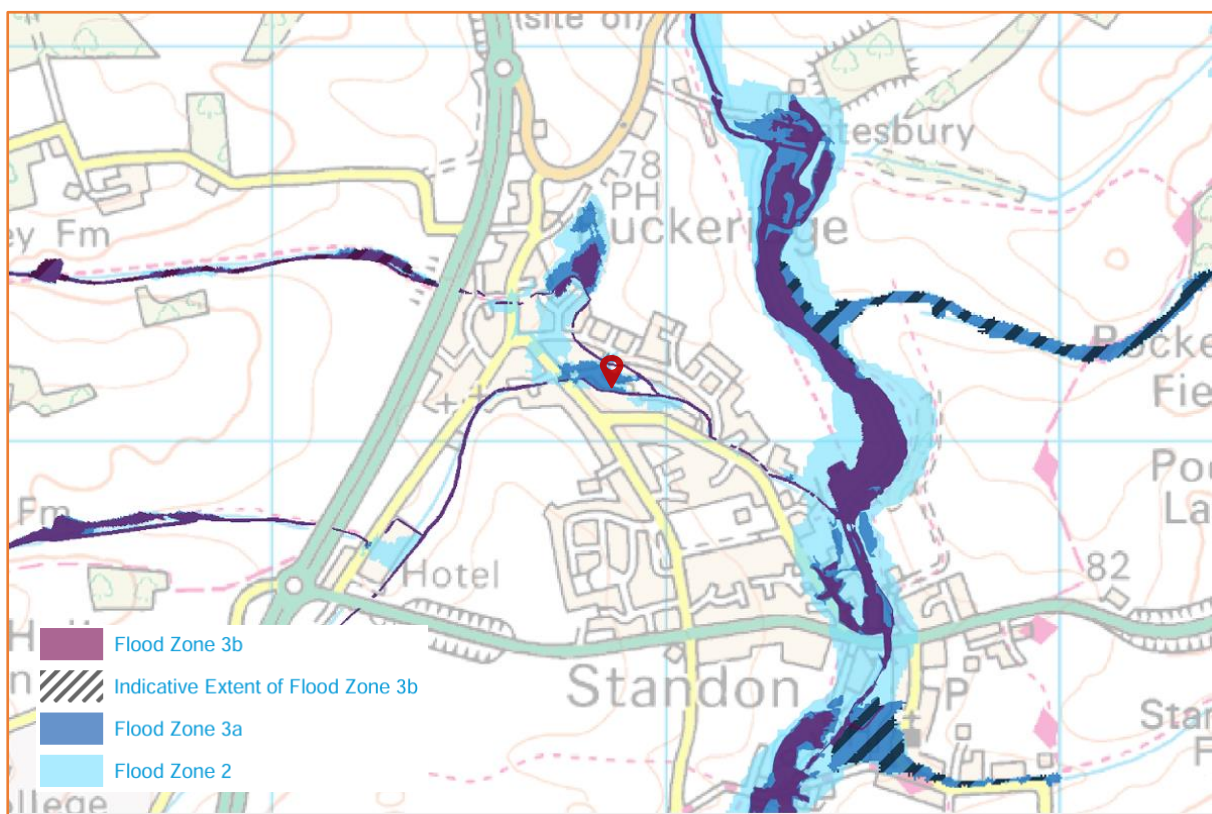


Figure 8: Council Defined Flood Zones (Source: 2016 East Hertfordshire SFRA)

5.3. Pluvial (Surface Water):

Pluvial flooding is the term used to describe flooding which occurs when intense, often short duration rainfall is unable to soak into the ground or to enter drainage systems and therefore runs over the land surface causing flooding. It is most likely to occur when soils are saturated (or baked hard) so that they cannot infiltrate any additional water or in urban areas where buildings tarmac and concrete prevent water soaking into the ground. The excess water can pond (collect) in low points and result in the development of flow pathways often along roads but also through built up areas and open spaces. This type of flooding is usually short lived and associated with heavy downpours of rain.

The potential volume of surface runoff in catchments is directly related to the size and shape of the catchment to that point. The amount of runoff is also a function of geology, slope, climate, rainfall, saturation, soil type, urbanisation and vegetation.

Pluvial flooding can occur in rural and urban areas, but usually causes more damage and disruption in the latter. Flood pathways include the land and water features over which floodwater flows. These pathways can include drainage channels, rail and road cuttings. Developments that include significant impermeable surfaces, such as roads and car parks may increase the volume and rate of surface water runoff.

Urban areas which are close to artificial drainage systems, or located at the bottom of hill slopes, or in valley bottoms and hollows, may be more prone to pluvial flooding. This may be the case in areas that are down slope of land that has a high runoff potential including impermeable areas and compacted ground.

Pluvial flooding can affect all forms of the built environment, including:

- Residential, commercial and industrial properties;
- Amenity and recreation facilities; and
- Infrastructure, such as roads and railways, electrical infrastructure, telecommunication systems and sewer systems.

This type of flooding is usually short-lived and may only last as long as the rainfall event. However occasionally flooding may persist in low-lying areas where ponding occurs. Due to the typically short duration, this type of flooding tends not to have consequences as serious as other forms of flooding, such as flooding from rivers; however it can still cause significant damage and disruption on a local scale.

The Flood Map for Surface Water assesses flooding scenarios as a result of rainfall with the following chance of occurring in any given year (annual probability of flooding is shown in brackets):

- High: Greater than or equal to 3.3% (1 in 30) chance in any given year (3.3%).
- Medium: Less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year.

- Low: Less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance in any given year.
- Very Low: Less than 0.1% (1 in 1,000) chance in any given year.

The mapping below shows the Risk of Flooding from Surface Water centred on the postcode. Please note that the EA do not consider this information suitable to be used to identify the risk to individual properties or sites. It is useful to raise awareness in areas which may be at risk and may require additional investigation.

The EA Surface Water Flood Map suggests that the risk of flooding from surface water at the site ranges from "Low" to "High".

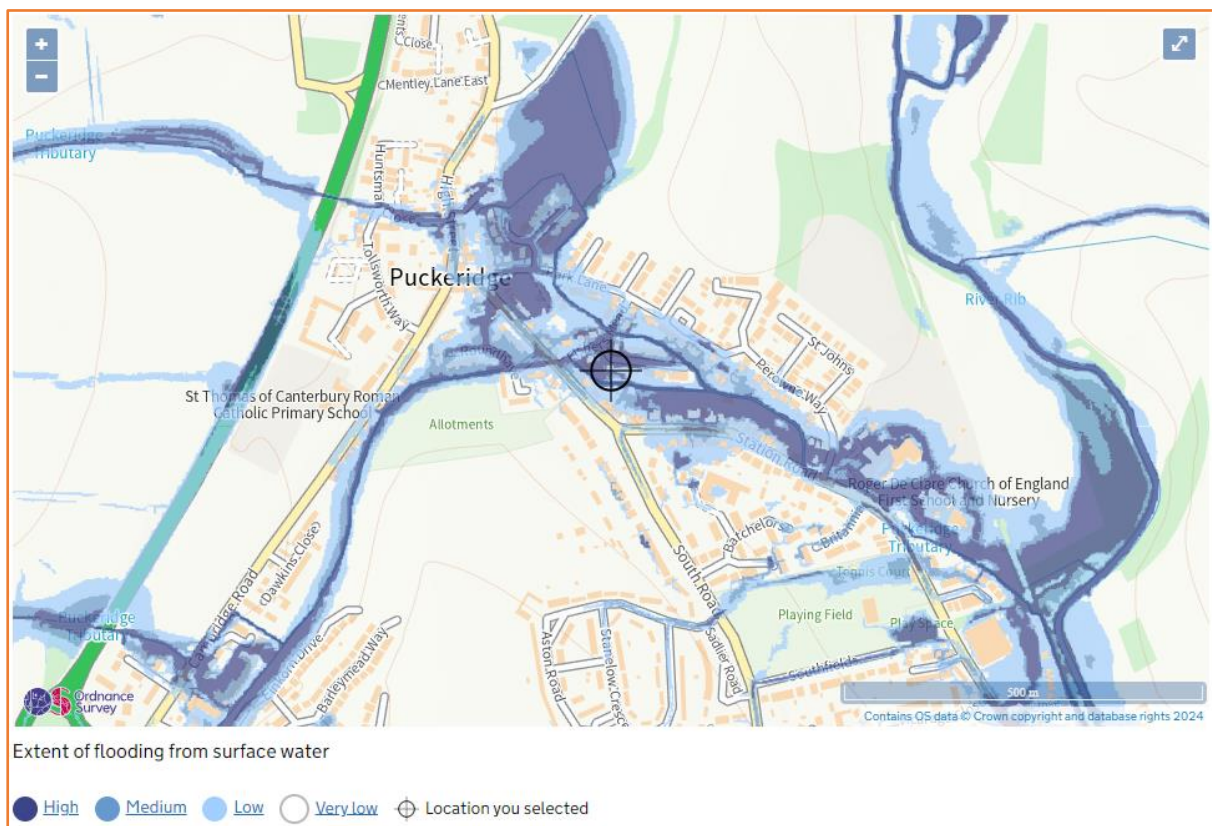


Figure 9: Extract from Environment Agency Surface Water Flood Map (Source: EA)

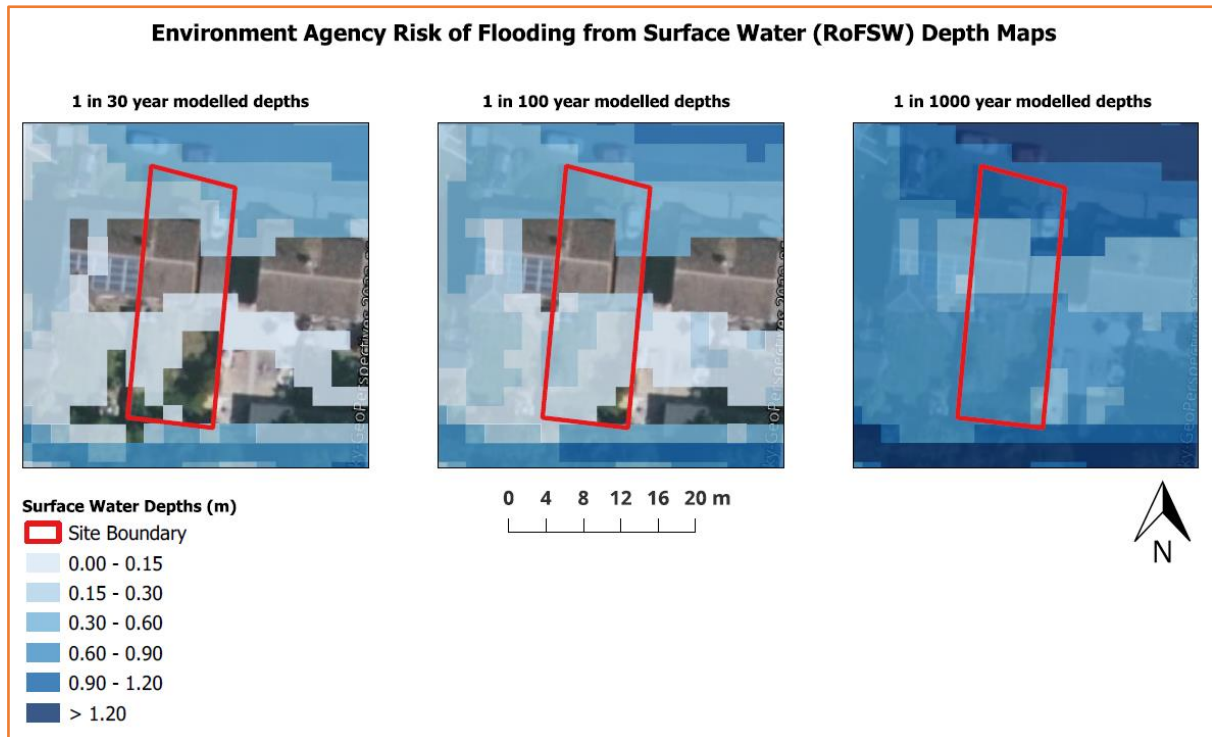


Figure 10: EA Risk of Flooding From Surface Water Mapping (Source: EA)

The EA risk of flooding from surface water depth maps show:

- For the 1:30 year event (High), on the site there is a maximum flood depth of 0.3-0.6m on site. However, in the area of the proposed side extension, there are maximum flood depths of between 0.15-0.3m.
- For the 1:100 year event (Medium), on the site there is a maximum flood depth of between 0.3-0.6m on site.
- For the 1:1000 year event (Low), on the site there is a maximum flood depth of between 0.9-1.2m on site.

No records of surface water flooding at the site previously have been provided.

5.4. Groundwater:

Groundwater flooding occurs as a result of water rising up from the underlying rocks or from water flowing from abnormal springs. This tends to occur after much longer periods of sustained high rainfall. Higher rainfall means more water will infiltrate into the ground and cause the water table to rise above normal levels. Groundwater tends to flow from areas where the ground level is high, to areas where the ground level is low. In low-lying areas the water table is usually at shallower depths anyway, but during very wet periods, with all the additional groundwater flowing towards these areas, the water table can rise up to the surface causing groundwater flooding.

Groundwater flooding is most likely to occur in low-lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands or river gravels in valley bottoms underlain by less permeable rocks. Groundwater

flooding takes longer to dissipate because groundwater moves much more slowly than surface water and will take time to flow away underground.

The 2016 East Hertfordshire mapping indicates that the site lies within an area of between 25-50% susceptibility to groundwater flooding.

The EA has identified that groundwater flooding is unlikely in this area. There are no records of groundwater flooding previously affecting the site.

5.5. Sewer Surcharge:

Sewer flooding occurs when the sewer network cannot cope with the volume of water that is entering it. It is often experienced during times of heavy rainfall when large amounts of surface water overwhelm the sewer network causing flooding. Temporary problems such as blockages, siltation, collapses and equipment or operational failures can also result in sewer flooding.

All Water Companies have a statutory obligation to maintain a register of properties/areas which have reported records of flooding from the public sewerage system, and this is shown on the DG5 Flood Register. This includes records of flooding from foul sewers, combined sewers and surface water sewers which are deemed to be public and therefore maintained by the Water Company. The DG5 register records of flood incidents resulting in both internal property flooding and external flooding incidents. Once a property is identified on the DG5 register, water companies can typically put funding in place to address the issues and hence enable the property to be removed from the register. It should be noted that flooding from land drainage, highway drainage, rivers/watercourses and private sewers is not recorded within the register.

The 2016 East Hertfordshire reports that the SG11 1 postcode area has previously been affected by 3 recorded sewer flood incidents as of July 2016.

No information has been provided to suggest that the site has previously been affected by sewer flooding.

5.6. Other Sources:

Reservoirs with an impounded volume in excess of 25,000 cubic metres (measured above natural ground level) are governed by the Reservoirs Act and are listed on a register held by the Environment Agency. The site is outside the maximum inundation extent when there is also flooding from rivers on the EA Reservoir Inundation Map. The EA also advise on their website that reservoir flooding is extremely unlikely. There has been no loss of life in the UK from reservoir flooding since 1925. All major reservoirs have to be inspected by specialist dam and reservoir Engineers. In accordance with the Reservoirs Act 1975 in England, these inspections are monitored and enforced by the EA themselves. The risk to the site from reservoir flooding is therefore minimal and is far lower than that relating to the potential for fluvial / tidal flooding to occur. The Environment Agency Reservoir Flood Map illustrated below, illustrates the largest area that might be flooded if the storage area were to fail and release the water it is designed to hold during a flood event.

Records of flooding from reservoirs and canals are erratic as there is no requirement for the Environment Agency to provide information on historic flooding from canals and raised reservoirs on plans. In particular, the NPPF does not require flood risk from canals and raised reservoirs to be shown on the Environment Agency flood zones.

Overflows from canals can be common as they are often fed by land drainage, and often do not have controlled overflow spillways. Occasionally, major bank breaches also occur, leading to rapid and deep flooding of adjacent land.

No further information has been provided to suggest the site is susceptible to from the failure of canals or other artificial infrastructure from the risk of flooding.

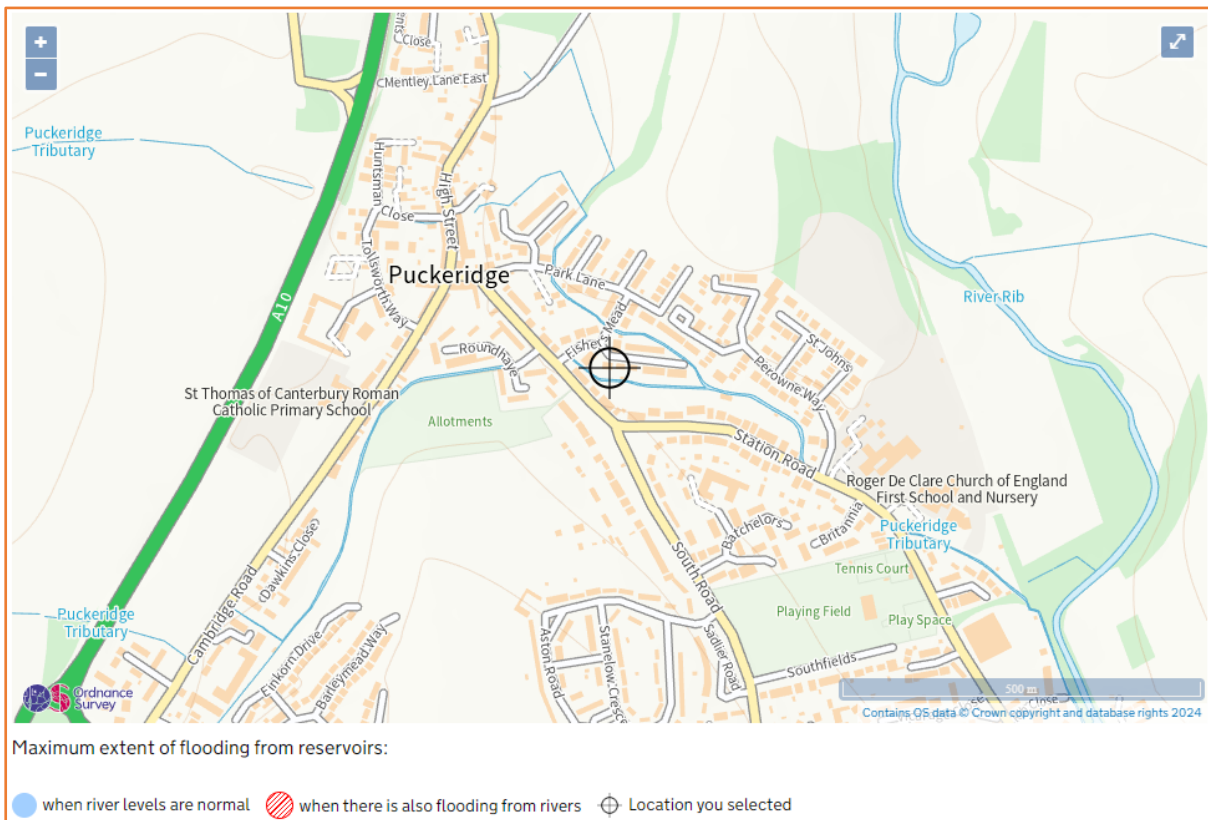


Figure 11: Extract from Environment Agency Risk of Flooding from Reservoirs Map (Source: EA)

6. Flood Risk Management

6.1. Vulnerability to Flooding:

The NPPF classifies property usage by vulnerability to flooding.

The existing site usage (residential) is classified as "more vulnerable".

Post development, the site will remain "more vulnerable". Accordingly, it is considered that the vulnerability of the site will remain the same post development.

6.2. EA Standing Advice:

The EA Standing Advice guidance is for domestic extensions and non-domestic extensions where the additional footprint created by the development does not exceed 250m². It should not be applied if an additional dwelling is being created, e.g. a self-contained annex or additional commercial unit.

The proposed planning application is for the construction of a residential extension which does not exceed 250m².

As per the EA Standing Advice, floor levels in the extension will be set no lower than existing adjacent floor levels (the new FFL finishes flush with the existing), and flood proofing of the development will be incorporated as appropriate.

No additional residential units will be created as part of the development and no new bedrooms are proposed on the ground floor.

The proposed development is considered to fit within the EA's standing advice for domestic extensions.

6.3. Physical Design Measures:

Given that the proposed application is for an extension to the existing property (and will not introduce any additional or separate residential units), finished floor levels will be set no lower than existing floor levels, and internal access will be maintained from the ground floor to the first floor of the property.

To help protect against flooding during extreme events, the applicant has agreed to implement flood resistant design measures into the proposal, in consultation with the Local Authority building control department. These measures can include the following:

- Exterior ventilation outlets, utility points and air bricks fitted with removable waterproof covers;
- Non-return valves fitted to all drain and sewer outlets;
- Electrical main ring run from ceiling level;
- Electrical incomer and meter situated at a high level;

- Boilers, control and water storage / immersion installed at a high level;
- Plumbing insulation of closed-cell design;
- Non-return valves fitted to all drain and sewer outlets;
- Manhole covers secured;
- Anti-syphon fitted to all toilets.
- Ground floor electrical main ring run from first floor level; and on separately switched circuit from first floor;
- Gas meter installed at first floor level or above;
- Kitchen units of solid, water resistant material;
- Use of MDF carpentry (i.e. skirting, architrave, built-in storage) avoided at ground floor level;
- Stairs of solid hardwood construction with wood faces treated to resist water penetration.
- The external ground floor doors and windows will be flood proof.

It is recommended that demountable flood defence barriers are installed up to 600mm above ground level, to defend ground level doorways where practical or other planning constraints do not prevent it.

6.4 Safe Escape:

The NPPF requires a route of safe escape for all residents and users to be provided from new residential properties in Flood Zone 3. Safe escape is usually defined as being though slow moving flood water no deeper than 25cm.

However, it should be noted that the proposed application is for the construction of a residential extension. No additional or new units or dwellings will be created as part of the development. Safe escape is not a requirement under the EA Standing Advice guidance is for domestic extensions.

Residents and users should follow the warning and evacuation procedure detailed in the following section.




6.5 Flood Warning:

The EA is responsible for issuing flood warnings. Flood warnings are issued to the emergency services and local authorities. Both private individuals and organisations can sign-up to receive warnings via phone, text or email. This system of receiving warnings is currently voluntary.

Advice regarding severe flood warnings will generally be given during weather forecasts on local radio and TV. In the case of extreme events, warnings can also be disseminated via door-to-door visits by the police or locally appointed flood wardens.

The site lies within an Environment Agency Flood Warning/ Alert Area. The EA issue flood warnings/alerts to specific areas when flooding is expected. It is recommended that the applicant registers online with the free Environment Agency Floodline Warnings/Alert Direct service at www.gov.uk/sign-up-for-flood-warnings to receive flood warnings by phone, text or email.

The flood warning service has three types of warnings that will help you 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.

7 Table 2: EA Flood Warning Service

6.6 Flood Plan:

It is recommended that the applicant and future owners, occupiers and Landlords of the property prepare a flood plan to protect life and property during a flood event:

Before a Flood:

- Prepare and keep a list of all your important contacts to hand or save them on your mobile phone.
- Think about what items you can move now and what you would want to move to safety during a flood.
- Know how to turn off electricity and water supplies to the site.
- 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.

During a Flood:

- Activate the evacuation plan and evacuate the site.
- Remove cars from the site if there is sufficient warning and the water levels are not rising rapidly.
- Switch off water and electricity for the site.
- Tune into your local radio station on a battery or wind-up radio.
- Listen to the advice of the emergency service and evacuate if told to do so.

- Avoid walking or driving through flood water. Six inches 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 outerwear, including gloves, wellington boots and a face mask.
- Have your electrics and water checked by qualified engineers before switching them back on.

6.7 Off-Site Impacts:

6.7.1 Fluvial floodplain storage:

The NPPF requires that where development is proposed in undefended areas of floodplain, which lie outside of the functional floodplain, the implications of ground raising operations for flood risk elsewhere needs to be considered. Raising existing ground levels may reduce the capacity of the floodplain to accommodate floodwater and increase the risk of flooding by either increasing the depth of flooding to existing properties at risk or by extending the floodplain to cover properties normally outside of the floodplain. Flood storage capacity can be maintained by lowering ground levels either within the curtilage of the development or elsewhere in the floodplain, in order to maintain at least the same volume of flood storage capacity within the floodplain.

In undefended tidal areas, raising ground levels is unlikely to impact on maximum tidal levels so the provision of compensatory storage should not be necessary.

For development in a defended flood risk area, the impact on residual flood risk to other properties needs to be considered. New development behind flood defences can increase the residual risk of flooding if the flood defences are breached or overtopped by changing the conveyance of the flow paths or by displacing flood water elsewhere. If the potential impact on residual risk is unacceptable then mitigation should be provided.

The application site is situated within Flood Zone 3a, as defined by the 2016 East Hertfordshire SFRA. The application is for a residential extension of less than 250m², and therefore there will be no unacceptable loss of floodplain storage.

6.7.2 Surface Water Drainage:

The development will utilise Sustainable drainage systems (SuDS) design in accordance with the NPPF for Planning Applications and the drainage hierarchy as follows:

1. Store rainwater for later use;
2. Infiltration techniques;
3. Attenuate rainwater by storing in tanks for gradual release;
4. Discharge rainwater direct into watercourse;

5. Discharge rainwater into surface water sewer;
6. Discharge rainwater into a combined sewer;

Due to the small scale of the development, a full Surface Water Drainage Strategy is not required at this stage of planning. However, SuDS features will be incorporated into the development where practically possible or will utilise the existing arrangement on site.

As such, any change in surface water runoff from the site will likely be negligible.

7. Sequential and Exception Test

The Sequential Test aims to ensure that development does not take place in areas at high risk of flooding when appropriate areas of lower risk are reasonably available.

The site is situated within Flood Zone 3 when using the Environment Agency Flood Map for Planning (Rivers and Sea). The 2016 East Hertfordshire identifies the site is not within Flood Zone 3b.

Post development, the site will remain “more vulnerable” (residential) throughout.

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a	Exception Test required	✗	Exception Test required	✓	✓
Zone 3b	Exception Test required	✗	✗	✗	✓

Table 2: Flood Risk Vulnerability and Flood Zone ‘Compatibility’

The Sequential and Exception Tests do not need to be applied to minor developments and changes of use (this application is for ‘minor development’ – a non-domestic extension).

8. Discussion and Conclusion

Unda Consulting Limited have been appointed by Mr Roy Rowe to undertake a Site Specific Flood Risk Assessment (FRA) for Planning at 4 Fishers Close, Puckeridge, Hertfordshire, SG11 1TD. The FRA has been undertaken in accordance with the National Planning Policy Framework (NPPF) and the associated technical guidance.

The proposed planning application is for the erection of a two storey side extension on the existing residential dwelling.

The existing site usage (residential) is classified as "more vulnerable". Post development, the site will remain "more vulnerable". Accordingly, it is considered that the vulnerability of the site will remain the same post development.

No separate or additional residential units will be created and the two storey rear extension is to be used as a playroom and utility room on the ground floor. No bedrooms will be located on the ground floor.

The site is located within Flood Zone 3 (High Probability), which means it is defined as land having a 1 in 100 or greater annual probability of river flooding. The nearest watercourse is the Puckeridge Tributary which borders the site's southern boundary.

Product 4 modelled flood levels and extents have been requested from the Environment Agency for use within this report.

According to the 2016 East Hertfordshire SFRA, the site is not located within Flood Zone 3b, the functional floodplain. The site is located within Flood Zone 3a

There are no EA owned or maintained flood defences in the vicinity of the site.

The site is outside of historical flood extents reported by the EA and the 2016 East Hertfordshire SFRA mapping. No records of fluvial flooding at the site previously have been provided.

The EA Surface Water Flood Map suggests that the site is at a "Low" to "High" risk of flooding from surface water.

The EA risk of flooding from surface water depth maps show:

- For the 1:30 year event (High), on the site there is a maximum flood depth of 0.3-0.6m on site. However, in the area of the proposed side extension, there are maximum flood depths of between 0.15-0.3m.
- For the 1:100 year event (Medium), on the site there is a maximum flood depth of between 0.3-0.6m on site.
- For the 1:1000 year event (Low), on the site there is a maximum flood depth of between 0.9-1.2m on site.

No records of surface water flooding at the site previously have been provided.

The 2016 East Hertfordshire mapping indicates that the site lies within an area of between 25-50% susceptibility to groundwater flooding. The EA has identified that groundwater flooding is unlikely in this area. There are no records of groundwater flooding previously affecting the site.

The 2016 East Hertfordshire reports that the SG11 1 postcode area has previously been affected by 3 recorded sewer flood incidents as of July 2016. No information has been provided to suggest that the site has previously been affected by sewer flooding.

The site is situated outside of the maximum inundation extent on the EA Reservoir Inundation Map.

The applicant has confirmed that:

- Proposed development fits within EA standing advice for domestic extensions
- No additional residential units will be created as part of the development
- The additional footprint created by the development will not exceed 250m²
- Floor levels within the extension will be set no lower than existing floor levels
- Flood proofing of the development will be incorporated as appropriate
- The applicant will register with the Environment Agency Floodline Alert/Warnings Direct service
- Due to the scale of the development, a full Surface Water Drainage Strategy is not required at this stage of planning

Assuming accordance with these flood risk management measures, Unda Consulting Limited consider the proposed application to be suitable in flood risk terms.

Appendix

- Site location and proposed plans;
- EA Flood Map for Planning.

HERTFORDSHIRE BUILDING CONTROL

BUILDING CONTROL CONSULTANCY

Hertfordshire Building Control
Hertsmere Civic Offices
Elstree Way, Borehamwood
Hertfordshire WD6 1WA

020 8007 7495
buildingcontrol@hertfordshirebc.co.uk
www.hertfordshirebc.co.uk

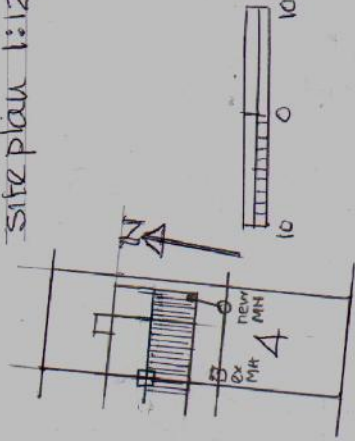
FULL PLANS SUBMISSION
The Building Act 1984
The Building Regulations 2010

This form is to be completed in full by the person (or agent) intending to carry out building work. If the form is unfamiliar, please read the notes on the reverse side or consult the office indicated above. Please type or use block capitals.

Applicant's details (see note 1)	
Surname: <u>Oliver</u>	Title: (eg Mr/Mrs/Miss) <u>Mr.</u>
Name of Company or Partnership (if applicable) and Status eg Ltd/Plt	
<u>4 Fishers Close, Rickenside, Saultd</u>	
Address:	Email: <u>Laliverroofing@yahoo.co.uk</u>
Postcode: <u>WD4 3 200 311</u>	Tel: <u>07493 700 311</u>
Agent's details (if applicable)	
Name: <u>Roy A. Rowe</u>	Telephone: <u>0763 848018</u>
Address: <u>Turnpike Cottage</u>	Address: <u>High Street, Barkway</u>
Postcode: <u>SG8 8EG</u>	Tel: <u>01763 848618</u>
Email: <u>annroyrowe@gmail.com</u>	
Location of building to which work relates	
Address: <u>ASD</u>	Postcode:
Proposed Work	
Description: <u>two storey side extension</u>	Registered Detail (note 9) or being dealt with by a Partner Authority: <u>YES/NO</u>
Details/Name of Partner Authority:	
Use of building	
1 If new building or extension please state proposed use: <u>residential</u>	
2 If existing building state present use: <u>h</u>	
3 Is the building a workplace subject to provisions of the Regulatory Reform (Fire Safety) Order 2005 (see note 3):	
Conditions (see note 5)	
Do you consent to the plans being passed subject to conditions where appropriate? YES/NO	
Relevant Period (see note 6)	
Do you consent to the statutory period being extended to 2 months, if necessary? YES/NO	
Fees (see note 4 and separate Guidance Note on Fees for Information)	
State internal floor area in m ² of new building, extension or loft conversion:	
State estimated cost (excluding vat) of work in Alterations category:	
Has the charge been individually determined? YES/NO	
PLAN fee: E	plus VAT: E
Total: E	
Are there, have there recently been, or are there likely to be, any trees, shrubs or hedges within 30 metres (100 ft) of any proposed foundations? YES/NO	
(Details, eg type, distance, date removed or to be planted, shown on drawings)	
Statement	
This application is deposited in relation to the building work as described for the purpose of Regulation 12(2)(b) and is accompanied by the appropriate fee. I understand that further fees will be payable following the first inspection by the local authority.	
Name: <u>R.A. Rowe</u>	Signature: <u>[Signature]</u>
Date: <u>23/1/24</u>	Checked/Agent:
PLANNING APPLICATION REFERENCE No FOR SCHEME (if known / applicable):	

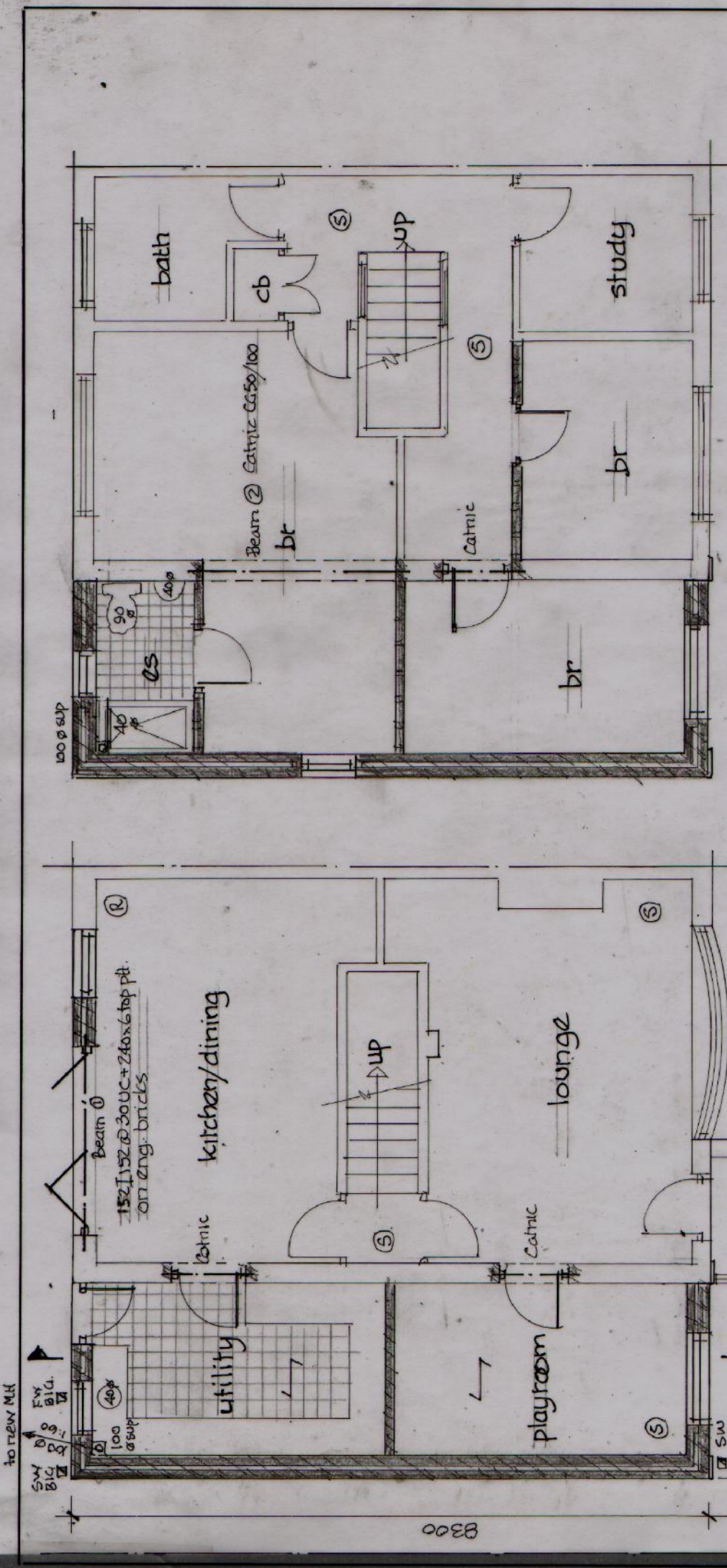


site plan 1:1250



Block Plan 1:500

4 Fishers Close, Rickenside
DRG. 1-24-3



R.A. Rowe.
Architectural Design Service
Temple Close High Street
Barnet, Herts. EN4 1JH
Tel. 01793 86013

R.A.R.

4 Fishers Close
Puckeridge
Proposed extension
Floor Plans

Scale: 50
Date: Jan 24 Drawn: P.A.R.
Drawing No.: 1-24-3 Rev:



Flood map for planning

Your reference
93898

Location (easting/northing)
538846/223143

Created
2 Feb 2024 8:55

Your selected location is in flood zone 3, an area with a high probability of flooding.

This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see www.gov.uk/guidance/flood-risk-assessment-standing-advice)

Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence which sets out the terms and conditions for using government data. <https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/>

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. <https://flood-map-for-planning.service.gov.uk/os-terms>




Flood map for planning

Your reference
93898

Location (easting/northing)
538846/223143

Scale
1:2500

Created
2 Feb 2024 8:55

-  Selected area
-  Flood zone 3
-  Flood zone 2
-  Flood zone 1
-  Flood defence
-  Main river
-  Water storage area

