FLOODPLAN LIMITED

Project Title: 00208 Chapel House

Product: Level 3 Flood Risk Assessment

Date: 28 September 2022

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Disclaimer

This document has been created for the purpose of a Flood Risk Assessment only and should only be used by Mr A. Fox for its intended purpose. FloodPlan Limited accepts no responsibility or liability for misuse of the document.

Report Revision Log

Report Reference	Date Issued	Issued To	Notes
00208 Chapel House	28/09/2022	Client	

1. INTRODUCTION

1.1. PURPOSE OF THE REPORT

FloodPlan have been commissioned on behalf of Mr A. Fox to produce a Flood Risk Assessment for Chapel House, Westbury-on-Severn, GL14 1JE. This assessment has been conducted with the understanding that the document will be used as part of a planning permission proposal by Mr A. Fox.

1.2. LOCATION OF SUBJECT SITE

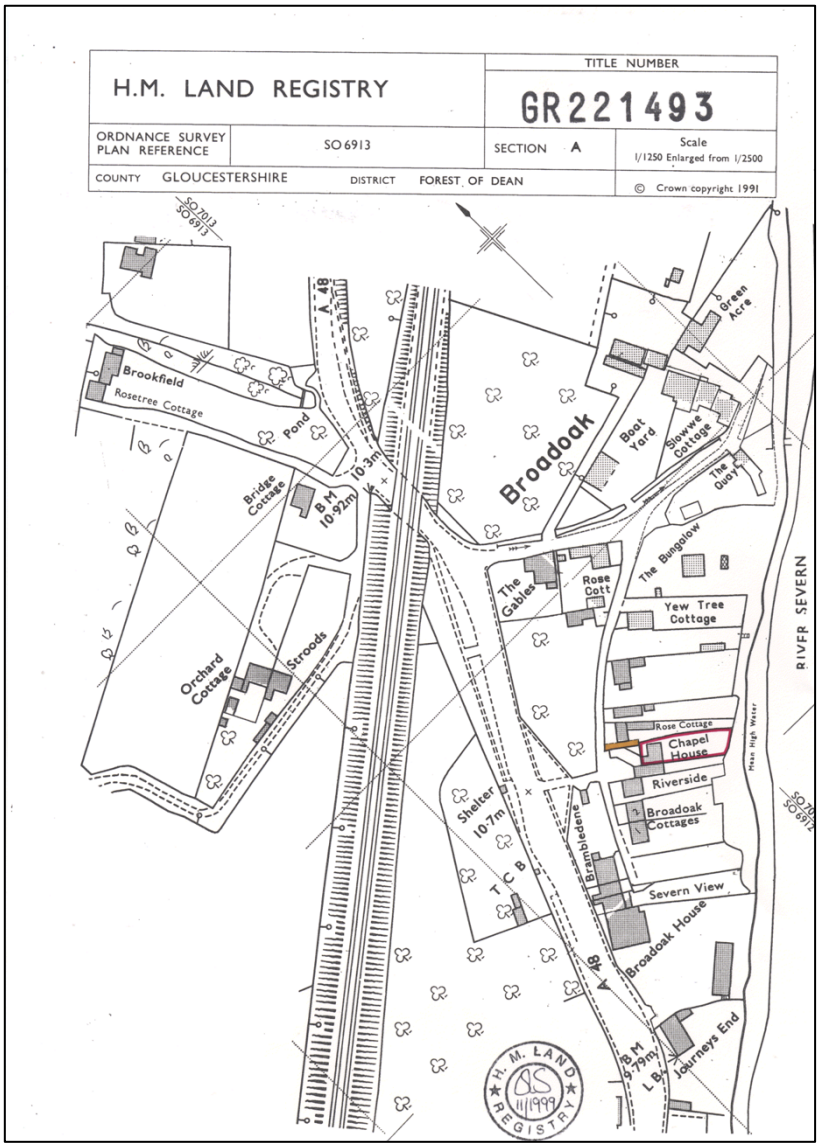


Figure 1: Site Location

1.3. SITE PROPOSALS

The development proposes a front and rear extension to an existing residential dwelling.

ASSESSMENT OF NPPF

1.4. INTRODUCTION TO NPPF

The National Planning Policy Framework (NPPF) document provides guidance to local planning authorities to ensure the effective implementation of the planning policy. The policy seeks to direct development away from areas at highest risk, but where development is necessary, making it safe without increasing flood risk elsewhere. For these purposes:

- "areas at risk of flooding" means land within Flood Zones 2 and 3; or land within Flood Zone 1 which has critical drainage problems, and which has been notified to the local planning authority by the Environment Agency.
- "flood risk" means risk from all sources of flooding - including from rivers and the sea, directly from rainfall on the ground surface and rising groundwater, overwhelmed sewers, and drainage systems, and from reservoirs, canals and lakes and other artificial sources.

Flood risk (from river and sea) are categorised inro one of the below:

1.5. FLOOD RISK CLASSIFICATIONS

Flood Zone	Probability of flooding
Zone 1	Low probability
Zone 2	Medium probability
Zone 3a	High probability
Zone 3b	Functional Floodplain

1.6. FLOOD RISK VULNERABILITY CLASSIFICATION

NPPF categorises land by vulnerability. A summary of categories can be seen below:

Vulnerability Class	Infrastructure
Essential Infrastructure	Power stations, water treatment works, wind turbines etc.

Highly vulnerable	Police stations, basement dwellings, caravans, mobile homes etc
More vulnerable	Hospitals, residential buildings, landfill sites, drinking establishments etc
Less Vulnerable	Emergency services stations, shops and building that offer professional services etc
Water compatible development	Pumping stations, docks, marinas etc

1.7. SUITABLE DEVELOPMENT MATRIX

The below table outlines the suitable development type for the flood zone classification assigned by the Environment Agency flood maps.

Flood risk vulnerability classification	Essential infrastructure	Water compatible	Highly vulnerable	More vulnerable	Less vulnerable
Zone 1					
Zone 2			Exception Test Required		
Zone 3a	Exception Test Required			Exception Test Required	
Zone 3b Functional floodplain	Exception Test Required				

Figure 2: Suitable Development Matrix

Key: Blue Development is appropriate; Red Development should not be permitted; Green Development is appropriate with the passing of an Exception Test.

2. NPPF SITE ASSESSMENT

2.1. FLOOD ZONE CLASSIFICATION

As per Figure 3, the site is wholly within flood zone 3.

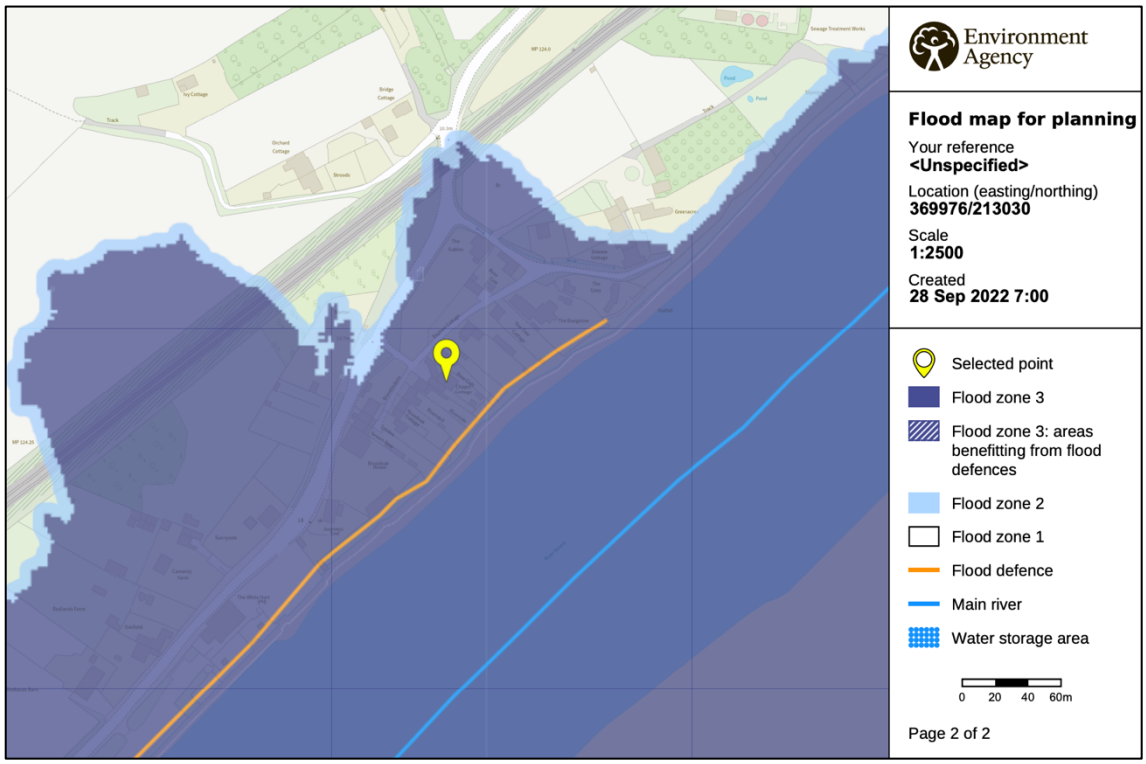


Figure 3: Flood Zone

2.2. LAND VULNERABILITY CLASSIFICATION

The existing land was used as an amenity area for the existing residential property and is therefore designated as 'less vulnerable' by NPPF. The proposed development will be designated 'more vulnerable'. The development therefore increases the vulnerability classification of the land.

2.3. SITE SUITABILITY (NPPF)

'More vulnerable' development is suitable for flood zone 3, as per Figure 2.

3. SITE FLOOD RISK

3.1. THIRD PARTY FLOOD RISK DATA SUMMERY

A 'Groundsure' flood report has been acquired for advising this assessment. The full report can be found in Appendix B. The main findings are summarised below:

Type of Risk	Assessment of Risk
Overall Flood Risk	High
Rivers and the Sea	High
Surface Water	Negligible
Groundwater	Negligible
Historic Flood	Not Identified
Flood Defences	Yes
FloodScoreTM – insurance rating	Very Low

3.2. SURFACE WATER FLOODING

The Environment Agency surface water flood map Figure 4, shows the site to be at risk from surface water flooding. Potential site users should be made aware.

Figure 4: EA Surface Water Flood Map

Where the dark blue shaded area denotes high risk of surface water flooding; the light blue denotes low risk with white areas having very low risk of surface water flooding. The risk classification is comparable to the 'Groundsure' flood report.

3.3. TIDAL AND FLUVIAL FLOODING

The site is classified as having a high risk of flooding from tidal or river sources by the EA mapping.

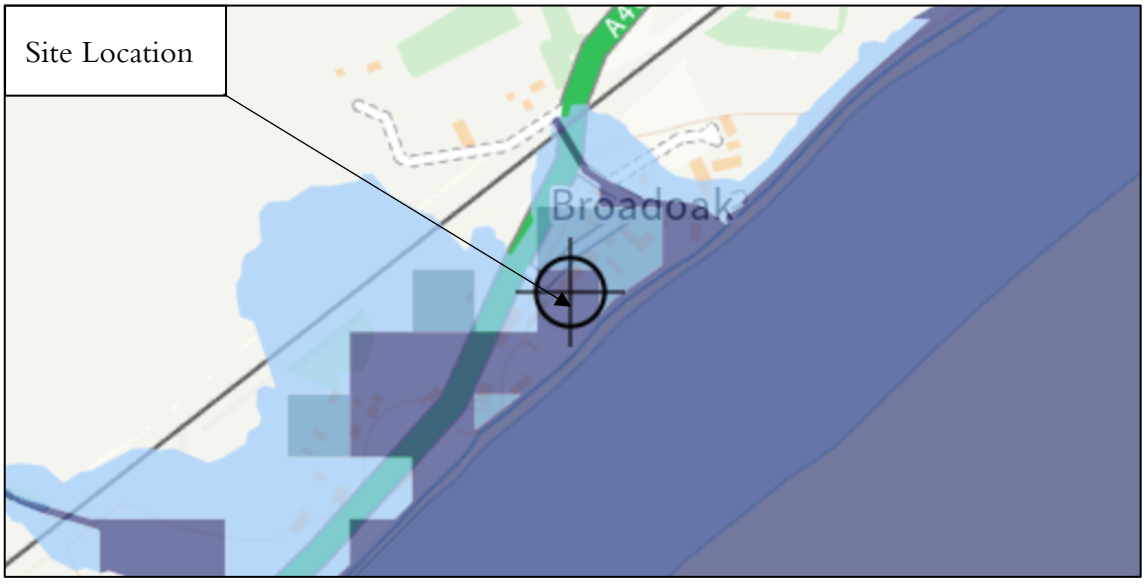


Figure 5: EA Tidal and Fluvial Flood Map

Where the dark blue shaded area denotes high risk of tidal and pluvial flooding; the light blue denotes low risk with the lightest blue areas having a very low risk of flooding.

LiDAR downloaded on thee 28th of September 2022 identifies the site to have a ground level of 9.6mOD.

As part of the commission, FloodPlan obtained Environment Agency flood modelling data. The closest node to the subject site is 'SEV37':

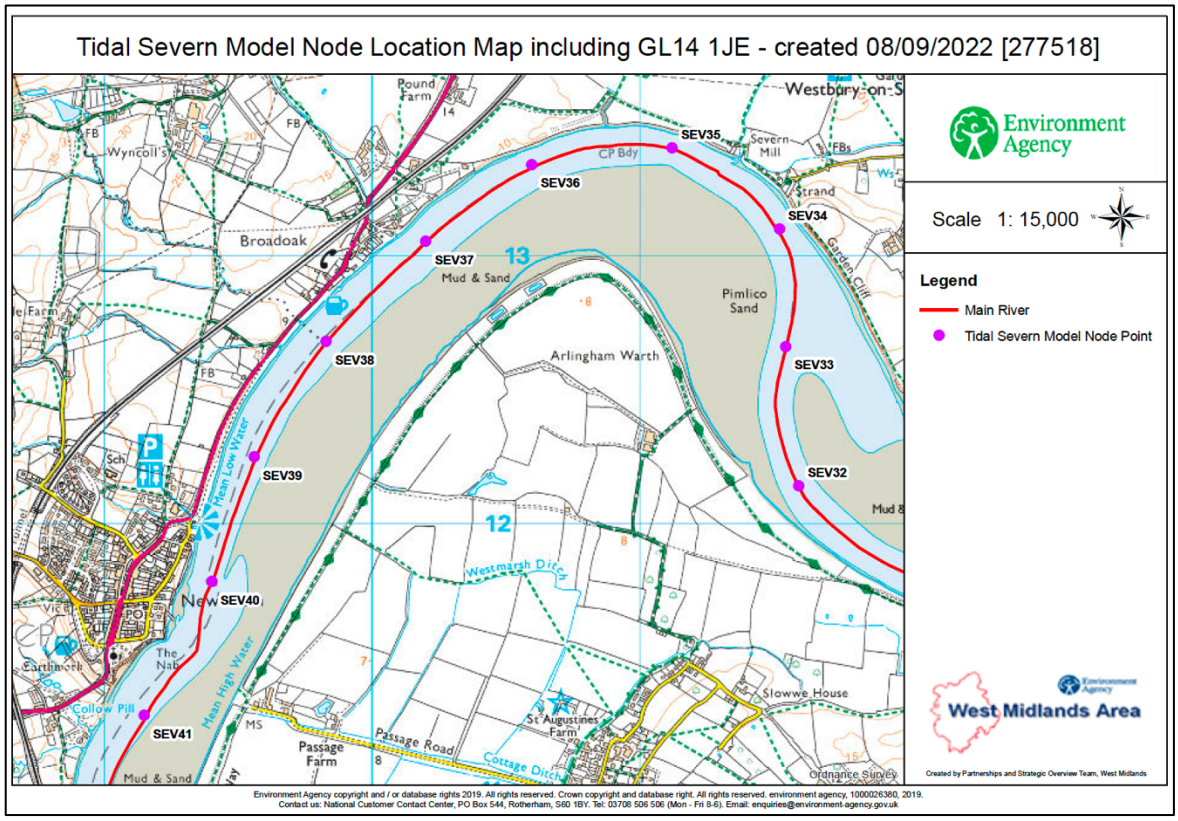


Figure 6: Environment Agency Node Locations.

'SEV37' is modelled to experience a maximum water level of 10.25mOD during the Fluvial 1% 2125 Higher Central Allowance event. The site is modelled to experience 0.65m of flooding at the site.

'SEV37' is also modelled to experience a maximum water level of 11.02mOD during the Tidal 0.5% 2125 Higher Central Allowance event. The site is modelled to experience 1.42m of flooding at the site.

Floor levels of the proposed development should be set above the modelled flood levels with a 300-600mm allowance for freeboard, where appropriate. A flood evacuation plan should also be considered. Given the severity of the modelled flood depths, this report recommends that existing and proposed structure be assessed by a structural engineer.

3.4. GROUNDWATER FLOODING

The 'Groundsure' flood report indicates that the site has a negligible risk of groundwater flooding.

3.5. RESERVOIR FLOODING

The site is not considered to be at risk of flooding from reservoir sources.

3.6. HISTORIC FLOODING

The 'Groundsure' flood report failed to identify any historical flooding to the site.

4. FURTHER SITE ASSESSMENT

4.1. SITE ACCESS AND EGRESS ROUTES

The site is at risk from fluvial / tidal and pluvial sources. Consideration should be given to adopting a flood evacuation plan

4.2. FLOOD COMPENSATION

Flood compensation should be considered for theoretically lost flood volume.

4.3. FLOOD WARNING AREAS

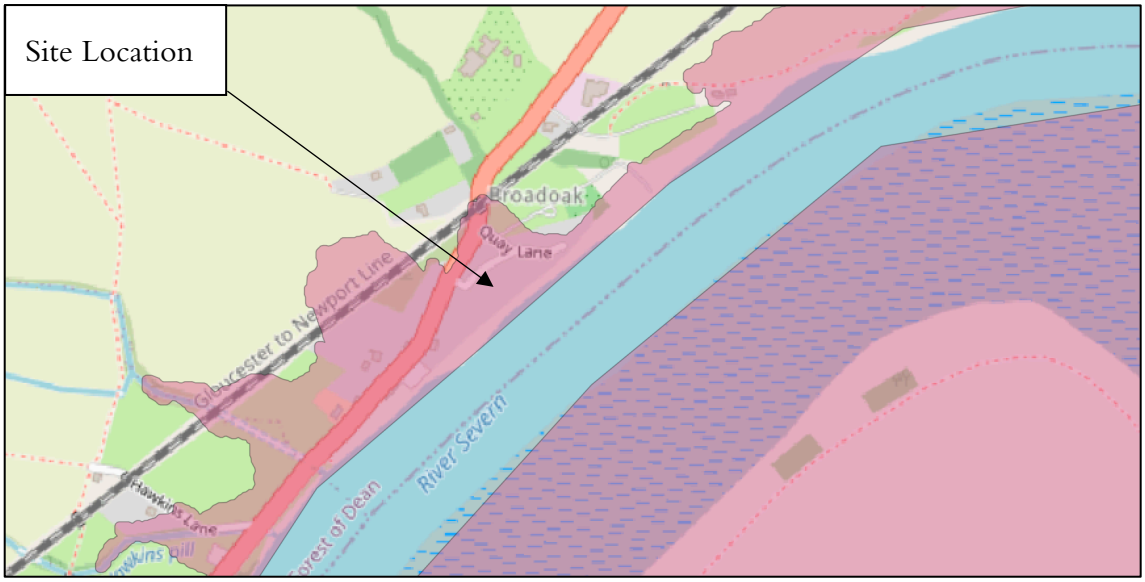


Figure 7: Flood Warning Areas

The site benefits from flood warnings.

4.4. AWARENESS OF FLOOD RISK

The developer should be aware that the site is not immune from flooding. It is recommended that all residents take the opportunity to develop emergency and non-emergency plans.

4.5. SEQUENTIAL TEST

The development proposed the construction of a residential dwelling in flood zone 3. The land is already under the ownership of the applicant and would be unviable to develop elsewhere. Further, the land is part of an existing residential estate. It is for these reasons the report finds scope for the development to have an acceptable sequential test.

4.6. EXCEPTION TEST

The NPPF Technical Guidance Document dictates that the exception test should be applied where a 'more vulnerable' type of development is located in flood risk zone 3a and is judged to have passed the sequential test.

Sites which meet the above criteria must pass the following tests. Sites must pass all elements to be appropriate for allocation.

1. "How can wider sustainability benefits to the community that outweigh flood risk be demonstrated."

The development will bring additional housing capacity to an area with a great demand. For a community to prosper, housing must be created. A benefit of maintaining the existing property will enforce the area and properties longevity. The construction would also employ local tradespeople.

2. "What needs to be considered to demonstrate that development will be safe for its lifetime."

This report has identified the site is modelled to experience non negligible risks of flooding. This report has identified a flood evacuation plan should be considered to identify flood protocols. Flood resistant and resilient materials should also be considered.

"What is considered to be the lifetime of development in terms of flood risk and coastal change."

It is reasonable to suggest that the development lifetime is 100 years, with regular maintenance. Therefore, in terms of flood risk, any surface water network design for the property must follow the SUDS hierarchy with a design to cope with events up to 100-year events plus 40% climate change allowance. There should be no displacement of water.

5. FINDINGS AND RECOMMENDATIONS

5.1. FINDINGS

The development plans an extension to an existing residential dwelling. NPPF categorises buildings used for residential purposes as 'more vulnerable'. More vulnerable developments are suitable for flood zone 3.

5.2. RECOMMENDATIONS

This report recommends the following be considered to lower the risk and/or consequences that flooding may cause to the proposed development:

- Property level flood protection and resilience should be considered
- A bespoke evacuation plan should be considered.
- No third parties are negatively impacted by the proposed development
- Finished floor levels set at a flood free level

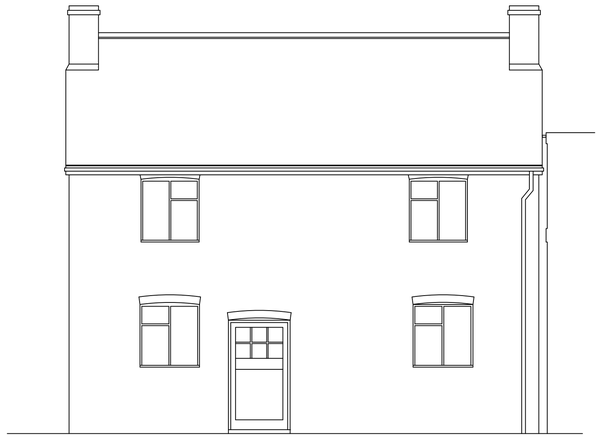
List of Appendices

Appendix A: Development Plan

Appendix B: Groundsure Flood Report

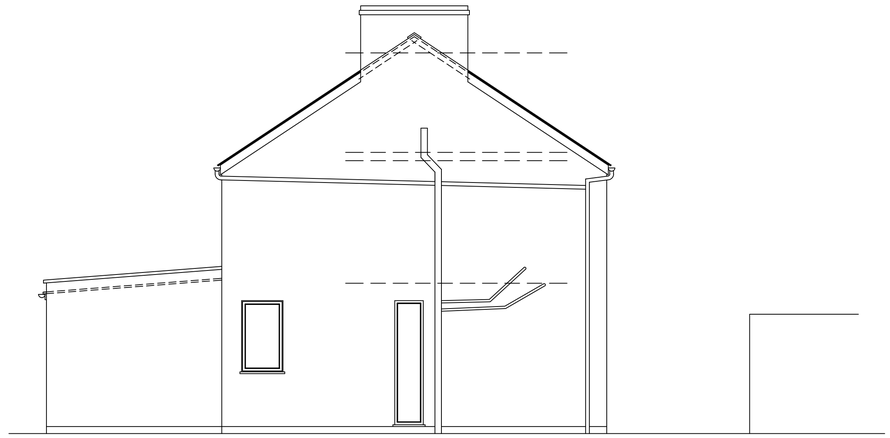
Appendix C: Environment Agency Flood Modelling Data

Appendix A: Development Plan

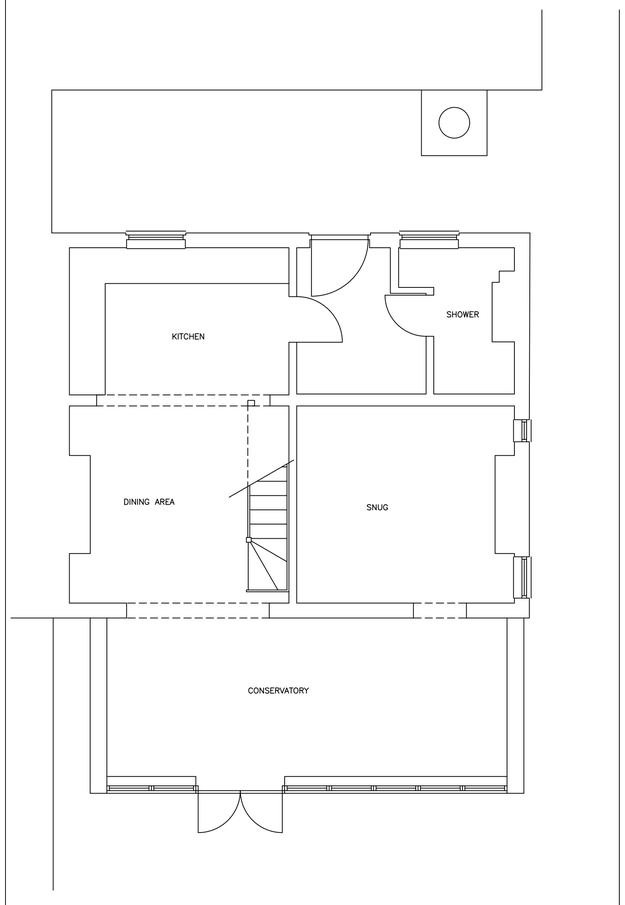


1 / 50 Existing Front Elevation

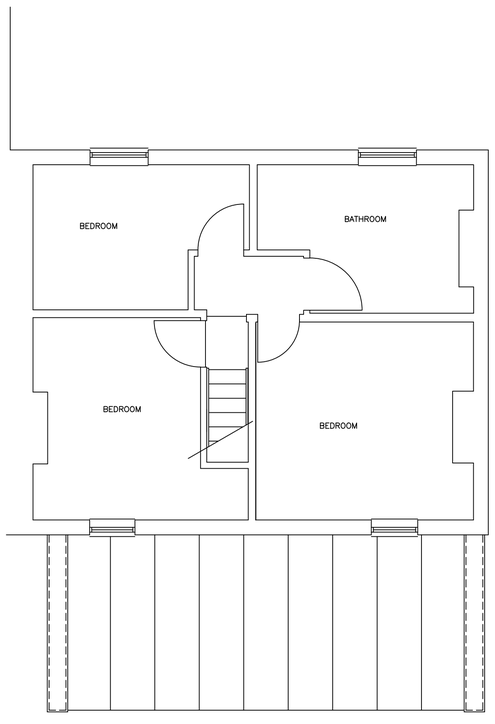
1 / 50 Existing Rear Elevation



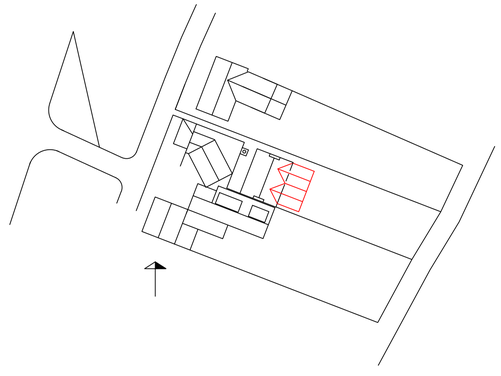
1 / 50 Existing Side Elevation



1 / 50 Existing Ground Floor Layout

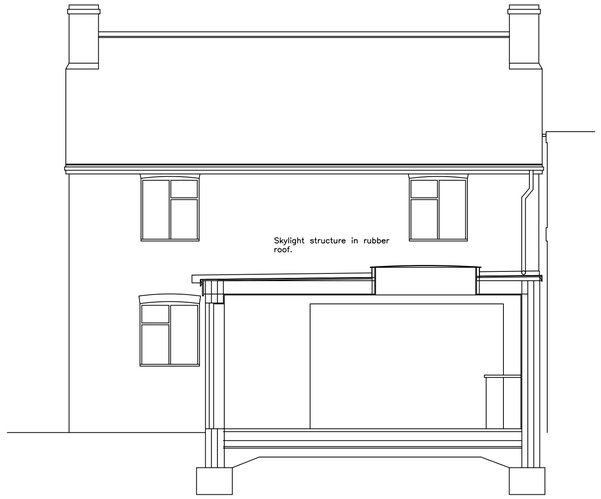


1 / 50 Existing First Floor Layout



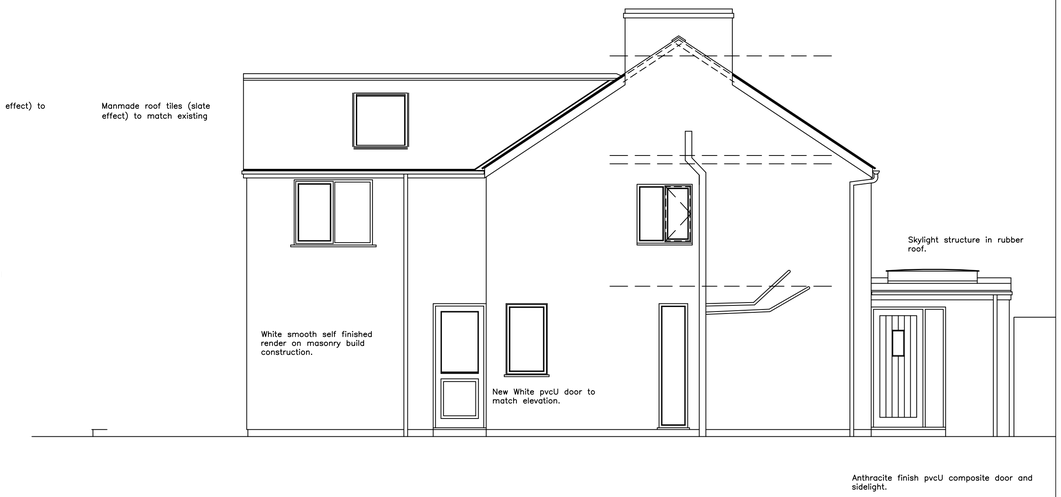
1 / 500 Block Plan

CLIENT Mr & Mrs A Fox	DRAWING TITLE Existing Layout and Elevations
PROJECT TITLE Chapel House, Riverside Lane, Broadoak. GL14 1JE	SCALE 1:50 DATE 08.05.21 DRAWN BY REVISION DRAWING NO. 0184/01

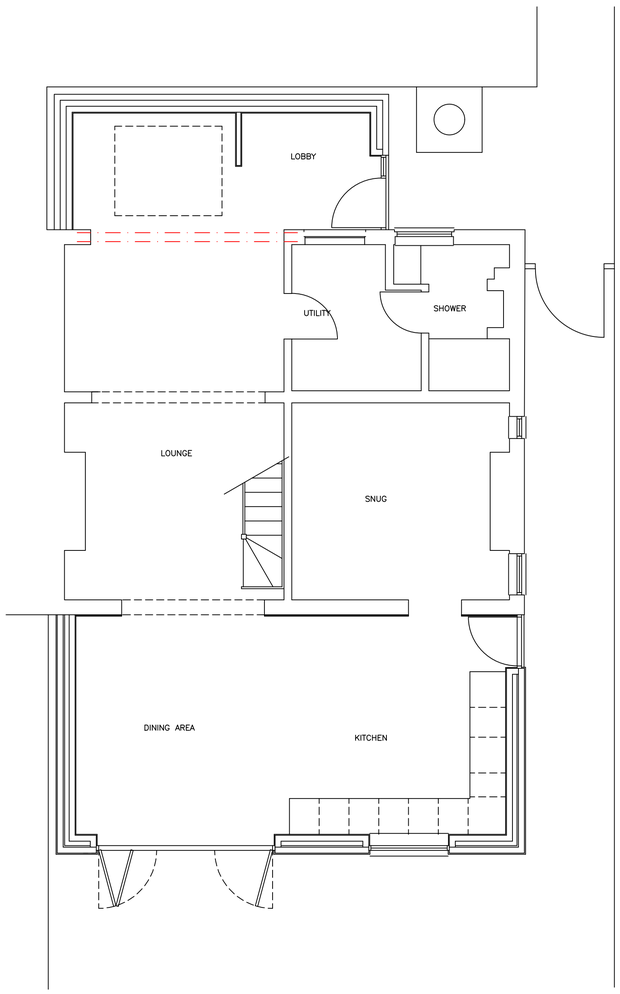


1 / 50 Proposed Front Elevation

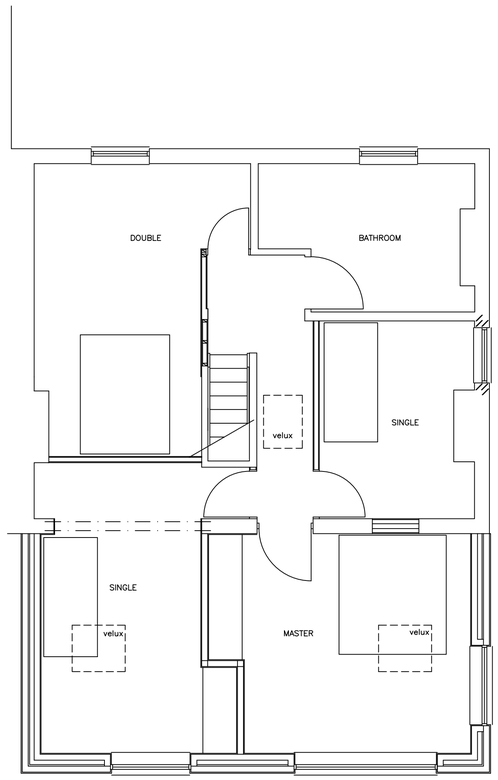
1 / 50 Proposed Rear Elevation



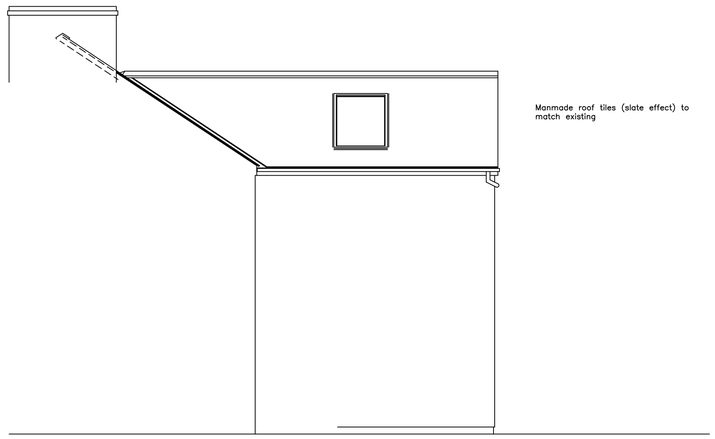
1 / 50 Proposed Side Elevation



1 / 50 Proposed Ground Floor Layout



1 / 50 Proposed First Floor Layout



1 / 50 Proposed Inner Side Elevation

CLIENT Mr & Mrs A Fox	DRAWING TITLE Proposed Layout and Elevations
PROJECT TITLE Chapel House, Riverside Lane, Broadoak. GL14 1JE	SCALE 1:50 DATE 22.11.21 | DRAWN BY | REVISION DRAWING NO. 0184/02

Appendix B: Groundsure Flood Report

Groundsure
LOCATION INTELLIGENCE

Flood

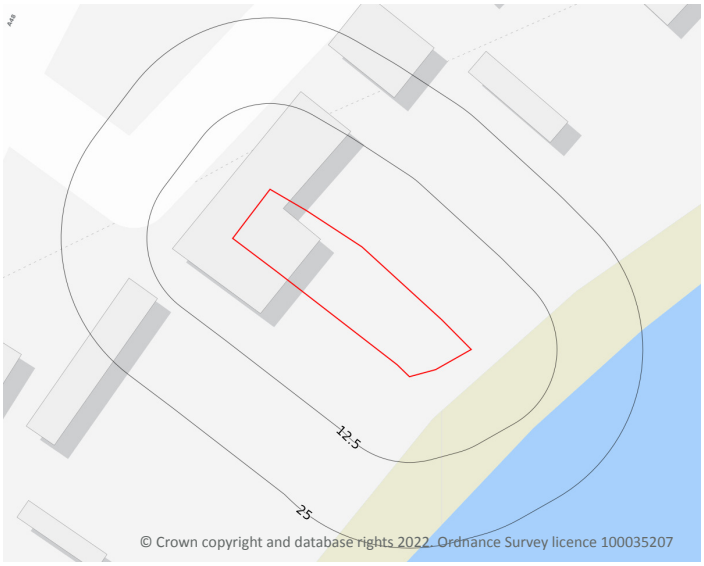
Chapel House Riverside Lane, Broadoak, Newnham, GL14 1JE

Overall Flood Risk

HIGH

Groundsure Flood complies with relevant Law Society practice notes on flood risk in property transactions.

Site plan



Search Results

Rivers and the Sea
High
page 3

Surface Water
Negligible

Groundwater
Negligible

Historic Flood
Not identified

Flood Defences
Yes
page 4

FloodScore™ insurance rating
Very Low
page 6

Full assessments for other environmental risks are available in additional Groundsure searches including the Groundsure Avista 7 in 1 report. Contact Groundsure or your search provider for further details.

Overview of findings and recommendations

To save you time when assessing the report, we only provide maps and data tables of features within the search radius that we have identified to be of note. These relate to environmental risks that may have liability implications, affect insurance premiums, property values and/or a lender's willingness to lend.

You can view the fully comprehensive library of information we have searched on **page 6**.

Flooding

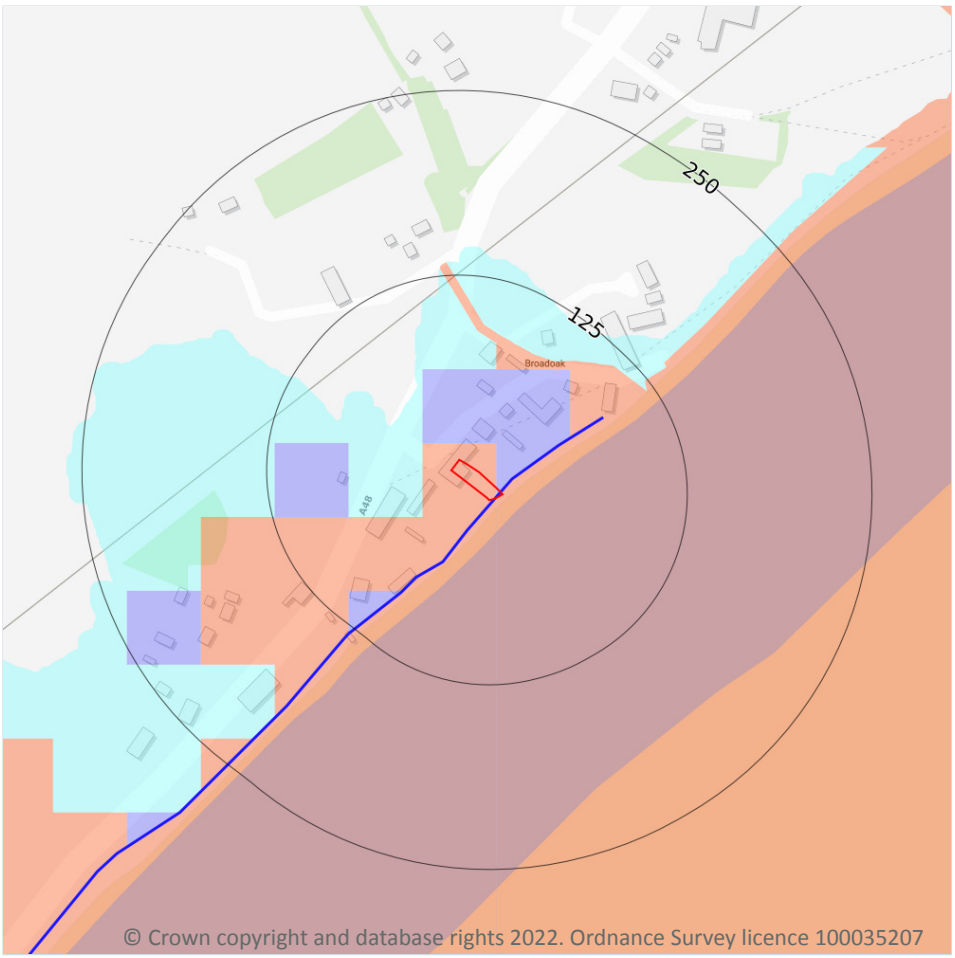
Flooding

An elevated level of flood risk has been identified at the property.

Next steps for consideration:

- check to see if the property is eligible for the Flood Re scheme, which enables many properties at risk of flooding to be insured at reasonable rates: http://www.floodre.co.uk/homeowner/about-us/
- investigate the insurance on offer for the property to ensure any implications on premiums are fully understood before completion
- the assessment in this report is based on the highest flood risk found within the site boundary. The detailed maps within the flood section clearly highlight which parts of the site are affected by flooding, allowing you to visualise whether flood risk affects the buildings or the associated land. If you would prefer an assessment that provides separate flood ratings for the main dwelling and the associated land, Groundsure can provide this for a fee of £35 plus VAT
- if the property has recently been constructed, the flood risk assessment contained within this report will not take into account any measures put in place by the developer to deal with flooding. You should seek further information from the developer on flood risk mitigation for the site
- investigate the various forms of flood resistance and resilience measures that will help protect your property in the event of a flood

Flooding / Risk of flooding from rivers and the sea



Site Outline

Search buffers in metres (m)

River and coastal flooding:

- High
- Medium
- Low
- Very Low
- Historical Flood Events
- Areas Used for Flood Storage
- Areas Benefiting from Flood Defences
- Proposed Flood Defence Scheme
- Flood Defences

Risk of flooding from rivers and the sea

The property has a High chance of flooding in any given year, according to Risk of Flooding from Rivers and Sea (RoFRaS)/Flood Risk Assessment Wales (FRAW) data. This could cause problems with insuring the property against flood risk. However, if built before 2009, it may be eligible for insurance assistance from the Flood Re scheme: http://www.floodre.co.uk/

RoFRaS/FRAW assesses flood risk from rivers and the sea in England and Wales, using local data and expertise. It shows the chance of flooding from rivers or the sea, taking account of flood defences and the condition those defences are in. The model uses local water level and flood defence data to model flood risk. See page **page 6** for explanation of the levels of flood risk.

Please see **page 2** for further advice.

This data is sourced from the Environment Agency and Natural Resources Wales.

Flooding / Flood defences

Flood defences

There are flood defences built in the vicinity of the property. Flood defences seek to reduce the risk of flooding and to safeguard life, protect property, sustain economic activity and the natural environment. Flood defences are designed to protect against flood events of a particular magnitude, expressed as risk in any one year.

Please see **page 2** for further advice.

Datasets searched

This is a full list of the data searched in this report. If we have found results of note we will state "Identified". If no results of note are found, we will state "Not identified". Our intelligent filtering will hide "Not identified" sections to speed up your workflow.

Flooding	
Risk of flooding from rivers and the sea	**Identified**
Flood storage areas: part of floodplain	Not identified
Historical flood areas	Not identified
Areas benefiting from flood defences	Not identified
Flood defences	**Identified**
Proposed flood defences	Not identified
Surface water flood risk	Not identified
Groundwater flooding	Not identified

Flood information

The Flood Risk Assessment section is based on datasets covering a variety of different flooding types. No inspection of the property or of the surrounding area has been undertaken by Groundsure or the data providers. The modelling of flood hazards is extremely complex and in creating a national dataset certain assumptions have been made and all such datasets will have limitations. These datasets should be used to give an indication of relative flood risk rather than a definitive answer. Local actions and minor variations, such as blocked drains or streams etc. can greatly alter the effect of flooding. A low or negligible modelled flood risk does not guarantee that flooding will not occur. Nor will a high risk mean that flooding definitely will occur. Groundsure's overall flood risk assessment takes account of the cumulative risk of river and coastal data, historic flood events and areas benefiting from flood defences provided by the Environment Agency/Natural Resources Wales (in England and Wales) and surface water (pluvial) and groundwater flooding provided by Ambiental Risk Analytics. In Scotland the river and coastal flood models are also provided by Ambiental Risk Analytics.

Risk of flooding from rivers and the sea

This is an assessment of flood risk for England and Wales produced using local data and expertise, provided by the Environment Agency (RoFRaS model) and Natural Resources Wales (FRAW model). It shows the chance of flooding from rivers or the sea presented in categories taking account of flood defences and the condition those defences are in. The model uses local water level and flood defence data to model flood risk.

The categories associated with the Environment Agency and Natural Resources Wales models are as follows:

RoFRaS (rivers and sea) and FRAW (rivers):

Very Low - The chance of flooding from rivers or the sea is considered to be less than 1 in 1000 (0.1%) in any given year.

Low - The chance of flooding from rivers or the sea is considered to be less than 1 in 100 (1%) but greater than or equal to 1 in 1000 (0.1%) in any given year.

Medium - The chance of flooding from rivers or the sea is considered to be less than 1 in 30 (3.3%) but greater than 1 in 100 (1%) in any given year.

High - The chance of flooding from rivers or the sea is considered to be greater than or equal to 1 in 30 (3.3%) in any given year.

FRAW (sea):

Very Low - The chance of flooding from the sea is considered to be less than 1 in 1000 (0.1%) in any given year.

Low - The chance of flooding from the sea is considered to be less than 1 in 200 (0.5%) but greater than or equal to 1 in 1000 (0.1%) in any given year.

Medium - The chance of flooding from the sea is considered to be less than 1 in 30 (3.3%) but greater than 1 in 200 (0.5%) in any given year.

High - The chance of flooding from the sea is considered to be greater than or equal to 1 in 30 (3.3%) in any given year.

Historic flood events

Over 86,000 events are recorded within this database. This data is used to understand where flooding has occurred in the past and provides details as available. Absence of a historic flood event for an area does not mean that the area has never flooded, but only that Environment Agency/Natural Resources Wales do not currently have records of flooding within the area. Equally, a record of a flood footprint in previous years does not mean that an area will flood again, and this information does not take account of flood management schemes and improved flood defences.

Surface water flooding

Ambiental Risk Analytics surface water flood map identifies areas likely to flood following extreme rainfall events, i.e. land naturally vulnerable to surface water or “pluvial” flooding. This data set was produced by simulating 1 in 30 year, 1 in 100 year, 1 in 250 year and 1 in 1000 year rainfall events. The flood risks for these rainfall events are reported where the depth would be greater than the threshold for a standard property to modern building standards. Modern urban drainage systems are typically built to cope with rainfall events between 1 in 20 and 1 in 30 years, though older ones may even flood in a 1 in 5 year rainstorm event.

Proposed flood defences

The data includes all Environment Agency/Natural Resources Wales's projects over £100K that will change or sustain the standards of flood defence in England and Wales over the next 5 years. It also includes the equivalent schemes for all Local Authority and Internal Drainage Boards.

Flood storage areas

Flood Storage Areas may also act as flood defences. A flood storage area may also be referred to as a balancing reservoir, storage basin or balancing pond. Its purpose is to attenuate an incoming flood peak to a flow level that can be accepted by the downstream channel. It may also delay the timing of a flood peak so that its volume is discharged over a longer time interval. These areas are also referred to as Zone 3b or 'the functional floodplain' and has a 5% or greater chance of flooding in any given year, or is designed to flood in the event of an extreme (0.1%) flood or another probability which may be agreed between the Local Planning Authority and Environment Agency/Natural Resources Wales, including water conveyance routes. Development within Flood Storage Areas is severely restricted.

Groundwater flooding

Groundwater flooding is flooding caused by unusually high groundwater levels. It occurs as excess water emerging at the ground surface or within underground structures such as basements. Groundwater flooding tends to be more persistent than surface water flooding, in some cases lasting for weeks or months, and it can result in significant damage to property. This risk assessment is based on a 5m Digital Terrain Model (DTM) and 1 in 100 year and 1 in 250 year return periods.

Ambiental FloodScore™ insurance rating

The property has been rated as **Very Low** risk.

Ambiental's FloodScore™ risk rating gives an indicative assessment of the potential insurance risk classification from flooding, which can provide an indication of how likely it is that a property's policy will be ceded to Flood Re. The assessment is based on Ambiental's river, tidal and surface water flood data and other factors which some insurers may use in their assessment are not included.

Flood Re is a re-insurance scheme that makes flood cover more widely available and affordable as part of your residential property home insurance. Properties at higher risk of flooding may have the flood part of their policy ceded to Flood Re by their insurer. It is important to understand that Flood Re does not apply to all situations. Exclusions from Flood Re includes properties constructed after 1 January 2009; properties not within domestic Council Tax bands A to H (or equivalent); commercial properties, certain buy to let scenarios and buildings comprising four or more residential units. A full list of the exemptions can be found on the Flood Re website (https://www.floodre.co.uk/can-flood-re-help-me/eligibility-criteria/).

The Ambiental FloodScore™ insurance rating is classified into six different bandings:

Very High indicates a level of risk that may make it more likely that standard insurance premiums will be higher, or additional terms may apply to the provision of flood cover. There is a very high possibility that the cover for flooding at the property will be ceded into the Flood Re scheme, particularly if the property has flooded in the past.

High indicates a level of risk that may make it more likely that standard insurance premiums will be higher, or additional terms may apply to the provision of flood cover. There is a high possibility that the cover for flooding at the property will be ceded into the Flood Re scheme, particularly if the property has flooded in the past.

Moderate-High indicates a level of risk that may make it more likely that standard insurance premiums will be higher, or additional terms may apply to the provision of flood cover. There is a moderate possibility that the cover for flooding at the property will be ceded into the Flood Re scheme, particularly if the property has flooded in the past.

Moderate indicates a level of risk that may make it more likely that standard insurance premiums will be higher, or additional terms may apply to the provision of flood cover. There is a low possibility that the cover for flooding at the property will be ceded into the Flood Re scheme, unless the property has flooded in the past.

Low indicates a level of risk that is likely to mean standard cover and premiums are available for flood cover. There is a low possibility the cover for flooding at the property will be ceded into the Flood Re scheme, unless the property has flooded in the past.

Very Low indicates a level of flood risk that should not have any impact on the provision of flood cover for the property.

Conveyancing Information Executive and our terms & conditions

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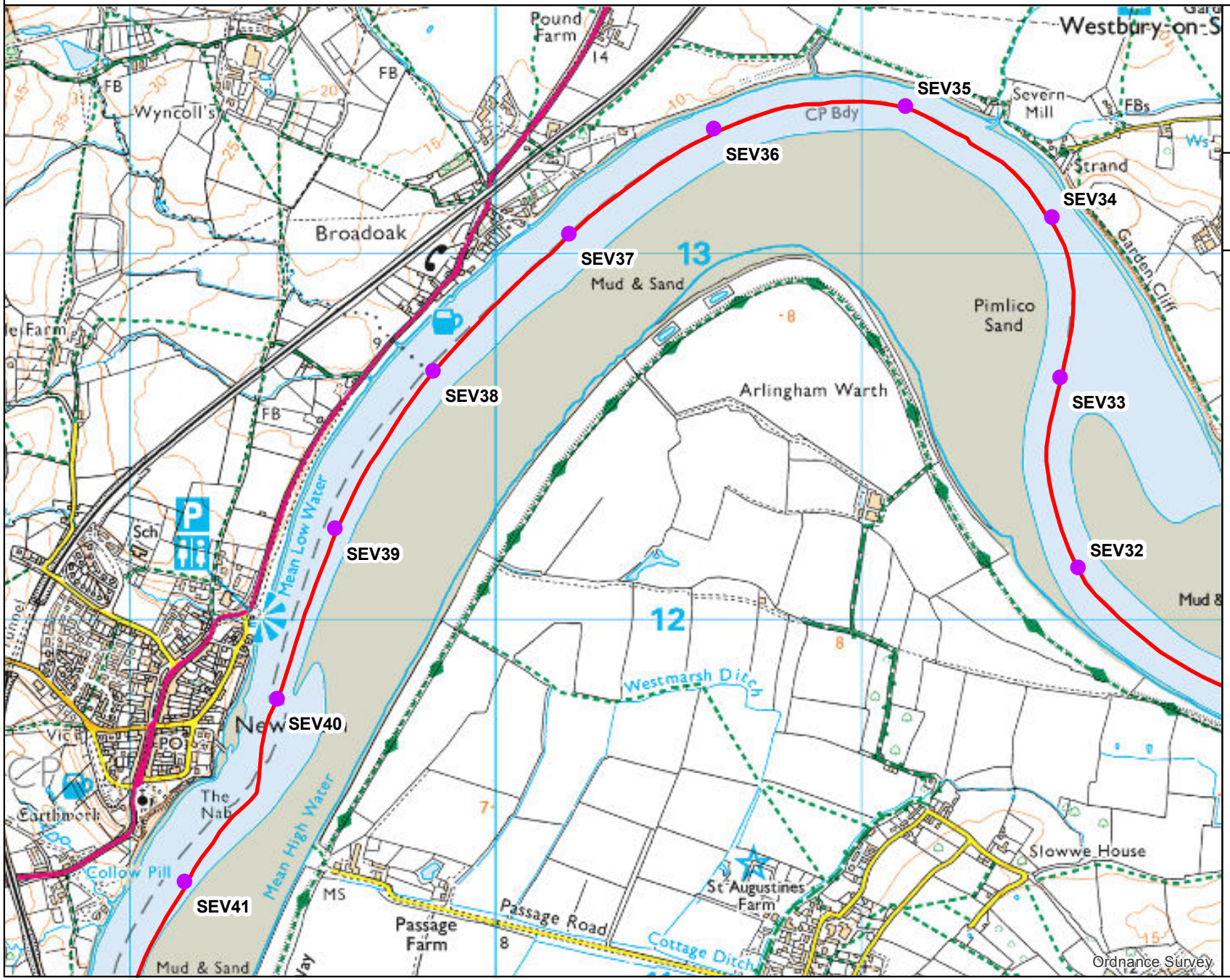
Data providers

Groundsure works with respected data providers to bring you the most relevant and accurate information in your Flood report. To find out who they are and their areas of expertise see https://www.groundsure.com/sources-reference.

Error! Reference source not found.

Tidal Severn Model Node Location Map including GL14 1JE - created 08/09/2022 [277518]



Environment Agency

Scale 1: 15,000

Legend

- Main River
- Tidal Severn Model Node Point

West Midlands Area

Created by Partnerships and Strategic Overview Team, West Midlands

Product 4 (Detailed Flood Risk Data) for Chapel House, Riverside Lane, Broadoak, Newnham, GL14 1JE

Reference number: 277518

Date of issue: 28 September 2022

Model Information

The following information and attached maps contain a summary of the modelled information relevant to the area of interest. The information provided is based on the best available data as of the date of issue.

Model Name	Release Date
Tidal Severn	2007
Tidal Severn Climate Change Re-run	2020

Flood Map for Planning (Rivers and Sea)

The Flood Map for Planning (Rivers and Sea) indicates the area at risk of flooding, **assuming no flood defences exist**, for a flood event with a 0.5% chance of occurring in any year for flooding from the sea, or a 1% chance of occurring in any year for fluvial (river) flooding (Flood Zone 3). It also shows the extent of the Extreme Flood Outlines (Flood Zone 2) which represents the extent of a flood event with a 0.1% chance of occurring in any year, or the highest recorded historic extent if greater. The Flood Zones refer to the land at risk of flooding and **do not** refer to individual properties. It is possible for properties to be built at a level above the floodplain but still fall within the risk area.

The Flood Map only indicates the extent and likelihood of flooding from rivers or the sea. It should also be remembered that flooding may occur from other sources such as surface water, sewers, road drainage, etc.

To find out which flood zone a location is in please use: https://flood-map-for-planning.service.gov.uk/

Definition of flood zones

- **Zone 1** - The area is within the lowest probability of flooding from rivers and the sea, where the chance of flooding in any one year is less than 0.1% (i.e. a 1000 to 1 chance).
- **Zone 2** - The area which falls between the extent of a flood with an annual probability of 0.1% (i.e. a 1000 to 1 chance) fluvial and tidal, or greatest recorded historic flood, whichever is greater, and the extent of a flood with an annual probability of 1% (i.e. a 100 to 1 chance) fluvial / 0.5% (i.e. a 200 to 1 chance) tidal. (Land shown in light blue on the Flood Map).
- **Zone 3** - The chance of flooding in any one year is greater than or equal to 1% (i.e. a 100 to 1 chance) for river flooding and greater than or equal to 0.5% (i.e. a 200 to 1 chance) for coastal and tidal flooding.

Note: The Flood Zones shown on the 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. Reference should therefore also be made to the Strategic Flood Risk Assessment when considering location and potential future flood risks to developments and land uses.

Areas Benefitting From Defences

Where possible we show the areas that benefit from the flood defences, in the event of flooding:

- from rivers with a 1% (1 in 100) chance in any given year, or;
- from the sea with a 0.5% (1 in 200) chance in any given year.

If the defences were not there these areas would flood. Please note that we do not show all areas that benefit from flood defences.

The associated Dataset is available here: https://data.gov.uk/dataset/flood-map-for-planning-rivers-and-sea-areas-benefiting-from-defences

Node Data / Modelled Levels

The node point map will show a selection of 1D model node points near to your site, the tidal & fluvial levels for these node points are shown below.

Flood Levels (m AOD)

The modelled levels are given in m AOD (N), m AOD indicates metres Above Ordnance Datum (Newlyn).

The information is taken from the model referenced above and may not include the updated climate change figures.

			Annual Exceedance Probability - Maximum Water Levels (m AOD) (defended)									
Node Label	**Easting**	**Northing**	**20% Fluvial, 1.33% Tidal**	**20% Fluvial, 1% Tidal**	**20% Fluvial, 0.5% Tidal**	**20% Fluvial, 0.5% inc. 20% increase in inflows**	**20% Fluvial, 0.1% Tidal**	**1.33% Fluvial, 50% Tidal**	**1% Fluvial, 50% Tidal**	**1% Fluvial, 50% Tidal inc. 20% increase in inflows**	**0.5% Fluvial, 50% Tidal**	**0.1% Fluvial, 50% Tidal**
SEV32	371594	212139	10.65	10.68	10.71	10.82	10.78	10.39	10.40	10.64	10.42	10.49
SEV33	371545	212660	10.65	10.68	10.72	10.84	10.79	10.38	10.39	10.64	10.42	10.48
SEV34	371521	213097	10.62	10.65	10.69	10.81	10.76	10.37	10.38	10.63	10.40	10.46
SEV35	371121	213401	10.59	10.61	10.65	10.77	10.72	10.35	10.36	10.61	10.39	10.44
SEV36	370597	213339	10.56	10.58	10.61	10.74	10.67	10.33	10.34	10.58	10.36	10.41
SEV37	370201	213053	10.53	10.55	10.57	10.70	10.64	10.30	10.30	10.55	10.33	10.37
SEV38	369829	212677	10.51	10.53	10.57	10.72	10.65	10.26	10.27	10.54	10.29	10.33
SEV39	369560	212246	10.49	10.51	10.55	10.70	10.63	10.23	10.24	10.50	10.25	10.29
SEV40	369401	211781	10.45	10.47	10.50	10.67	10.59	10.18	10.19	10.46	10.22	10.25
SEV41	369150	211281	10.41	10.43	10.47	10.67	10.57	10.13	10.14	10.44	10.17	10.20

			Climate Change Scenarios – Maximum Water Levels (m AOD) (defended)							
Node Label	**Easting**	**Northing**	**Fluvial 2020 HC**	**Tidal 2020 HC**	**Fluvial 2020 UE**	**Tidal 2020 UE**	**Fluvial 2040 HC**	**Tidal 2040 HC**	**Fluvial 2040 UE**	**Tidal 2040 UE**
SEV32	371594	212139	10.33	10.69	10.34	10.69	10.34	10.73	10.35	10.74
SEV33	371545	212660	10.32	10.70	10.32	10.70	10.33	10.74	10.35	10.75
SEV34	371521	213097	10.31	10.68	10.32	10.68	10.32	10.72	10.34	10.73
SEV35	371121	213401	10.29	10.65	10.30	10.65	10.30	10.68	10.32	10.70
SEV36	370597	213339	10.26	10.61	10.28	10.62	10.28	10.65	10.29	10.66
SEV37	370201	213053	10.23	10.57	10.24	10.58	10.24	10.62	10.26	10.63
SEV38	369829	212677	10.20	10.58	10.21	10.58	10.21	10.64	10.22	10.65
SEV39	369560	212246	10.16	10.56	10.18	10.57	10.18	10.62	10.19	10.63
SEV40	369401	211781	10.11	10.52	10.14	10.53	10.14	10.58	10.16	10.60
SEV41	369150	211281	10.05	10.50	10.08	10.51	10.08	10.56	10.10	10.59

Email: Enquiries_Westmids@environment-agency.gov.uk
Website: www.gov.uk/government/organisations/environment-agency

			Climate Change Scenarios – Maximum Water Levels (m AOD) (defended)							
Node Label	**Easting**	**Northing**	**Fluvial 2070 HC**	**Tidal 2070 HC**	**Fluvial 2070 UE**	**Tidal 2070 UE**	**Fluvial 2125 HC**	**Tidal 2125 HC**	**Fluvial 2125 UE**	**Tidal 2125 UE**
SEV32	371594	212139	10.35	10.78	10.39	10.81	10.35	11.07	10.39	11.34
SEV33	371545	212660	10.34	10.80	10.38	10.82	10.34	11.09	10.38	11.35
SEV34	371521	213097	10.33	10.78	10.37	10.81	10.33	11.08	10.37	11.33
SEV35	371121	213401	10.31	10.74	10.35	10.77	10.31	11.06	10.35	11.31
SEV36	370597	213339	10.29	10.71	10.33	10.74	10.29	11.04	10.33	11.28
SEV37	370201	213053	10.25	10.68	10.30	10.71	10.25	11.02	10.30	11.29
SEV38	369829	212677	10.22	10.71	10.26	10.75	10.22	11.05	10.26	11.31
SEV39	369560	212246	10.19	10.70	10.22	10.73	10.19	11.04	10.22	11.30
SEV40	369401	211781	10.15	10.68	10.17	10.71	10.15	11.02	10.17	11.28
SEV41	369150	211281	10.10	10.68	10.13	10.72	10.10	11.02	10.13	11.29

Note;

All Climate Change levels detailed above represent respective high risk events in each instance (i.e. a 1% or 1 in 100 year for fluvial, 0.5% or 1 in 200 year for tidal).

HC = Higher Central Allowance

UE = Upper End Allowance

There are no modelled figures currently available for the Central Allowance.

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Website: www.gov.uk/government/organisations/environment-agency

Modelled Flood Extents

Available modelled flood outlines produced as part of the detailed modelling have been provided to you in GIS format, these show modelled flood extents taking into account flood defences. Climate change will increase flood risk due to overtopping of defences.

Please note; there are currently no available GIS layers for the respective Tidal Severn Model Climate Change scenarios.

https://ea.sharefile.com/d-s10b461b51e2a4be6a5ca994122dd1d13

Climate Change

The 'Flood Risk Assessments: Climate Change Allowances' are published on gov.uk. This is in replacement of previous climate change allowances for planning applications. You will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding. The climate change factors are now more complex and a single uplift percentage across England cannot be justified.

It remains the applicant's responsibility to demonstrate through their proposal and flood risk assessments that new developments will be safe in flood risk terms for its lifetime.

Recorded Flood Outlines

Please find tabulated information below for records of historic flood events.

Flood Event Date	Source of Flooding	Cause of Flooding
July 1968	Main River	Channel capacity exceeded (no raised defences)
December 1981	Main River	Unknown
January 1992	Drainage	Unknown
December 1992	Drainage	Unknown
February 1995	Main River	Unknown

The corresponding recorded flood outline/s can be accessed here:
https://data.gov.uk/dataset/recorded-flood-outlines1

The Recorded Flood Outlines take into account the presence of defences, structures, and other infrastructure where they existed at the time of flooding. It includes flood extents that may have been affected by overtopping, breaches or blockages. Any flood extents shown do not necessarily indicate that properties were flooded internally. It is also possible that the pattern of flooding in this area has changed and that this area would now flood or not flood under different circumstances.

Please note that our records are not comprehensive and that the map is an indicative outline of areas which have previously flooded, not all properties within this area will have flooded. It is possible that other flooding may have occurred that we do not have records for.

You may also wish to contact your Local Authority or Internal Drainage Board (where relevant), to see if they have other relevant local flood information.

Defence Data

Flood defences do not completely remove the chance of flooding. They can be overtopped by water levels which exceed the capacity of the defences.

If flood defences are located in your area you can access this data here:
https://data.gov.uk/dataset/spatial-flood-defences-including-standardised-attributes

Supporting Information

River modelling: technical standards and assessment guidance

The link below contains standards for the flood risk management industry on how to build and review hydraulic models and provide evidence for flood risk management decisions.

https://www.gov.uk/government/publications/river-modelling-technical-standards-and-assessment

Surface Water

Managing the risk of flooding from surface water is the responsibility of Lead Local Flood Authorities. The 'risk of flooding from surface water' map has been produced by the Environment Agency on behalf of government, using Lead Local Flood Authority surface water information.

You may wish to contact your Local Authority who may be able to provide information on surface water.

It is not possible to say for certain what the flood risk is but we use the best information available to provide an indication so that people can make informed choices about living with or managing the risks. The information we supply does not provide an indicator of flood risk at an individual site level. Further information can be found on the Agency's website:

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

Additional Details

Further details about the Environment Agency information supplied can be found on the GOV.UK website:

https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather

If you have requested this information to help inform a development proposal, then you should note the information on GOV.UK on the use of Environment Agency Information for Flood Risk Assessments:

https://www.gov.uk/planning-applications-assessing-flood-risk
https://www.gov.uk/government/publications/pre-planning-application-enquiry-form-preliminary-opinion