Flood Risk Assessment

Land at Back Arun Fishery, Arundel BN18 9JJ

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Contract

GeoSon Limited were instructed by Luke O'Keefe of Angling 4 Education, in an email dated 24th July 2025, to undertake a Site Specific Flood Risk Assessment to support a proposed planning application for development at Land at Back Arun Fishery, Arundel.

Project	Flood Risk Assessment for Planning
Prepared For	Angling 4 Education
Location	Land at Back Arun Fishery, Arundel BN18 9JJ
Application	Siting of three temporary (portacabin/converted container) buildings on an area of existing hardstanding
Our Reference	73462
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Issue Date	13/08/2025
Issued To	Luke O'Keefe (Angling 4 Education)
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Purpose

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Introduction

Context

GeoSon Limited have been instructed by Angling 4 Education to undertake a Site Specific Flood Risk Assessment (FRA) to support a proposed planning application for development at Land at Back Arun Fishery, Arundel.

This FRA has been undertaken in accordance with the revised National Planning Policy Framework (NPPF) December 2024 and the associated Planning Practice Guidance (PPG).

The level of flood risk to and from the site has been determined using third party information including Environment Agency flood data, national government mapping, LiDAR topography data and Local Authority documentation.

National FRA Requirements

In accordance with the National Planning Policy Framework (NPPF), a Flood Risk Assessment is required to accompany a planning application when a development site is:

- located within flood zones 2 or 3 (including minor development and change of use)
- more than 1 hectare (ha) in size
- less than 1 ha in flood zone 1 however includes a change of use in development type to a more vulnerable class (for example from commercial to residential) which could be affected by sources of flooding other than rivers and the sea
- located within an area which has been identified to have critical drainage problems by the Environment Agency

The site is situated within Flood Zone 3 on the Environment Agency's Flood Map for Planning. As such, in accordance with NPPF guidance the applicant is required to submit a Flood Risk Assessment with any planning application for the site.

The Flood Risk Assessment is required to consider the proposed use of the site and assess the potential flood risk posed to the intended development from multiple sources of flooding including rivers, sea, surface water, groundwater, reservoir failure, sewer surcharge and any other artificial sources.

The Flood Risk Assessment will assess the risk posed from all potential sources of flooding so that site users and third party land will be safe now and for the expected lifetime of the development, taking climate change into account.

Objectives

The objectives of this document are to determine:

- Whether the site is at significant risk of flooding from any source currently or in the future, taking climate change into account
- Whether the development will increase flood risk elsewhere

If the site is identified to be at risk of flooding from any source this FRA will:

- Outline appropriate mitigation measures, compliant with NPPF and PPG, which would be suitable to incorporate within the proposed development to alleviate flood risk on and off site
- Determine whether safe ingress and egress can be achieved and maintained for the lifetime of the development

Site Details

Site Description

The proposed application site is located at Land at Back Arun Fishery, Arundel BN18 9JJ.

The application boundary measures approximately 2500m^2 and appears to be used as a car park for the adjacent fishing lakes. The applicant has confirmed that Southern Railway also use the land and have a temporary structure (container) positioned in the south western comer of the site.

The application area is accessed via a single track road off Station Approach which forms the eastern boundary.

Having reviewed aerial imagery Back Arun fishing lakes are located adjacent west of the red outline boundary with Arundel Train Station situated 30m south. A car park associated with the Arundel Park Hotel extends to form the northern boundary of the application area.

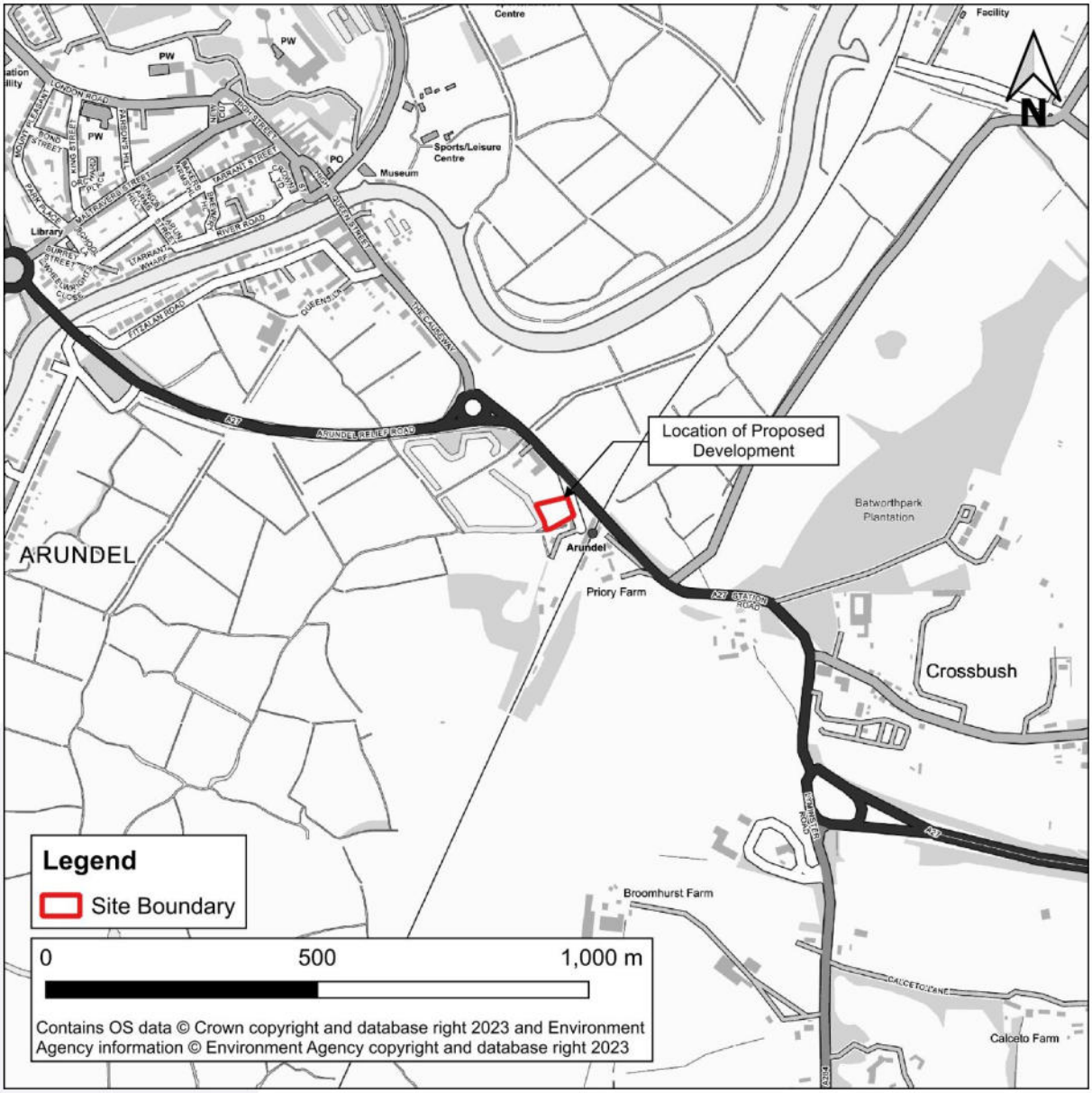


Figure 1: Site Location

Topography

Topographic LiDAR data has been obtained from the Environment Agency to assess the ground elevation profile across the site and within the wider area.

Light Detection and Ranging (LiDAR) is an airborne remote sensing technique, which accurately measures the height of the terrain and surface objects on the ground through the use of a laser, scanner and GPS receiver. The mapping technique measures the distance between the aircraft and the ground to generate precise, three-dimensional information of the terrain and surface objects. Hundreds of thousands of measurements per second are made of the ground, allowing highly detailed surface and terrain models to be generated at different spatial resolutions ranging between 25cm and 2.0 metres.

The LiDAR dataset can be supplied in two forms by the EA:

1. As a Digital Surface Model (DSM), which includes surface objects, such as vehicles, buildings and vegetation, as well as the terrain surface. Or;
2. As a Digital Terrain Model (DTM) produced by removing surface objects such as buildings from the Digital Surface Model through application of bespoke algorithms and manual filtering techniques.

For the purposes of this study the 1.0m resolution Digital Terrain Model has been used.

Environment Agency 1.0m LiDAR data indicates that the site and the surrounding area generally slope towards the River Arun.

Data shows that the ground topography within the red outline application boundary ranges from approximately 1.30mAOD along the western periphery (adjacent to the lake) to 2.60mAOD in the centre.

Based on plans provided by the applicant, the proposed temporary structures will be positioned upon land with an approximate elevation of 1.50mAOD to 2.00mAOD.

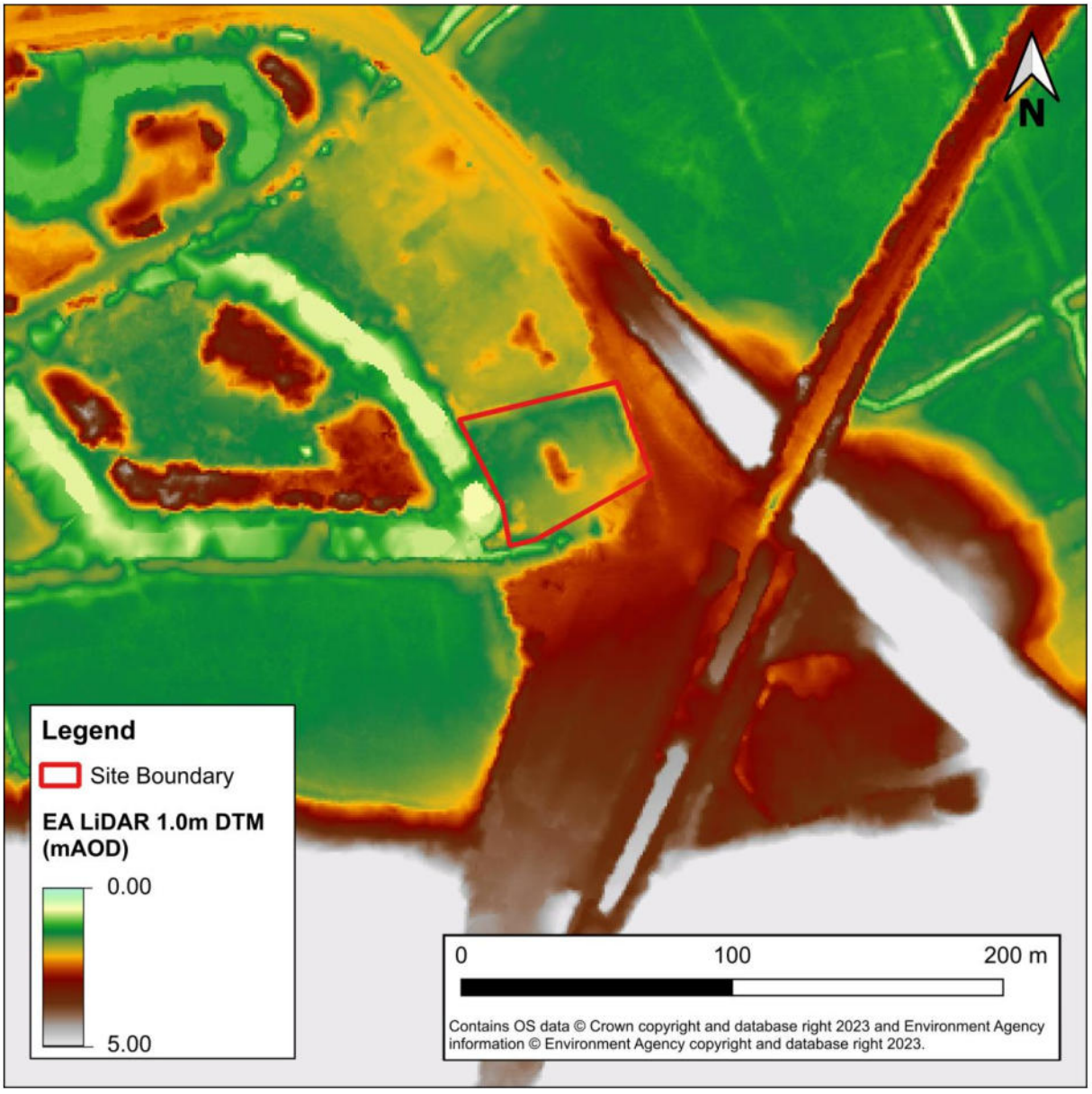


Figure 2: Topography of the Site and Surrounding Area

Geology and Hydrogeology

Review of online British Geological Survey (BGS) records indicate that the site is located directly upon the edge of two bedrock geology formations, comprising:

- Lambeth Group (Clay, Silt and Sand)
- Spetisbury Chalk Member (Chalk)

Lambeth Group Formation was formed between the Thanetian Age and Ypresian Age some 48.1 to 59.2 million years ago.

Spetisbury Chalk Member was formed during the Campanian Age some 72.2 to 83.7 million years ago.

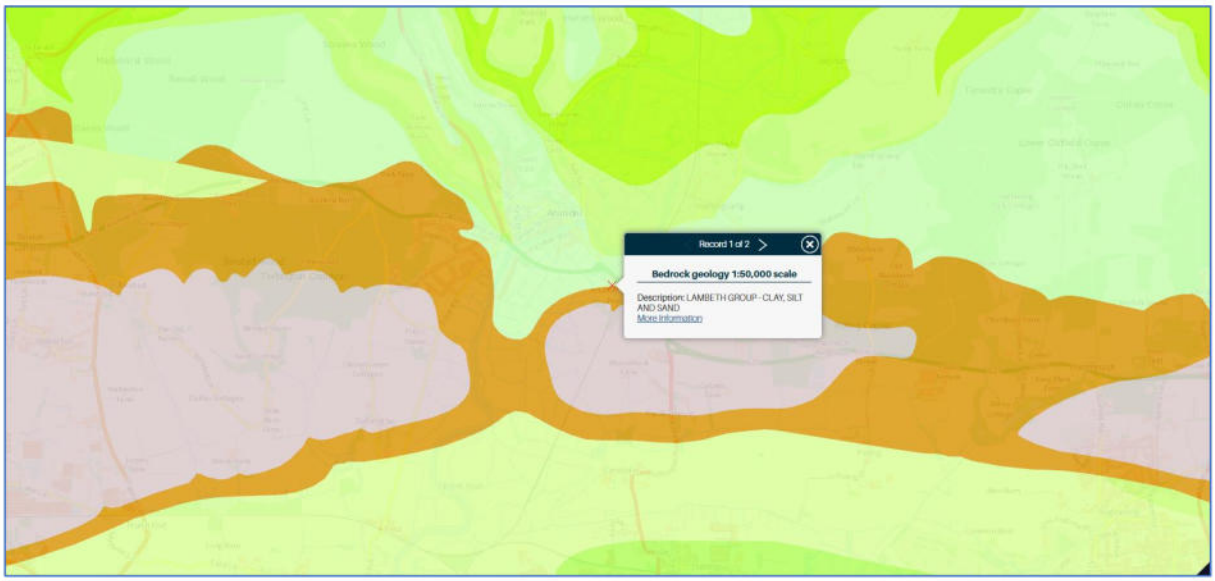


Figure 3: Bedrock Geology Map (Source: British Geological Survey)

According to BGS data the site is also underlain by superficial deposits comprising Raised Marine Deposits (Clay, Silt, Sand and Gravel).



Figure 4: Superficial Geology Map (Source: British Geological Survey)

Review of Landis Soilscapes online viewer suggests that the site is located within an area where the soils are classified as 'Freely draining slightly acid loamy soils' and 'Loamy and clayey soils of coastal flats with naturally high groundwater'.

DEFRA 'Magic Maps' indicate that there are no groundwater Source Protection Zones beneath the site. According to DEFRA 'Magic Maps' the closest Source Protection Zone to the development is located approximately 1.25km north west of the application area and is classified as a Zone I - Inner Protection Zone.

Nearby Watercourses

Review of aerial imagery indicates that Back Arun Fishing Lakes are located adjacent west of the application boundary.

In addition to the lakes, several other water features have been identified within a 1.0km radius of site including the River Arun situated approximately 270m north.

The River Arun is classified as a Main River and is therefore managed by the Environment Agency.

Multiple drainage ditches and ponds have also been identified within the surrounding area. These are classified as Ordinary Watercourses. Ordinary Watercourses within the surrounding area are managed by the Lead Local Flood Authority (West Sussex County Council).

The watercourses nearest to the site are shown in Figure 5 (below).

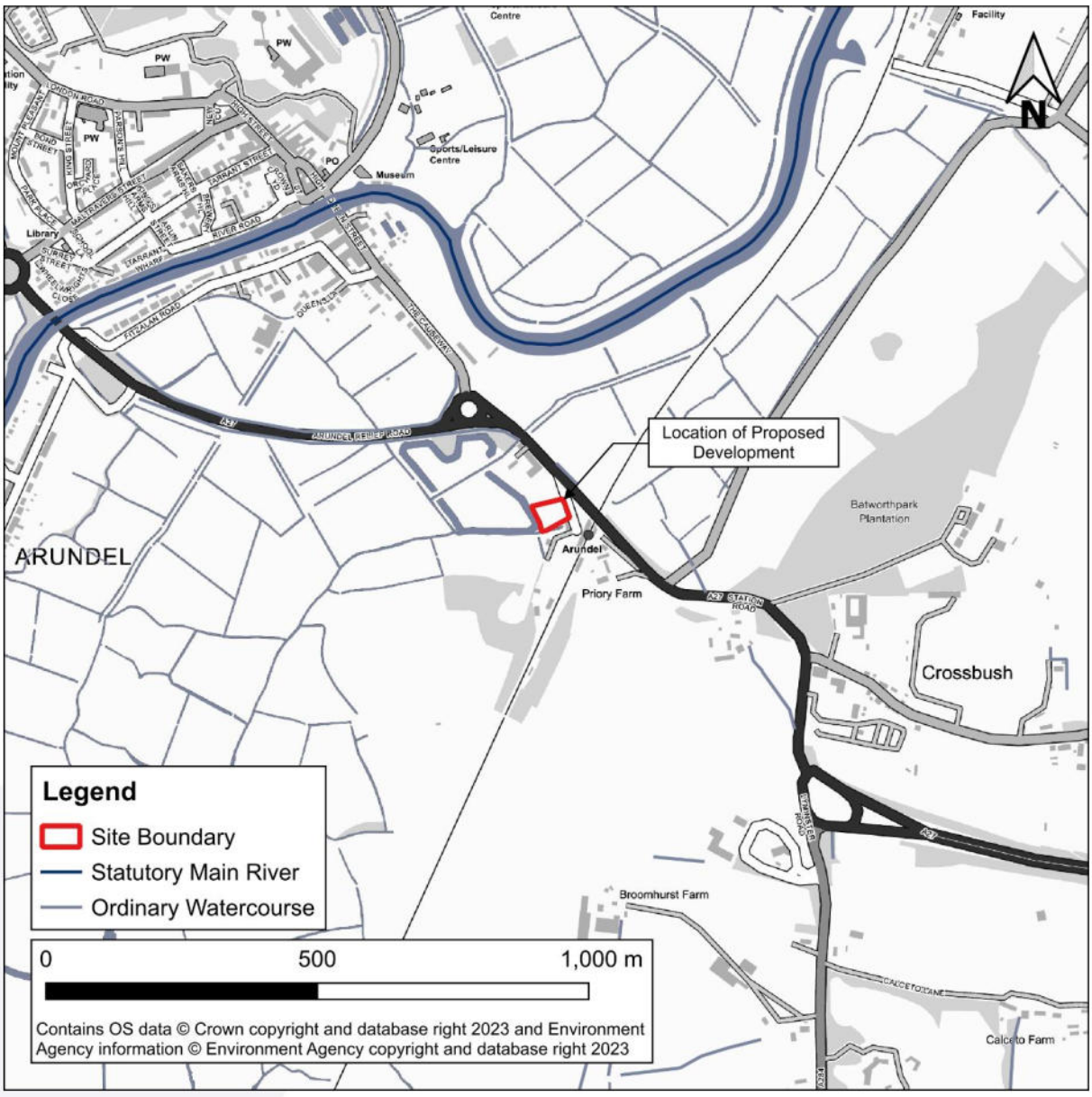


Figure 5: Watercourses Near the Site

Proposed Development

Development Proposals

The proposed planning application comprises the siting of three temporary (portacabin/converted container) structures on an area of existing hardstanding.

According to plans provided by the applicant the proposed temporary structures will be located in the north eastern corner of the site and will be utilised as a changing room, toilet and an office.

Post development, the site will be used for Forest School activities including fishing which will take place on the two existing lakes located over the bridge located adjacent west of the car park.

The proposed site layout plan is shown in Figure 6 and Appendix A.



Figure 6: Proposed Block Plan (Source: Batcheller Monkhouse)

Development Vulnerability Classification

The National Planning Policy Framework classifies land use type in terms of vulnerability to flooding. Annex 3 of the NPPF details the flood risk vulnerability classification for each land use type (refer below).

Essential infrastructure
• Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including infrastructure for electricity supply including generation, storage and distribution systems; including electricity generating power stations, grid and primary substations storage; and water treatment works that need to remain operational in times of flood. • Wind turbines. • Solar farms.
Highly vulnerable
• Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • 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'.)
More vulnerable
• Hospitals • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels. • Non–residential uses for health services, nurseries and educational establishments. • Landfill* and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less vulnerable
• Police, ambulance and fire stations which are not required to be operational during flooding. • 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. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill* and hazardous waste facilities).

- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.
- Car parks.

Water-compatible development

- 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.

Table 1: Flood Risk Vulnerability Classification (Source: NPPF)

The site is currently used as a car park with a storage container located in the southern western corner. Therefore, in terms of flood risk vulnerability it is considered "Less Vulnerable".

The proposals relate to the siting of three temporary structures to facilitate water-based recreation. As such, according to NPPF guidance the proposals should be considered as "Water-Compatible Development".

Sequential and Exception Test Guidance

In accordance with the National Planning Policy Framework, and associated Planning Practice Guidance, the Sequential and Exception Tests should be undertaken to determine the most appropriate location for a development and used to inform the proposed design layout.

The Sequential Test is designed to steer new development to areas with the lowest risk of flooding, taking all sources of flood risk and climate change into account.

The Exception Test is undertaken when development in a flood risk area cannot be avoided. The Exception Test comprises of two elements which need to be satisfied before a development can be permitted. It needs to be demonstrated that:

1. A development will provide wider sustainability benefits to the community that outweigh flood risk; and
2. A development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

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	X	Exception Test Required	✓	✓
Zone 3b	Exception Test Required	X	X	X	✓

Table 2: Flood risk vulnerability and flood zone 'incompatibility' (Source: PPG)

Given the nature of the proposals the development is considered 'Water-Compatible'.

According to Table 2 (above) 'Water-Compatible' development is considered suitable within Flood Zone 1, 2, 3a and 3b.

Uniqueness of Location

The applicant has provided information which demonstrates the difficulty in finding a suitable location within the county which meet the specification of this site.

The applicant has been operating for 15 years in varying parts of the south of the county and has to date needed to rely on a model of using private/publicly owned facilities to provide their services. This model has been successful to a point. However, it has always been the aim to develop a base in which Angling 4 Education could offer a full range of outdoor activities at one location.

The identification of the Back Arun site is the culmination of 5 years of searching for such a premises.

The Back Arun site is unique in terms of accessibility. The site offers parking and is 30 metres from a train station. Having undertaken a search for 5 years the applicant has identified no alternative sites (locally, regionally or nationally) within such close proximity to a railway station. The proximity to a reliable public transport hub provides the opportunity for the facility to be accessible to all members of the community including those who do not drive and groups who rely on public services.

The applicant wishes to restore the fishery in order to guarantee the future of what is an important community fishing facility as well embark on a project which will enable every section of the community to access outdoor activities such as fishing.

The proposed uses will offer educational and recreational facilities to members of the public, school children, adults with mental health issues and disabilities, refugees, veterans and care home residents.

Examples of activities that will be undertaken at the site include fishing, bushcraft, wildlife spotting, pond dipping, scavenger hunts, flora and fauna identification.

Climate Change Allowance Guidance

Peak River Flow Uplifts

In July 2021 the Environment Agency issued revised peak river flow allowances for management catchments in England. As part of the update the EA published the Peak River Flow Map which shows anticipated changes to peak river flows over time based on management catchment. Management catchments are sub-catchments of river basin districts.

According to the EA's Peak River Flow Map the site is located within the Arun and Western Streams Management Catchment. Updated peak river flow allowances for this catchment are as follows:

Epoch	Central	Higher	Upper
2020s	11%	16%	27%
2050s	13%	19%	36%
2080s	25%	36%	64%

Table 3: Arun and Western Streams Management Catchment Peak River Flow Allowances

The specific Climate Change allowance required to the be assessed within the Flood Risk Assessment, to account for future change in peak river flows, is dependent on the development's design lifetime and vulnerability classification.

The application relates to the siting of three temporary buildings which will facilitate water based recreation. As such, according to NPPF guidance the proposals should be considered as "Water-Compatible".

In line with government guidance "Water-Compatible" development located in Flood Zones 2 and 3 should use the Central Allowance to account for future climate change.

Sea Level Uplifts

In December 2019 the Environment Agency published an updated range of epoch allowances for sea level rise based on river basin district. According to the EA's River Basin District Map the site and the surrounding area are located within the South East basin district.

Updated sea level allowances for each epoch for the South East region are as follows:

South East Allowance	2000 to 2035 (mm)	2036 to 2065 (mm)	2066 to 2095 (mm)	2096 to 2125 (mm)	Cumulative rise 2000 to 2125 (m)
Higher Central	5.7 (200)	8.7 (261)	11.6 (348)	13.1 (393)	1.20
Upper End	6.9 (242)	11.3 (339)	15.8 (474)	18.2 (546)	1.60

Table 4: Sea Level Allowances for Each Epoch in mm per year with Cumulative Sea Level Rise for Each Epoch in Brackets (Based on a 1981 to 2000 Baseline)

The Higher Central and Upper End climate change allowances should be assessed by applying the relevant cumulative mm allowance for each epoch to the current day 1 in 200 year tidal projection.

Assessment of Flood Risk

Flood risk is a combination of:

- the probability (likelihood or chance) of a flood event happening; and
- the potential consequences (impact) if an event were to occur.

In accordance with guidance set out in the Flood Risk and Coastal Change section of the PPG, areas at risk of flooding should be considered as those at risk of flooding from any source, now or in the future.

This study uses publicly available data (including EA flood maps and Local Authority documentation) to assess the potential flood risk posed to the intended development from multiple sources of flooding and the risk of flooding elsewhere, as a result of the proposals.

Where flood risks are identified this study outlines appropriate mitigation measures, compliant with NPPF and PPG, which would be suitable to incorporate within the proposed development to manage said flood risk(s).

Historical Flooding

Arun District Council's Level 1 Strategic Flood Risk Assessment (2016) states that the catchment has a long history of flood events, with multiple sources of flooding. In particular, three notable flood events have affected the district in the last 60 years and these have been associated primarily with heavy rainfall, high groundwater levels, high river flows and high tides (but not necessarily in combination). The most recent events of 1974, 2000 and 2012 caused widespread flooding in the district after significantly high rainfall over an extensive period.

The SFRA includes a map which shows recorded flood extents and incident points within the catchment area. Data shown on the map has been collated from records held by the Environment Agency, Arun District Council and West Sussex County Council.

According to the historic flooding map, as of 2016 there were no reported incidents of flooding at the site. The closest reported incident to the site on the SFRA historic flood map relates to a fluvial flood incident along Fitzalan Road some 940m west of the application area.

In addition to the Local Authority information, review of the Environment Agency's Recorded Flood Outline and Historic Flood Map datasets indicate that the site has not been impacted by fluvial flooding.

According to information held by the EA the closest fluvial/tidal event to the site impacted land on the opposite side of The Causeway. Agricultural land some 50m east of the application area is reported to have flooded in December 2013 as a result of the River Arun overtopping its defences.

A copy of the Recorded Flood Outline map is shown in Figure 7.

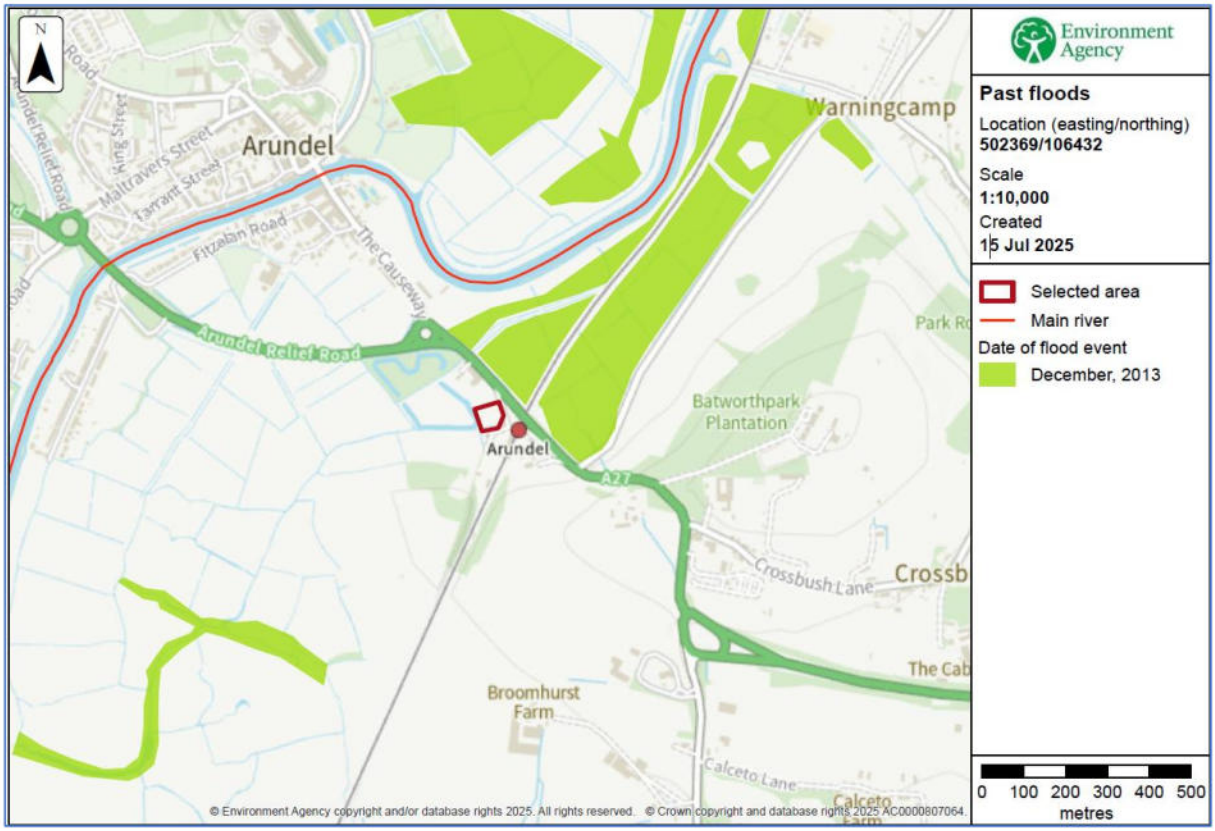


Figure 7: Recorded Flood Outlines (Source: Environment Agency)

Fluvial (River) / Tidal (the Sea)

Flood Zone Extents

The Environment Agency has created a set of Flood Zones which show the risk of flooding from rivers and sea in England, for several return period events, ignoring the presence of defences. The Flood Zones are shown on the EA's Flood Map for Planning which forms the basis for assessing flood risk and development suitability under the National Planning Policy Framework.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than a 1 in 1000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map for Planning – all land outside Zones 2, 3a and 3b)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1000 annual probability of tidal 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 tidal flooding. (Land shown in dark blue on the Flood Map)
Zone 3b Functional Floodplain	This zone comprises land where water from rivers or the sea has to flow or be stored in times of flood. The identification of functional floodplain should take account of local circumstances and not be defined solely on rigid probability parameters. The functional floodplain will normally comprise: • land having a 1 in 30 or greater annual probability of flooding, with any existing flood risk management infrastructure operating effectively; or • land that is designed to flood (such as a flood attenuation scheme), even if it would only flood in more extreme events (such as 1 in 1000 annual probability of flooding). Areas of functional floodplain should be identified by local planning authorities within Strategic Flood Risk Assessments, in agreement with the Environment Agency. (Note, Zone 3b is not separately distinguished from Zone 3a on the Flood Map).

Table 5: Flood Zone Definitions (Source: Planning Practice Guidance)

The Flood Map for Planning was updated on the 25th March 2025.

The updated Flood Map for Planning continues to show Flood Zones 1, 2 and 3 for the present day (ignoring the benefits of defences).

However, the Environment Agency's mapping tool now also displays the following information:

- Rivers and sea with defences for the present day and climate change scenarios
- Rivers and sea without defences for the present day and climate change scenarios
- Surface water flood extents for the present day

According to the Environment Agency's Flood Map for Planning (refer to Figure 8) the site is located within Flood Zone 3.

Flood Zone 3 is defined as:

- Land with a 1 in 100 or greater annual probability of river flooding.
- Land with a 1 in 200 or greater annual probability of tidal flooding.

The primary source of flood risk to the site appears to originate from the River Arun.

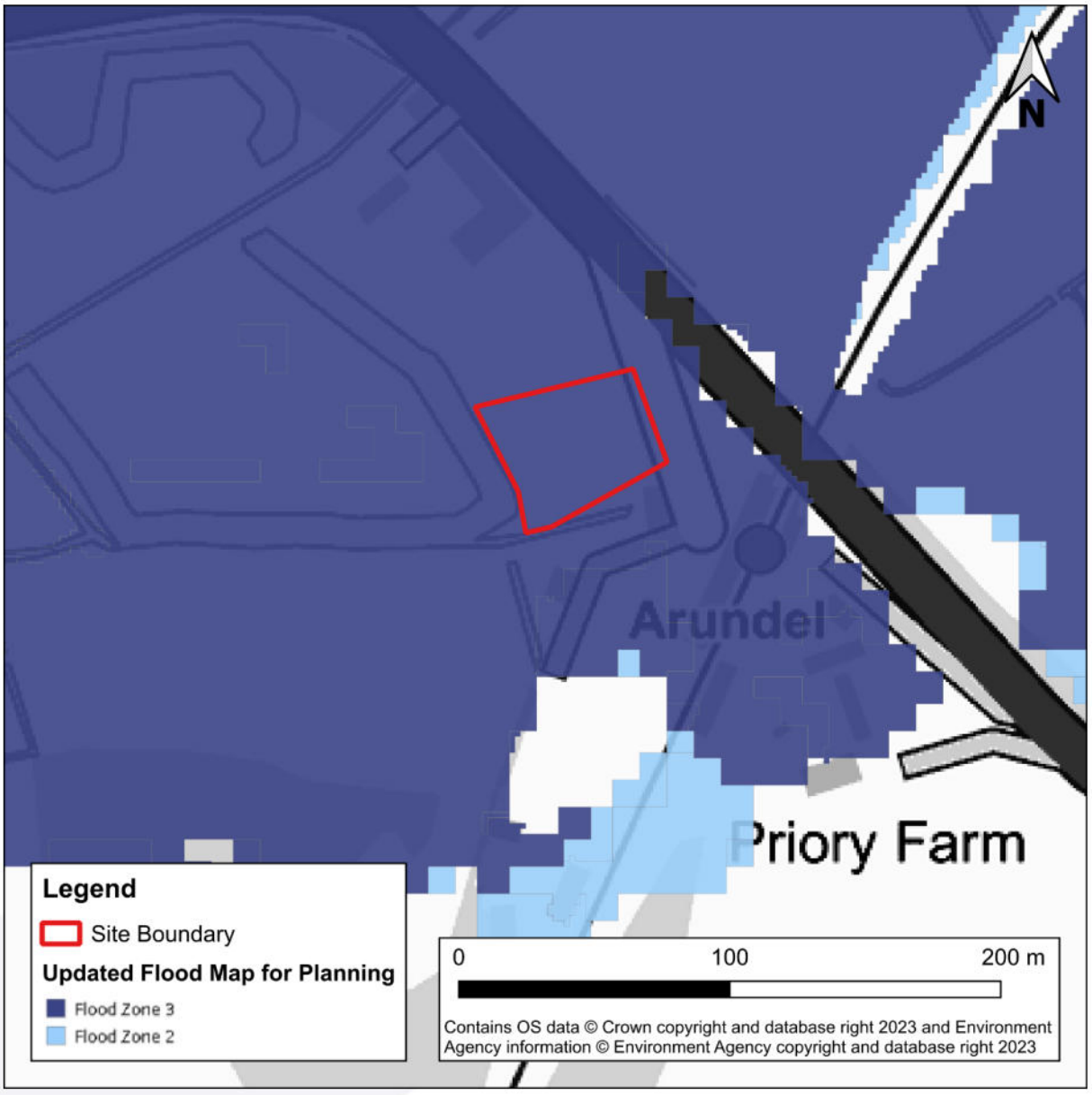


Figure 8: Environment Agency Flood Map for Planning (Source: EA)

Review of Arun District Council's SFRA mapping shows that the site is modelled within the current and future Flood Zone 3 extents.

Environment Agency Product 4 Response

Considering that the site has been modelled within Flood Zone 3 on the EA's Flood Map for Planning a Product 4 enquiry has been raised with the Environment Agency to obtain detailed flood model information in the relation to the development.

A Product 4 response (EA reference: EIR2025/16176) was received in July 2025, refer to Appendix B. Within which the Environment Agency provided details of modelled defended and undefended flood levels and extent mapping extracted from the 2010 Lower Tidal Arun Strategy.

Flood extent maps have been provided by the Environment Agency for a range of return period events including the defended and undefended tidally dominated and fluvially dominated scenarios. Refer to Appendix B for copies of the extent maps.

The following section provides a review of the modelled defended and undefended 2D floodplain levels provided within the EA's product 4 response.

2D floodplain levels have been extracted from the 2010 Lower Tidal Arun Strategy flood model at five node points across the site for the following return period events:

Fluvial

- Undefended 5% (1 in 20) AEP
- Undefended 1% (1 in 100) AEP
- Undefended 1% (1 in 100) AEP +CC
- Undefended 0.1% (1 in 1000) AEP
- Defended 5% (1 in 20) AEP
- Defended 1% (1 in 100) AEP
- Defended 1% (1 in 100) AEP +CC
- Defended 0.1% (1 in 1000) AEP

Tidal

- Undefended 0.5% (1 in 200) AEP
- Undefended 0.5% (1 in 200) AEP 2110 CC
- Undefended 0.1% (1 in 1000) AEP
- Defended 0.5% (1 in 200) AEP
- Defended 0.5% (1 in 200) AEP 2110 CC
- Defended 0.1% (1 in 1000) AEP

Table 6 and Table 7 show the highest 2D floodplain level at the site for each aforementioned return period event. The full list of floodplain levels and depths can be seen in Appendix B.

Return Period Event	Fluvial 2D Floodplain Level	
	Defended	Undefended
5% (1 in 20) AEP	-	2.33
1% (1 in 100) AEP	-	2.41
1% (1 in 100) AEP +CC	1.79	3.33
0.1% (1 in 1000) AEP	1.75	2.73

Table 6: Modelled Fluvial Floodplain Levels (Source: 2010 Lower Tidal Arun Strategy)

Return Period Event	Tidal 2D Floodplain Level	
	Defended	Undefended
0.5% (1 in 200) AEP	1.57	2.99
0.5% (1 in 200) AEP 2110 CC	3.50	3.60
0.1% (1 in 1000) AEP	1.62	3.06

Table 7: Modelled Tidal Floodplain Levels (Source: 2010 Lower Tidal Arun Strategy)

The modelled tidal levels are shown to be typically higher than the modelled fluvial levels at the site. Therefore, it is considered that the site is predominantly at risk of tidal flooding.

Extreme Tide Level (Still Water)

In accordance with Environment Agency advice, developments located within areas at risk of tidal flooding should also consider assessment of the Still Water Tide Level data from the Coastal Flood Boundary Study (2018).

The Defra Spatial Data Download web service indicates that the site is located approximately 7.3km from the nearest chainage point (_4570) which is located off the coast of Littlehampton.

Review of the data associated with chainage point _4570 shows that the modelled 1 in 200 year flood level is 3.96mAOD.

Applying the updated (2019) climate change allowance uplifts (refer to Table 4) to the 0.5% AEP Still Water Tide Level provides the following Higher Central and Upper End climate change flood levels for the 2100 year (75 year design lifetime) scenario.

Allowance	2017 0.5% AEP flood level (mAOD)	Cumulative rise 2018 to 2100 (m)	2100 0.5% AEP plus climate change flood level (mAOD)
Higher Central	3.96	0.77	4.73
Upper End	3.96	0.93	4.89

Table 8: 0.5% AEP Flood Level with Higher Central and Upper End Climate Change Uplifts

Design Flood Level

Having reviewed the outputs from both the Lower Tidal Arun Strategy (2010) and the Coastal Flood Boundary Study (2018), whilst the Lower Tidal Arun Strategy was released before the latest climate change guidance was published given that the outputs include 2D floodplain levels at the site, the modelled results from the Lower Tidal Arun Strategy are considered to be more representative of the level of risk at the development.

As such, the model results from the Lower Tidal Arun Strategy have been used to base this Flood Risk Assessment on.

The specific Climate Change allowance required to be assessed within the Flood Risk Assessment, to account for future change, is dependent on the development's design lifetime and vulnerability classification. Page 17 details the fluvial and tidal Climate Change allowances for the area.

The proposed planning application relates to the siting of three temporary structures within the site curtilage to facilitate water-based recreation. As such, the development proposals are considered 'Water Compatible'.

Considering the nature of the development, the application should be assessed against the 2100 1 in 200 year scenario.

2D floodplain levels are not available within the Lower Tidal Arun Strategy for the 2100 1 in 200 year scenario. Therefore, given the temporary nature of the development, a pragmatic and conservative approach has been adopted and the development has been assessed against the 2110 climate change flood level.

Comparison of the undefended 0.5% AEP 2110 CC floodplain level (3.60mAOD) with ground levels associated with the location of the proposed temporary units (1.50mAOD to 2.00mAOD, taken from EA LiDAR data) indicates that the development area may experience flood depths of 1.60-2.10m during the undefended 0.5% (1 in 200) AEP 2110 CC event.

However, it is important to note that the flood level outlined above does not take into account the presence of flood defences located within wider area which afford the site some protection.

The development area is shown to be elevated approximately 1.50-2.00m below the defended 0.5% (1 in 200) AEP 2110 CC flood level (3.50mAOD).

Flood Defences

According to the Environment Agency's AIMS dataset, flood defences in the form of embankments are located along the banks of the River Arun within proximity to the site.

Environment Agency data suggests that the sections of embankment located along the southern bank of the River Arun (260m north of the development) have a crest level of 3.24mAOD to 3.80mAOD and offer the site/surrounding area a design standard of protection of 50 to 200 years

Figure 9 shows the closest formal flood defences to the development based on the EA's AIMS Spatial Flood Defences dataset.

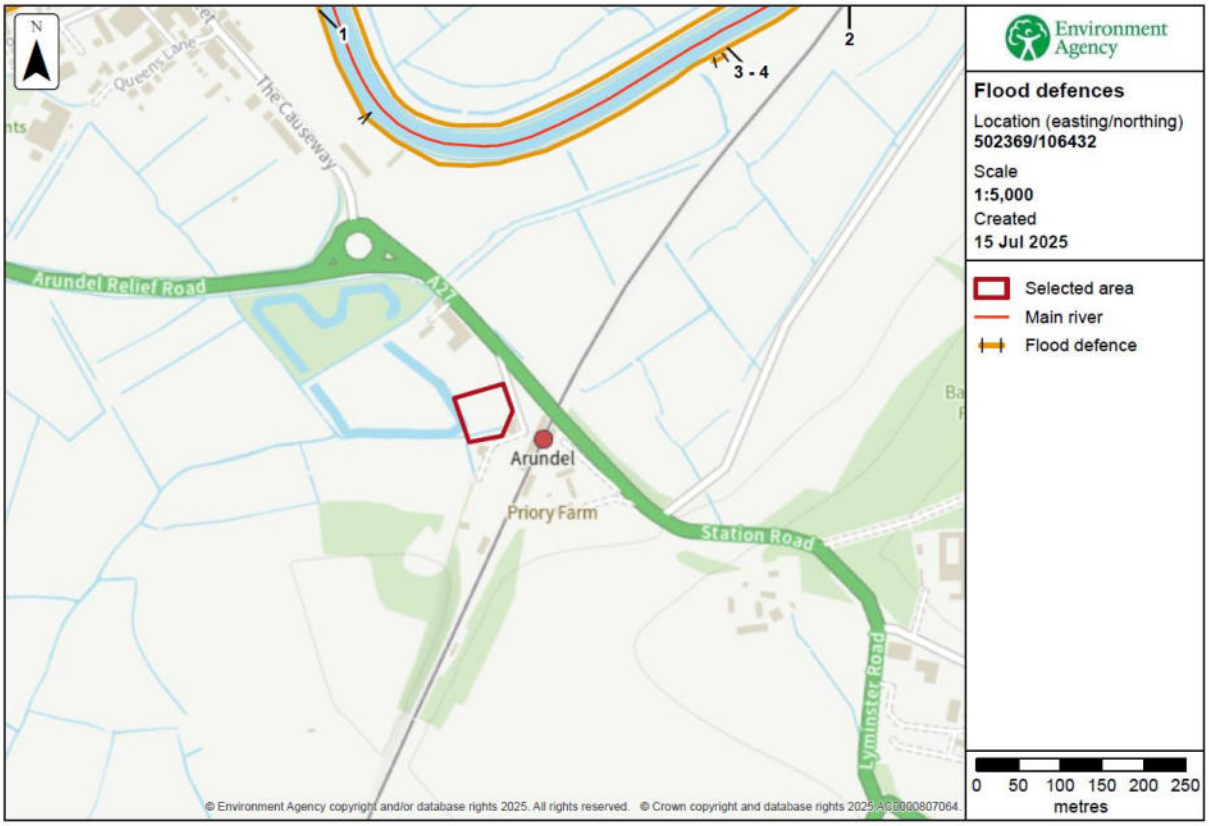


Figure 9: Formal Flood Defences Near the Site (Source: Environment Agency)

Pluvial (Surface Water)

Pluvial flooding occurs as a result of excess overland flow and stormwater ponding. Surface water flooding can happen when water does not have time to soak into the underlying ground or cannot infiltrate at all, for instance because the ground is already fully saturated.

This mechanism of flooding can also arise when the volume of precipitation exceeds the capacity of the drainage system meaning that water is unable to drain away through the sewer network and instead flows overland.

Overland flow will follow the local topography and can therefore pose a risk to both the development and surrounding third party land.

The risk posed to the site from surface water flooding has been assessed using the new National Flood Risk Assessment (NaFRA) 'Risk of Flooding from Surface Water' dataset. The updated Risk of Flooding from Surface Water maps were published on the 28th January 2025 by the Environment Agency and were subsequently integrated into the Flood Map for Planning on 25th March 2025.

The revised mapping is considered to represent a significant improvement on previous iterations of the surface water flood maps, both in terms of method and representation of the risk of flooding.

The NaFRA dataset was created by combining the best available flood models (including locally produced detailed model information and national flood modelling) to generate the probability of flood risk for each 2m grid square of land, with the aim of using the best available flood risk information in any one location.

Considerable improvements have been made when compared to the previous iterations of the RoFSW dataset including a more accurate representation of buildings within the model terrain to better capture the influence of built footprints on flow routes, the correction of misinterpretations in earlier surface water maps that wrongly suggested some buildings would remain dry, and a focus toward assessing flood risk to land rather than individual properties.

The new RoFSW dataset includes details of the annual chance of flooding to a specific depth. The dataset presents the likelihood (categorised as High, Medium or Low) of flooding to reach the following depth increments at a set location in any given year:

- 0.2m
- 0.3m
- 0.6m
- 0.9m
- 1.2m

Risk is displayed as one of the following likelihood categories:

High	An area which has more than 3.3% chance of flooding each year
Medium	An area which has between 1% and 3.3% chance of flooding each year
Low	An area which has between 0.1% and 1% chance of flooding each year
Very Low	An area which has less than a 0.1% chance of flooding each year

The 2025 RoFSW dataset includes modelled outputs for both the present day and climate change scenarios. The newly introduced climate change map shows the predicted impacts of climate change on future flood risk for the 2050's epoch (2040 – 2060) where the central allowances have been used to support short and medium-term decisions informed by the highest flood likelihood projections.

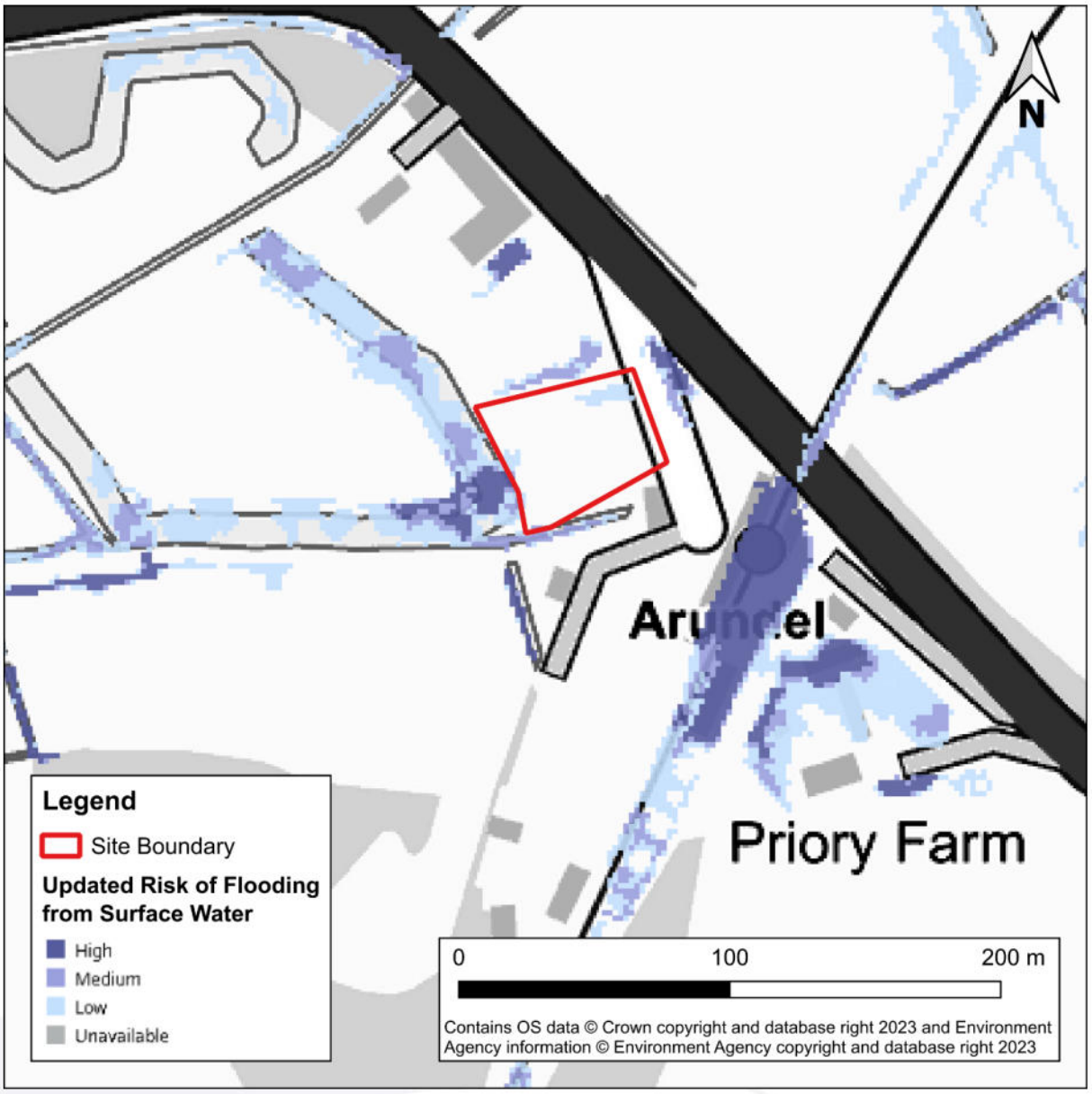


Figure 10: Risk of Flooding from Surface Water Extents (Source: EA)

The EA's Risk of Flooding from Surface Water dataset (Figure 10) shows that the application boundary is located within an area modelled to be at 'Very Low' and 'Low' risk of flooding from surface water.

A small area of land adjacent west and 10m east of the application boundary has been modelled at 'High' risk of surface water flooding. Having reviewed aerial imagery the areas of modelled 'High' risk appear to be associated with water accumulation in Arun Back pond and along Station Approach.

Review of the surface water modelling shown on the Environment Agency's Long Term Flood Risk Map indicates that there is the following chance of flood water to reach the following depths at the site in any given year:

Depth	Present Day	2050's epoch (2040 – 2060)
20cm[1]	Very Low Chance	Very Low Chance
30cm[2]	Very Low Chance	Very Low Chance
60cm[3]	Very Low Chance	Very Low Chance

Notes

1. *At 20cm, flood water can get into some homes and buildings, especially if the property has a basement. At this level, water can also damage your car or cause a breakdown.*
2. *At 30cm, flood water can get into homes and buildings. Water at this level can also move a car, damage roads and cause major traffic disruption.*
3. *At 60cm, we expect flood water to get into homes and buildings. Water at this level can float most vehicles, including 4x4s.*

Flood protection measures are usually effective up to 60cm. You should not try and keep flood water out of buildings if it's over 90cm. Water at this level can cause collapse or permanent structural damage.

No further information has been provided to suggest that the site has historically flooded as a result of surface water flows.

Groundwater

Groundwater flooding occurs when the water table rises up from the underlying rocks and emerges at the ground surface or within subsurface infrastructure (such as basements). Low lying areas that are underlain by permeable bedrock, superficial geology and aquifers are particularly susceptible to this form of flooding, especially during the winter months and after periods of heavy, sustained precipitation.

Unlike other mechanisms of flooding, groundwater flooding takes longer to dissipate as the water table needs to lower before any emerged flood water can soak back into the ground. As a result of this, whilst groundwater flooding does not pose a significant risk to life, flood waters can last for many months and can cause considerable damage to property.

Arun District Council's SFRA (2016) states that *significant groundwater flood events have been recorded across the district. This risk is supported by the Areas Susceptible to Groundwater Flooding (AStGWF) mapping which suggests that the susceptibility to groundwater flooding is generally high across the district.*

The Areas Susceptible to Groundwater Flooding (AStGWF) dataset gives an indication of the susceptibility of groundwater flooding across the catchment, based upon 1km grid squares where geological and hydro-geological conditions show that groundwater may emerge.

According to the map (refer to Figure 11) the site is located within a grid reference where >=50% <75% of the area is susceptible to groundwater flooding.

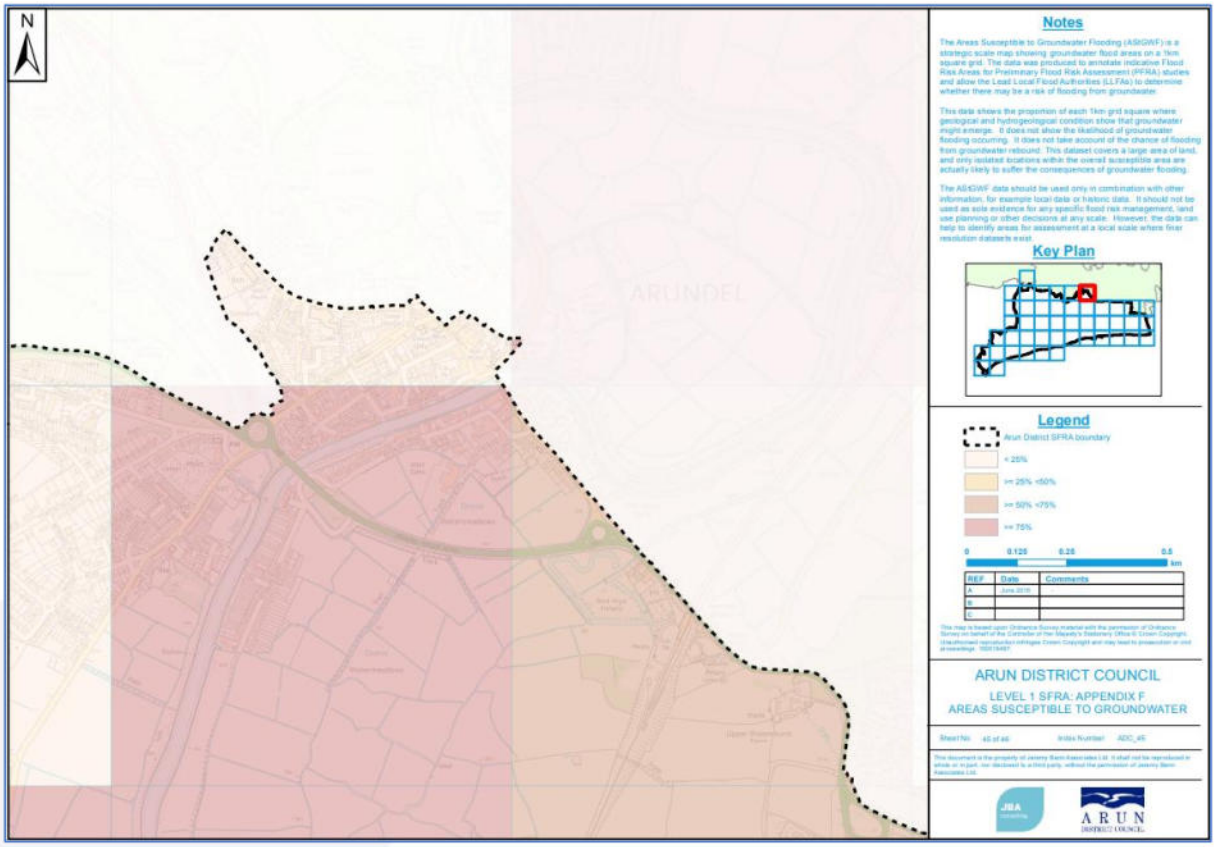


Figure 11: Areas at Risk of Groundwater Flooding (Source: ADC SFRA 2016)

Sewer Surcharge

Sewer flooding occurs when the volume of water entering a drainage system is greater than the capacity of the sewer network. It is often experienced during periods of heavy rainfall, when a large amount of precipitation falls within a short period of time, and overloads the sewer system capacity causing a surcharge and localised short-term flooding.

Sewer flooding can also occur when the sewerage system is unable to discharge as intended. This is frequently caused by problems such as high water levels within the receiving watercourse, blockages, siltation and structural defects.

Historical incidents of sewer flooding are detailed by water companies in a Hydraulic Flood Risk Register (HFRR) which records incidents of internal and external flooding relating to public foul, combined or surface water sewers and displays which properties suffered flooding. For confidentiality reasons, this data is supplied on a postcode basis.

Arun District Council Level 1 SFRA (2016) includes details of the number of properties within a postcode region which have experienced sewer flood incidents as of 25th February 2016. This information has been provided by Southern Water on a 5-digit postcode basis.

The DG5 register shows that a total of 315 flood incidents have been recorded across Arun District. According to the Level 1 SFRA, 8 sewer flood incidents have been reported in the postcode area which the development is located (BN18 9).

Despite this, given the site's current use, it can be confidently assumed that the development is at very low risk of sewer surcharge flooding.

Reservoir

Reservoirs are artificially created lakes, typically formed by building a dam across an existing watercourse to hold water back. Whilst unlikely, flooding from reservoirs can occur as a result of water exceeding the reservoir capacity or structural failure of the dam or bank.

All large reservoirs are regulated under the Reservoirs Act 1975 and undergo regular maintenance to minimise the possibility of reservoir failure. This legislation is enforced by the Environment Agency and requires reservoirs to be routinely inspected and maintained to an appropriate standard. As an enforcement authority the Environment Agency is responsible for some 2,000 reservoirs in England and Wales.

The Environment Agency have produced a flood map which shows where water may go in the unlikely event of a dam or reservoir failure. Two flooding scenarios are shown on the reservoir flood maps:

- A 'dry-day' scenario which shows the predicted flood extents if a dam or reservoir failed when rivers are at normal levels
- A 'wet-day' scenario which shows how much greater the flood extent might be if a downstream river is already experiencing an extreme flood event

Review of the Environment Agency's Risk of Flooding from Reservoirs map indicates that the site is located within the 'maximum extent of flooding from reservoirs when there is also flooding from rivers'.

As such, whilst unlikely to occur, the development is considered to be susceptible to reservoir failure.

Other Sources

No canals or other artificial infrastructure have been identified within the surrounding area which could pose a risk of flooding to the development.

Flood Risk Management

The proposed planning application relates to the siting of three temporary structures to facilitate water-based recreation. As such, the development is classified as "Water-Compatible".

"Water-Compatible" development is acceptable within Flood Zone 1, 2, 3a and 3b.

Finished Floor Levels

Plans provided by the applicant show that the proposed temporary structures will be positioned upon land with an approximate elevation of 1.50mAOD to 2.00mAOD.

It is recommended that if possible the temporary units are raised so that the Finished Floor Level of each structure is located approximately 600mm higher than the surrounding external ground levels.

Raising the units 600mm above the surrounding ground levels would result in the temporary structures having a Finished Floor Level of approximately 2.10mAOD to 2.60mAOD.

This could be achieved by either raising the land beneath the units or by constructing the temporary structures on axle stands/a bespoke frame.

Regardless of the final technique used to raise the units, given that the application relates to the siting of temporary structures, the applicant will return the land back to its original state after the duration of permitted use has passed; unless a subsequent approval for an extension of use or a separate application is granted.

Mitigation Measures

Comparison of the undefended 0.5% AEP 2110 CC floodplain level (3.60mAOD) with ground levels associated with the location of the proposed temporary units (1.50mAOD to 2.00mAOD, taken from EA LiDAR data) indicates that the development area may experience flood depths of 1.60-2.10m during the undefended 0.5% (1 in 200) AEP 2110 CC event.

In accordance with guidance published by the Environment Agency and the Department for Communities and Local Government (DCLG) flood resistance measures should be designed to keep water out of a property (by sealing off points of entry) to a maximum height of 600mm above the FFL. Holding back greater flood depths than 600mm may impact the structural integrity of a building. Therefore, in situations where flood depths are greater than 600mm it is advised that flood resilience measures are considered.

In light of the above, in order to offer protection during an extreme flood event it is recommended that the following mitigation measures are considered in consultation with the Local Authority:

- Non-return valves fitted on drains and pipes
- Any chambers fitted with a double seal screw down cover and frame
- Anchors are used to attach the temporary units to the slab
- Seals/bungs on hand to install in toilets and on pipes, should a flood event occur
- The electrical main ring run is installed at least 600mm above the Finished Floor Level
- All electrics and sockets are raised at least 600mm above the Finished Floor Level
- If applicable, boilers, gas meters and electrical incomer/meters are raised at least 600mm above the Finished Floor Level
- Solid concrete ground floor slab, with waterproof membrane
- Waterproof screed used on the ground floor with waterproof ground floor internal render (if applicable)

- Water resistant materials such as stainless steel, plastic or solid wood used for the fitout
- Any cracks and holes in the external walls, including service and drainage entry points are sealed with mortar/sealant and made watertight
- Covers for airbricks and appliance vents
- Where possible, the use of MDF carpentry is avoided within the fitout
- Ensure there is access to all spaces to enable drying and cleaning, should a flood event occur

The applicant may also wish to consider installation of demountable flood defence barriers to protect ground floor entry thresholds against flood water ingress up to a maximum depth of 0.6m.

Additionally, important documents (including insurance policies and photographs) belonging to the business should be stored above the design flood level.

Surface Water Flood Risk Mitigation

The site is located entirely outside of the modelled 1 in 30 year and 1 in 100 year surface water flood extents.

Despite this, it is recommended that the Finished Floor Level of the proposed temporary units area raised 600mm above the surrounding ground levels (if possible).

Raising the Finished Floor Level above the surrounding ground levels will prevent water ingress from storm water flowing or ponding near doorways and other entry points such as low windows, vents and air bricks.

The applicant has confirmed that the area where the proposed units will be installed is already underlain by hardstanding.

As such, it is considered that the development in its current form will not lead to a significant increase in surface water runoff rates and volumes when compared to the pre-developed situation, and a surface water drainage strategy is not required.

Despite this, in order to reduce surface water runoff rates and further protect the structures from existing overland flows the applicant may wish to consider the following surface water measures:

- Incorporating rainwater butts (to provide a source of non-potable water) and raingardens into the scheme
- Designing any external landscaping to slope away from the units
- Installing linear drains in front of all structure entry points
- Designing any openings, such as air bricks, to be at least 300mm above the surrounding external ground levels.

These measures will help mitigate against overland flows being directed towards the building during storm events and will reduce the risk of stormwater ponding at threshold entry points and stormwater ingress.

Groundwater Flood Risk Mitigation

The applicant has confirmed that there will be no land lowering as part of the proposals. Therefore, it is considered that the site will not be at an increased risk of groundwater flooding as a result of the development.

Furthermore, no information has been provided to suggest that the application area has ever experienced groundwater emergence.

Despite this, it is recommended that the temporary units are installed on a solid slab or the ground beneath the suspended floor is sealed.

This mitigation measure will protect against the unlikely occurrence of groundwater ingress should water table levels fluctuate in the future.

Flood Warnings and Alerts

The application site is located within an EA Flood Warning and Alert area.

Therefore it is recommended that future owners and senior staff sign up to the Environment Agency's free Targeted Flood Warning Service at https://www.gov.uk/sign-up-for-flood-warnings.

Warning	Meaning / Response Actions
 **Flood Alert**	**What it means:** Flooding is possible – be prepared. **When it is used:** The Environment Agency will issue a Flood Alert status when flooding is possible. It is usually issued between 2 hours and 12 hours in advance of flooding, dependant on the form and characteristics of the flood risk. **Triggers:** Forecasts that indicate that flooding from rivers and/or high tides, surges or strong winds at sea. **How is it issued:** This will be issued through the Environment Agency website and via the Flood Warnings Direct service, based upon weather, river and sea conditions. **Actions:** When a Flood Alert is issued, individuals should: • Be prepared to act on Flood Warning and Evacuation Plans. • Prepare to relocate or move to an area outside of the modelled Flood Zone extent. • Prepare a flood kit of essentials and have it ready if needed. • Monitor local water levels and forecasts on the Environment Agency website and on the Local TV/radio stations.
 **Flood Warning**	**What it means:** Flooding expected – immediate action is required. **When it is issued:** Flood Warnings will be issued when water levels are rising, heavy rain is anticipated to cause rivers to flash flood or there are high tides / surges coupled with strong winds at sea. It is usually issued between 30 minutes to 2 hours in advance of flooding. **Triggers:** Heavy rainfall forecast to cause flash flooding of rivers, and forecast flooding from rivers or the sea. **How it is issued:** This will be issued through the Environment Agency website and via the Flood Warnings Direct service, based upon weather and river/sea conditions. **Actions:** When a Flood Warning is issued, individuals should: • If necessary, move possessions, valuables and pets higher or to a safe place. • Locate keys to lock windows and tools to switch off gas and electricity supplies in the event evacuation is required. • If flood protection measures are available (e.g. flood gates and airbrick covers) put them in place. • Consider moving any vehicles to a higher level or to an area outside of the Flood Zone. • Contact the Local Authority to find out whether evacuation is considered necessary, and if so, where they are providing rest centres for evacuees. • If evacuation is required, switch off the gas and electricity supply before leaving the property (if safe to do so).

 **Severe Flood Warning**	**What it means:** Severe flooding. Danger to life. **When it is used:** When flooding poses a significant threat to life. **Triggers:** Actual flooding where the conditions pose a significant risk to life and/or widespread disruption to communities, onsite observations from flooded locations or a breach in defences or failure of a barrier that is likely to cause significant risk to life. **How it is issued:** This will be issued through the EA website and via the Flood Warnings Direct service based upon weather and river conditions. In this location a Severe Flood Warning may also be received via the Local Authority. **Actions:** When a Severe Flood Warning is issued, individuals should: • Stay in a safe place with a means of escape. • Be ready should you need to evacuate the property. • Cooperate with the emergency services. • Call 999 if you are in immediate danger.
Warning No Longer in Force	**What it means:** No further flooding is currently expected in your area. **When it is used:** When a Severe Flood Warning, Flood Warning or Flood Alert is no longer in force. **Triggers:** The risk of flooding has passed, water levels have dropped below the warning level and no further flooding is affected. **How it is issued:** This will be issued through the EA website, local TV/radio stations and news bulletins. **Actions:** When a 'Warnings No Longer in Force' status is issued, site owners should: • If evacuation has occurred, check with the Local Authority that it is safe to return to the property/building. • Be careful as flood water may still be around for a few days and could be contaminated. • If there has been flooding to the property contact your landlord/management company for advice (if applicable), take photographs of any damage and contact your insurance company. If you need to make an insurance claim do not throw anything away until the insurance company says so.

Table 9: EA Flood Warnings and Flood Alerts

Should a flood alert be issued it is recommended that the site owners and senior staff monitor the situation and advise staff / guests where appropriate.

Future site owners and staff should also be advised to monitor weather forecasts by signing up to the Met Office weather warnings.

Considering the proposed use of the site, it is recommended that the applicant develops a Flood Warning and Evacuation Plan in accordance with the Environment Agency's Flood Plan Checklist as well as West Sussex County Council's emergency planning guidance (refer to Appendix C).

The Flood Warning and Evacuation Plan will outline the site-specific actions which will be followed in the event of a flood warning being issued.

As a precautionary measure, it is recommended that operations cease and the site is closed during the period that a flood warning is active / during a flood event.

Emergency Flood Kit

It is recommended that the owner(s) of the site puts together a flood kit. Provision of an emergency kit will help site users and senior staff to prepare and react quickly in the event of flooding.

It is important to remember that in a flood event people may not have time to find essential items. Therefore, it is vital to prepare a small easy-to-carry bag with essentials in advance.

The Environment Agency recommend that you create a grab bag of essential items including:

- Important documents in a waterproof bag such as insurance certificates, passports, driving licences and other hard to replace documents
- A copy of the emergency action plan
- Emergency contact numbers: Insurance helpline, local council and emergency services
- Contact details for your water, electricity and gas suppliers
- Spare keys for the building and any cars
- Torch and batteries (in case it floods in the early morning/late evening and you lose power)
- Portable radio (wind-up preferable) for local station updates
- Fully charged mobile phone and charging lead
- Small power bank or portable charger
- Additional batteries for torches and radios
- Camera (if phone doesn't have one) to record damage for insurance purposes
- First aid kit and essential prescription medication (including respiratory aids)
- Anti-bacterial hand wipes/gel
- Hearing aids
- Spare glasses and/or contact lenses
- Whistle
- Bottled water (check use-by date)
- Non-perishable food items (including tinned goods and energy or cereal bars)
- Blankets and sleeping bags
- Wash kit and essential toiletries (including toilet paper and wet wipes)
- Bank cards and emergency cash
- Notebook and pen

It is recommended that the information in this document is used to help the developer complete a business flood plan (refer to the guidance in the report appendix).

The details within this Flood Risk Assessment should assist with deciding what practical actions to take before and during a flood event, with the aim of reducing the damage flooding could cause to the site.

Safe Access and Egress

The NPPF requires all new residential developments in areas at risk of flooding to demonstrate a route of safe escape for residents and site users which can be maintained for the lifetime of the development.

The application relates to the siting of three temporary structures to facilitate water-based recreation. No residential units will be created at the site. As such, a route of safe escape is not required.

Despite this, in the event of a severe flood warning, an evacuation route can be provided via Station Approach adjacent east of the site. If safe to do so, it is recommended that site users travel north along Station Approach before heading south along The Causeway / Station Road. This route leads site users away from the River Arun and is located entirely outside of the Flood Zone 2 and Flood Zone 3 extents from 50m east of the site onwards.

If flooding occurs and water exceeds 25cm anywhere along the evacuation route (including on site) site users should seek refuge within the property and await further instruction from the emergency services.

It is recommended that future owners and site users are made aware of the evacuation route.

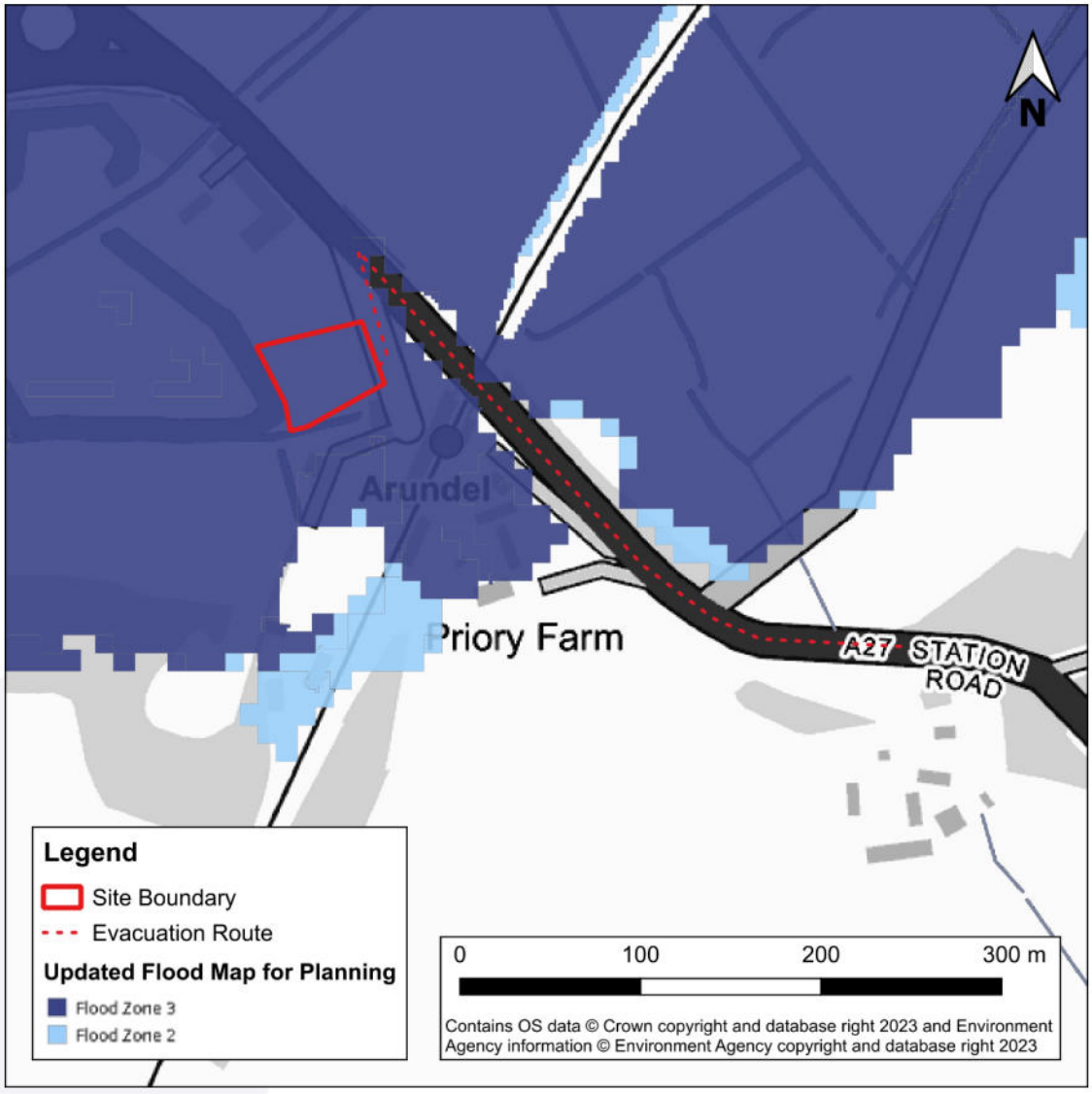


Figure 12: Evacuation Route

Conclusions and Recommendations

Conclusions

GeoSon Limited have been instructed by Angling 4 Education to undertake a Site Specific Flood Risk Assessment (FRA) to support a proposed planning application for development at Land at Back Arun Fishery, Arundel.

This FRA has been undertaken in accordance with the revised National Planning Policy Framework (NPPF) December 2024 and the associated Planning Practice Guidance (PPG).

The proposed application is located at Land at Back Arun Fishery, Arundel BN18 9JJ. The site measures approximately 2500m^2 and appears to be used as a car park for the adjacent fishing lakes. The applicant has confirmed that Southern Railway also use the land and have a temporary structure (container) positioned in the south western comer of the site.

The proposed planning application comprises the siting of three temporary (portacabin/converted container) structures on an area of existing hardstanding. According to plans provided by the applicant the proposed temporary structures will be located in the north eastern corner of the site and will be utilised as a changing room, toilet and an office.

The proposed temporary structures will facilitate water-based recreation. As such, according to NPPF guidance the proposals should be considered as "Water-Compatible Development" and as such are suitable within Flood Zone 1, 2, 3a and 3b.

According to the Environment Agency's Flood Map for Planning the site is located within Flood Zone 3.

Considering that the site has been modelled within Flood Zone 3 on the EA's Flood Map for Planning a Product 4 enquiry has been raised with the Environment Agency to obtain detailed flood model information in the relation to the development.

A Product 4 response (EA reference: EIR2025/16176) was received in July 2025, refer to Appendix B. Within which the Environment Agency provided details of modelled defended and undefended flood levels and extent mapping extracted from the 2010 Lower Tidal Arun Strategy.

Having reviewed the outputs from both the Lower Tidal Arun Strategy (2010) and the Coastal Flood Boundary Study (2018), whilst the Lower Tidal Arun Strategy was released before the latest climate change guidance was published given that the outputs include 2D floodplain levels at the site, the modelled results from the Lower Tidal Arun Strategy are considered to be more representative of the level of risk at the development.

As such, the model results from the Lower Tidal Arun Strategy have been used to base this Flood Risk Assessment on.

Considering the nature of the development, the application should be assessed against the 2100 1 in 200 year scenario.

2D floodplain levels are not available within the Lower Tidal Arun Strategy for the 2100 1 in 200 year scenario. Therefore, given the temporary nature of the development, a pragmatic and conservative approach has been adopted and the development has been assessed against the 2110 climate change flood level.

Comparison of the undefended 0.5% AEP 2110 CC floodplain level (3.60mAOD) with ground levels associated with the location of the proposed temporary units (1.50mAOD to 2.00mAOD, taken from EA LiDAR data) indicates that the development area may experience flood depths of 1.60-2.10m during the undefended 0.5% (1 in 200) AEP 2110 CC event.

However, it is important to note that the flood level outlined above does not take into account the presence of flood defences located within wider area which afford the site protection.

The development area is shown to be elevated approximately 1.50-2.00m below the defended 0.5% (1 in 200) AEP 2110 CC flood level (3.50mAOD).

The EA's Risk of Flooding from Surface Water dataset shows that the site is located within an area modelled to be at 'Very Low' and 'Low' risk of flooding from surface water.

Arun District Council's SFRA (2016) uses the Areas Susceptible to Groundwater Flooding (AStGWF) dataset to assess the risk of groundwater flooding across the catchment. According to the map the site is located within a grid reference where >=50% <75% of the area is susceptible to groundwater flooding.

Arun District Council's Level 1 SFRA also details the number of properties within a postcode region which have experienced sewer flood incidents as of 25th February 2016. According to the Level 1 SFRA, eight sewer flood incidents have been reported in the postcode area which the development is located (BN18 9). Despite this, given the site's current use, it can be confidently assumed that the development is at very low risk of sewer surcharge flooding.

Review of the Environment Agency's Risk of Flooding from Reservoirs map indicates that the site is located within the 'maximum extent of flooding from reservoirs when there is also flooding from rivers'. As such, whilst unlikely to occur, the development is considered to be susceptible to reservoir failure.

No canals or other artificial infrastructure have been identified within the surrounding area which could pose a risk of flooding to the development.

Summary and Recommendations

- The proposed planning application relates to the siting of three temporary structures to facilitate water-based recreation. As such, the development is classified as "Water-Compatible".
- "Water-Compatible" development is acceptable within Flood Zone 1, 2, 3a and 3b.
- Plans provided by the applicant show that the proposed temporary structures will be positioned upon land with an approximate elevation of 1.50mAOD to 2.00mAOD.
- It is recommended that if possible the temporary units are raised so that the Finished Floor Level of each structure is located approximately 600mm higher than the surrounding external ground levels.
- Raising the units 600mm above the surrounding ground levels would result in the temporary structures having a Finished Floor Level of approximately 2.10mAOD to 2.60mAOD.
- This could be achieved by either raising the land beneath the units or by constructing the temporary structures on axle stands/a bespoke frame.
- Regardless of the final technique used to raise the units, given that the application relates to the siting of temporary structures, the applicant will return the land back to its original state after the duration of permitted use has passed; unless a subsequent approval for an extension of use or a separate application is granted.

- In order to offer further protection to the temporary units during an extreme flood event mitigation measures have been recommended on Pages 31 and 32.
- Any external landscaping should be designed to slope away from the units.
- Linear drains should be installed in front of all building entry points.
- Any cracks and holes in the external walls, including service and drainage entry points are sealed with mortar/sealant and made watertight.
- There will be no land lowering as part of the proposals. Therefore, it is considered that the site will not be at an increased risk of groundwater flooding as a result of the development. Despite this, it is recommended that the temporary units are installed on a solid slab or the ground beneath the suspended floor is sealed.
- The application site is located within an EA Flood Warning and Alert area. Therefore it is recommended that future owners and senior staff sign up to the Environment Agency's free Targeted Flood Warning Service at https://www.gov.uk/sign-up-for-flood-warnings.
- Future site owners and staff should also be advised to monitor weather forecasts by signing up to the Met Office weather warnings.
- Considering the proposed use of the site, it is recommended that the applicant develops a Flood Warning and Evacuation Plan in accordance with the Environment Agency's Flood Plan Checklist as well as West Sussex County Council's emergency planning guidance (refer to Appendix C).
- **As a precautionary measure, it is recommended that operations cease and the site is closed during the period that a flood warning is active / during a flood event.**
- In the event of a severe flood warning, an evacuation route can be provided via Station Approach adjacent east of the site. If safe to do so, it is recommended that site users travel north along Station Approach before heading south along The Causeway / Station Road. This route leads site users away from the River Arun and is located entirely outside of the Flood Zone 2 and Flood Zone 3 extents from 50m east of the site onwards.

Appendix

A. Proposed Block Plan

B. Environment Agency Product 4 Response

C. Environment Agency Flood Plan Checklist and West Sussex County Council's Emergency Planning Guidance

Appendix A


Inn
TCB
Toilet
The Causeway
Office
Changing Room
FB
LB
Existing Container
Roseland

Appendix B

Flood risk assessment data

Location of site: Land adjacent to Roseland, The Causeway, Arundel, BN18 9JL
Document created on: 15 July 2025
This information was previously known as a product 4.
Customer reference number: EIR2025/16176

Map showing the location that flood risk assessment data has been requested for.



How to use this information

You can use this information as part of a flood risk assessment for a planning application. To do this, you should include it in the appendix of your flood risk assessment.

We recommend that you work with a flood risk consultant to get your flood risk assessment.

Included in this document

In this document you'll find:

- how to find information about surface water and other sources of flooding
- information on the models used
- definitions for the terminology used throughout
- flood map for planning (rivers and the sea)
- past floods
- flood defences and attributes
- information to help you assess if there is a reduced flood risk from rivers and the sea because of defences
- modelled data
- information about strategic flood risk assessments
- information about this data
- information about flood risk activity permits
- help and advice

Surface water and other sources of flooding

When using the surface water map on the check your long term flood risk service the following considerations apply:

- surface water extents are suitable for use in planning
- surface water climate change scenarios may help to inform risk assessments, but the available data fall short of what is required to assess planned development
- surface water depth information should not be used for planning purposes

To find out about other factors that might affect the flood risk of this location, you should also check:

- reservoir flood risk
- groundwater flood risk - you could use the British Geological Survey groundwater flooding data, groundwater: current status and flood risk and the guide on mining and groundwater constraints for development - further information may be available from the lead local flood authority (LLFA)
- your local planning authority's SFRA, which includes future flood risk

Your Lead Local Flood Authority is West Sussex County.

For information about sewer flooding, contact the relevant water company for the area.

About the models used

Model name: Lower Tidal Arun Strategy (2010)
Scenario(s): Defended fluvial, Undefended fluvial, Defended tidal, Undefended tidal
Date: 22 September 2010

These models contain the most relevant data for your area of interest.

Terminology used

Annual exceedance probability (AEP)

This refers to the probability of a flood event occurring in any year. The probability is expressed as a percentage. For example, a large flood which is calculated to have a 1% chance of occuring in any one year, is described as 1% AEP.

Metres above ordnance datum (mAOD)

All flood levels are given in metres above ordnance datum which is defined as the mean sea level at Newlyn, Cornwall.

Flood map for planning (rivers and the sea)

Your selected location is in flood zone 3.

Flood zone 3 shows the area at risk of flooding for an undefended flood event with a:

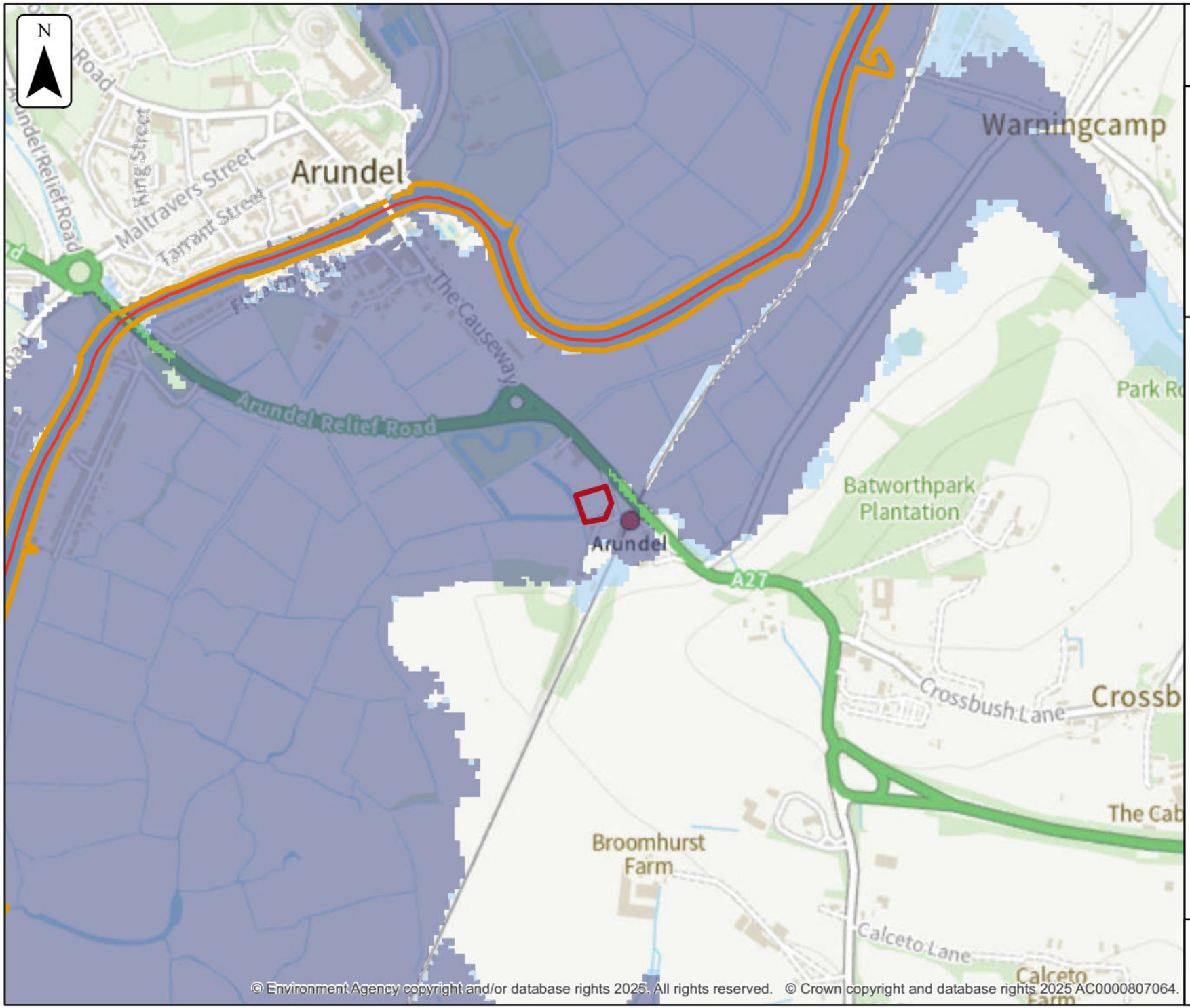
- 0.5% or greater probability of occurring in any year for flooding from the sea
- 1% or greater probability of occurring in any year for fluvial (river) flooding

Flood zone 2 shows the area at risk of flooding for an undefended flood event with:

- between a 0.1% and 0.5% probability of occurring in any year for flooding from the sea
- between a 0.1% and 1% probability of occurring in any year for fluvial (river) flooding

It's important to remember that the flood zones on this map:

- refer to the land at risk of flooding and do not refer to individual properties
- refer to the probability of river and sea flooding, ignoring the presence of defences
- do not take into account potential impacts of climate change



Environment Agency

Flood map for planning

Location (easting/northing)
502369/106432

Scale
1:10,000

Created
15 Jul 2025

- Selected area
- Main river
- Flood defence
- Flood Zone 3
- Flood Zone 2

0 100 200 300 400 500
metres

Past floods

Past flood events included in this document

The recorded flood outlines included in this document are for areas of land local to your site location that have been flooded by any of these sources:

- ephemeral water
- main rivers
- ordinary watercourses
- the sea
- unknown

Data limitations

The outlines do not include flooding from:

- drainage where rainfall has led to surface water ponding or overland runoff
- artificial, water-bearing sewer, water supply and wastewater treatment pipelines

Changes to flood defences

The defences (also known as assets) that were in place may also have changed. For example, assets may have been built more recently than the last recorded flood outline.

What the recorded flood outlines dataset is

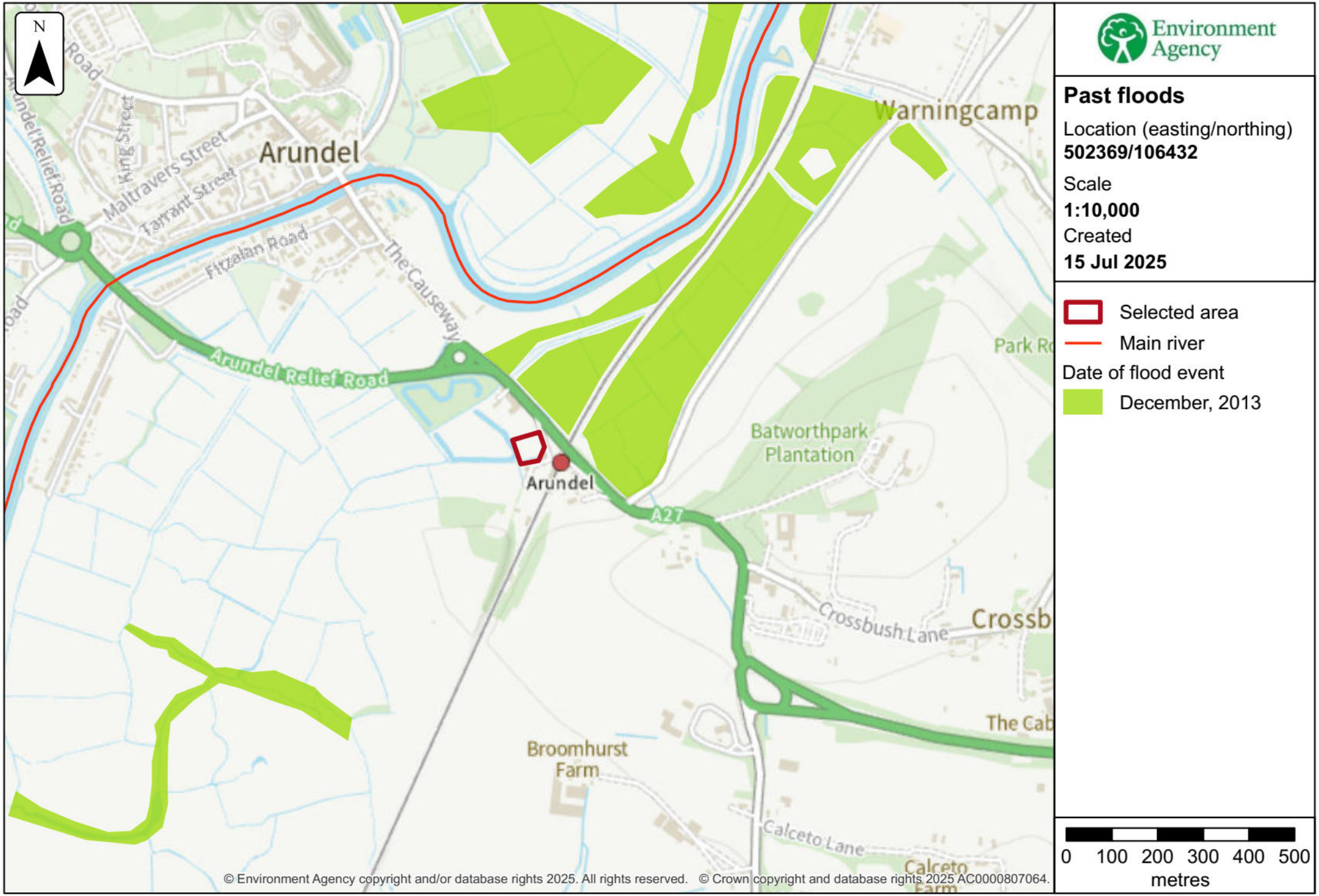
The recorded flood outlines are a geographical information system (GIS) data layer that show our verified records of areas that have flooded in the past from:

- rivers
- the sea
- groundwater
- surface water

Download the complete recorded flood outlines dataset, which includes data quality flags for outlines recorded after April 2020. This indicates the confidence we have in an outline.

Get flood information from other organisations

Contact West Sussex County Lead Local Flood Authority (LLFA) and your drainage board to get information about past flooding caused by surface water or drainage systems.


N
Arundel
Warningcamp
Arundel Relief Road
Maltravers Street
Tarrant Street
King Street
Fitzalan Road
The Causeway
Batworthpark Plantation
Arundel
A27
Crossbush Lane
Broomhurst Farm
Calceto Lane
Calceto Farm
Environment Agency
Past floods
Location (easting/northing)
502369/106432
Scale
1:10,000
Created
15 Jul 2025
Selected area
Main river
Date of flood event
December, 2013
0 100 200 300 400 500
metres
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Data on past flood events

Start date	End date	Source of flood	Cause of flood	Affects location
1 December 2013	1 February 2014	main river	overtopping of defences	No

Flood defences and attributes

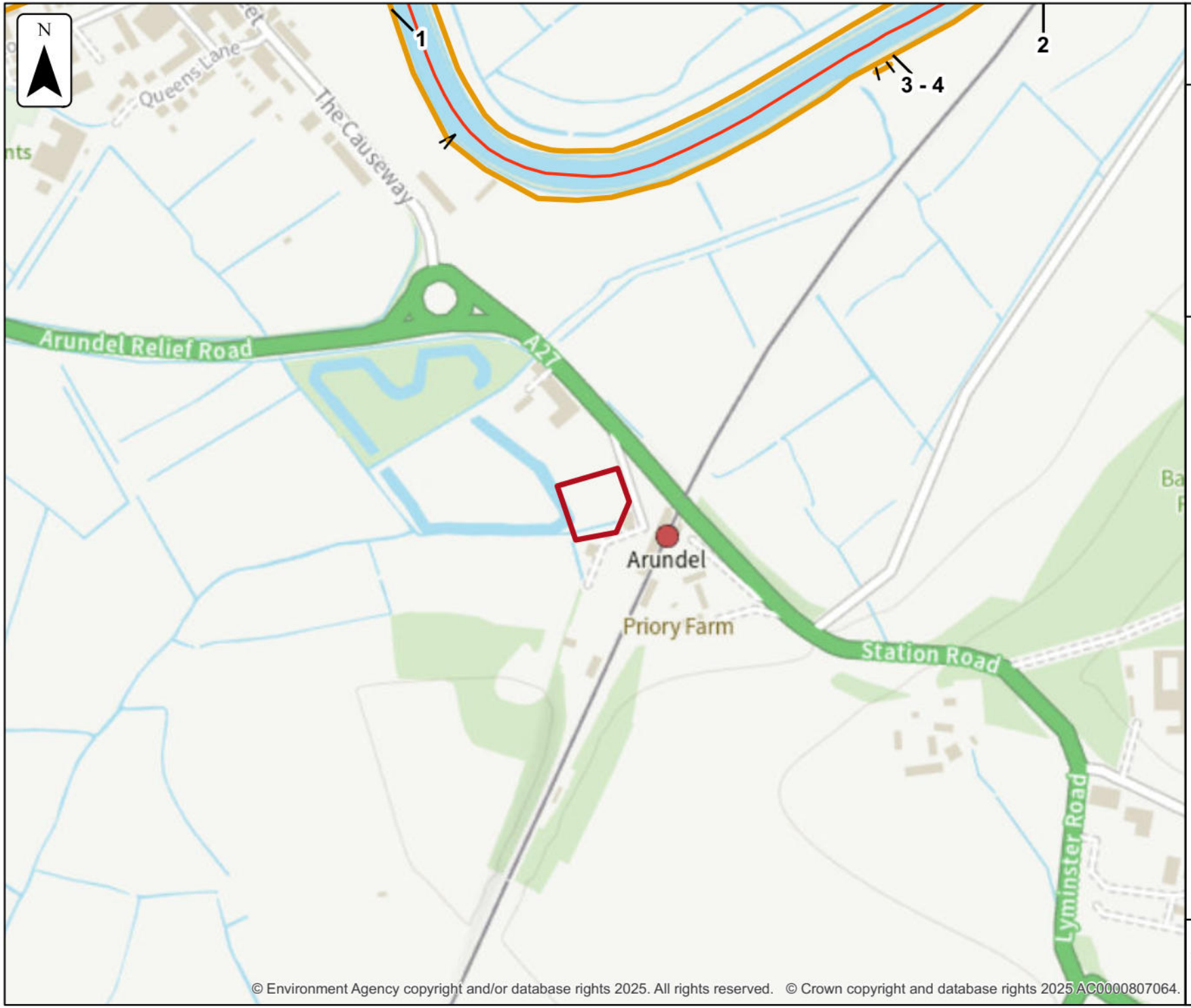
The flood defences map shows the location of the flood defences present.

The flood defences data table shows the type of defences, their condition and the standard of protection. It shows the height above sea level of the top of the flood defence (crest level). The height is In mAOD which is the metres above the mean sea level at Newlyn, Cornwall.

It's important to remember that flood defence data may not be updated on a regular basis. The information here is based on the best available data.

Use this information:

- to help you assess if there is a reduced flood risk for this location because of defences
- with any information in the modelled data section to find out the impact of defences on flood risk



Environment Agency

Flood defences

Location (easting/northing)
502369/106432

Scale
1:5,000

Created
15 Jul 2025

- Selected area
- Main river
- Flood defence

0 50 100 150 200 250
metres

Flood defences data

Label	Asset ID	Asset Type	Standard of protection (years)	Current condition	Downstream actual crest level (mAOD)	Upstream actual crest level (mAOD)	Effective crest level (mAOD)
1	124904	Embankment	200		3.80	3.62	
2	49282	Embankment	200		3.56	3.40	3.20
3	332767	Embankment			3.62	3.46	3.41
4	788761	Embankment	50		3.65	3.24	3.09

Any blank cells show where a particular value has not been recorded for an asset.

Modelled data

This section provides details of different scenarios we have modelled and includes the following (where available):

- outline maps showing the area at risk from flooding in different modelled scenarios
- modelled node point map(s) showing the points used to get the data to model the scenarios and table(s) providing details of the flood risk for different return periods
- map(s) showing the approximate water levels for the return period with the largest flood extent for a scenario and table(s) of sample points providing details of the flood risk for different return periods

Climate change

The climate change data included in the models may not include the latest flood risk assessment climate change allowances. Where the new allowances are not available you will need to consider this data and factor in the new allowances to demonstrate the development will be safe from flooding.

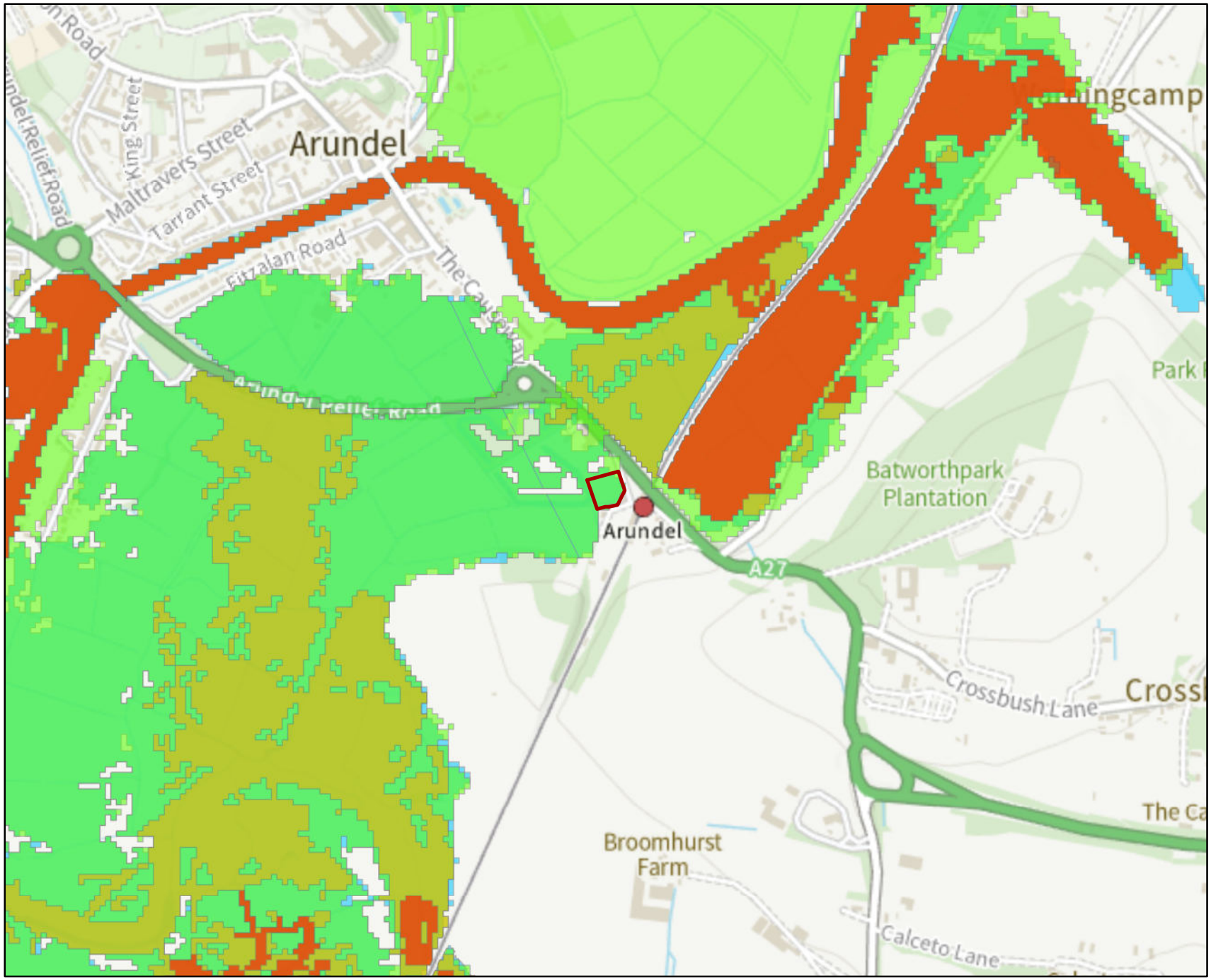
The Environment Agency will incorporate the new allowances into future modelling studies. For now, it's your responsibility to demonstrate that new developments will be safe in flood risk terms for their lifetime.

Modelled scenarios

The following scenarios are included:

- Defended modelled fluvial: risk of flooding from rivers where there are flood defences
- Defences removed modelled fluvial: risk of flooding from rivers where flood defences have been removed
- Defended modelled tidal: risk of flooding from the sea where there are flood defences
- Defences removed modelled tidal: risk of flooding from the sea where flood defences have been removed

Modelled Flood Outlines (Defended Fluvial). Centred BN18 9JL. Created 15/07/2025.



Environment Agency

N

Legend

- Site Boundary
- 5% AEP (Defended Fluvial)
- 1% AEP (Defended Fluvial)
- 1% AEP +CC (Defended Fluvial)
- 0.1% AEP (Defended Fluvial)

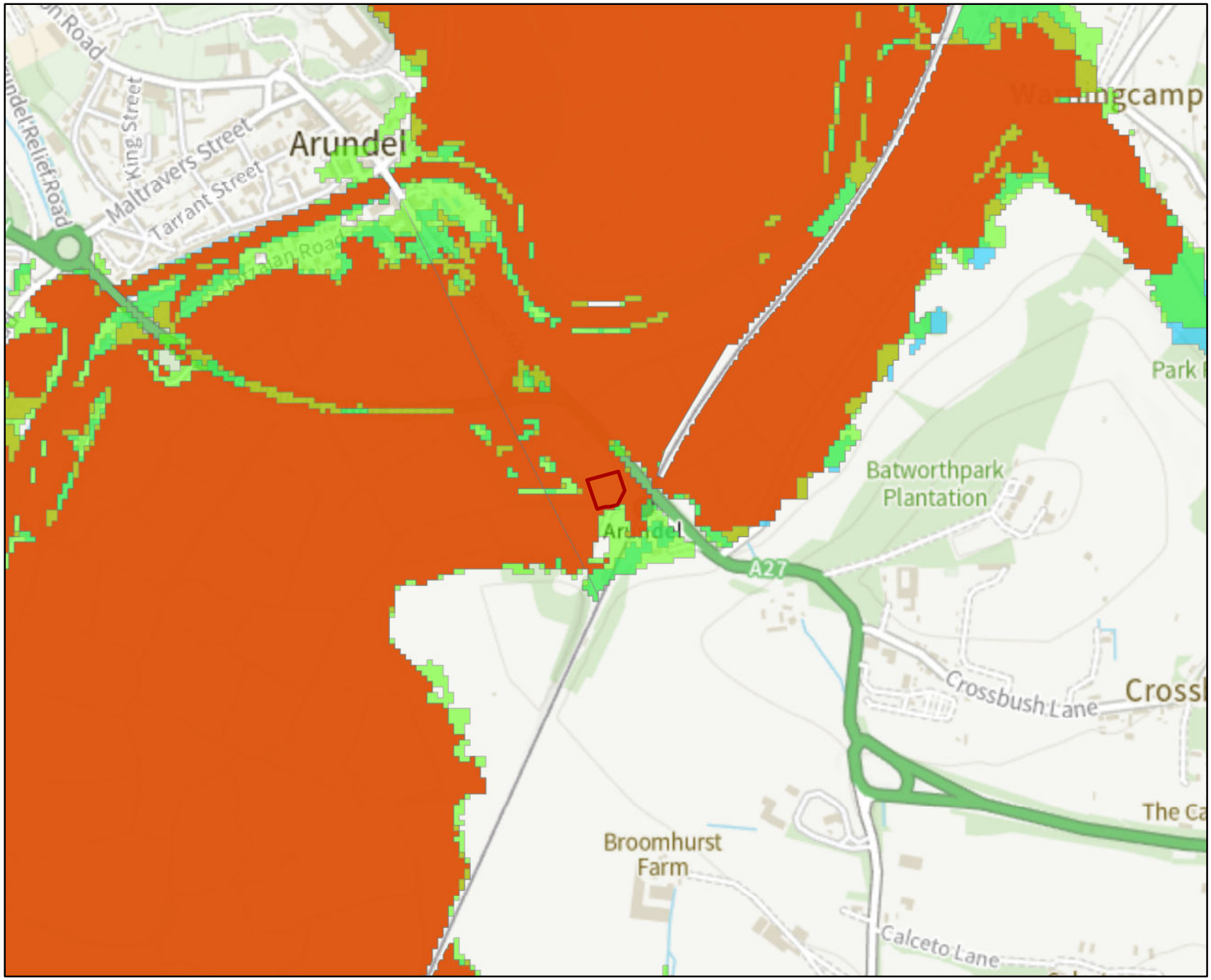
Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000

0 0.225 0.45
Kilometers

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Contact us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506. Email:enquiries@environment-agency.gov.uk

Modelled Flood Outlines (Undefended Fluvial). Centred BN18 9JL. Created 15/07/2025.



Environment Agency

N

Legend

- Site Boundary
- 5% AEP (Undefended Fluvial)
- 1% AEP (Undefended Fluvial)
- 1% AEP+CC (Undefended Fluvial)
- 0.1% AEP (Undefended Fluvial)

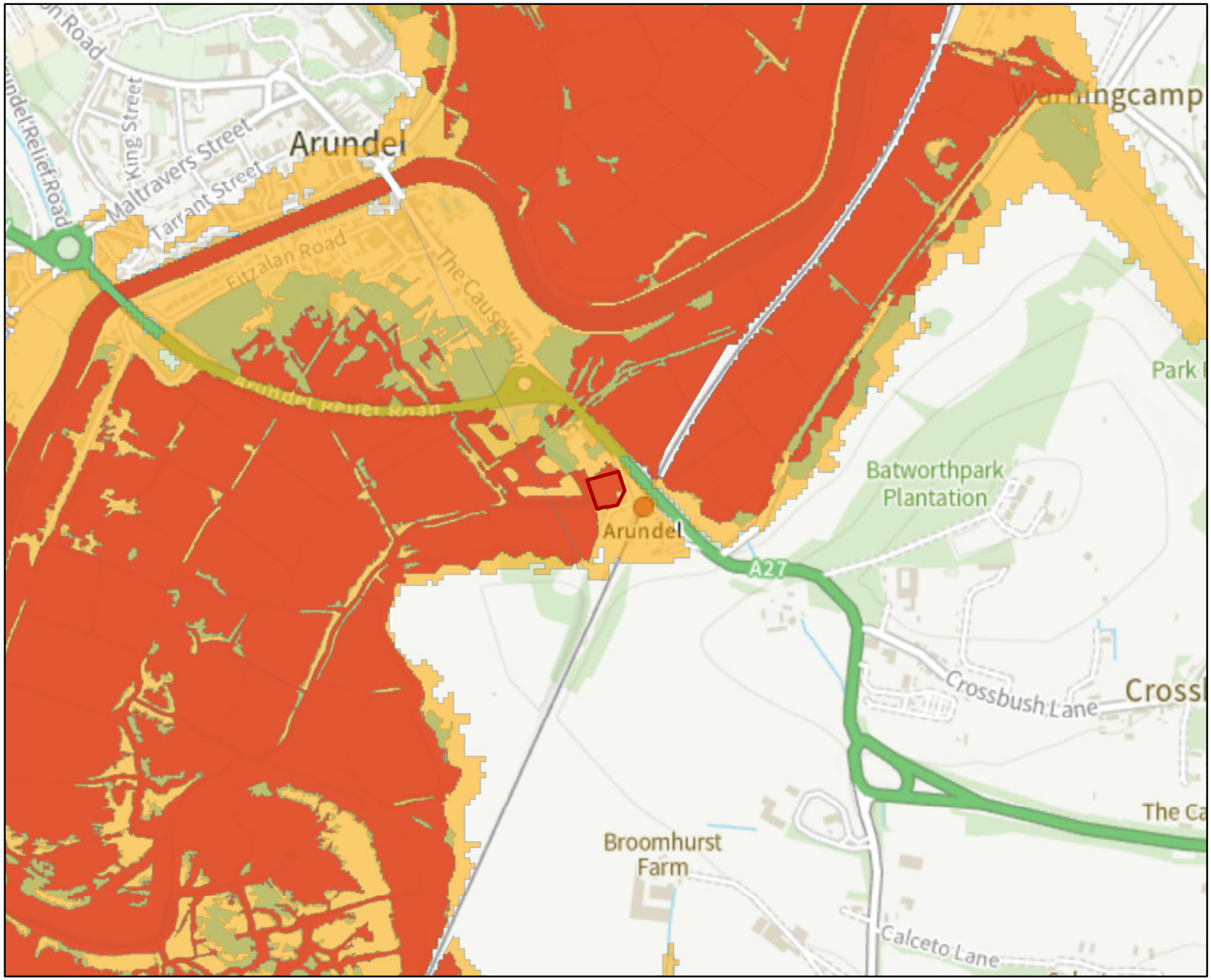
Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000

0 0.225 0.45
Kilometers

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Modelled Flood Outlines (Defended Tidal). Centred BN18 9JL. Created 15/07/2025.



Environment Agency

N

Legend

- Site Boundary
- 0.5% AEP (Defended Tidal)
- 0.5% AEP (2110) (Defended Tidal)
- 0.1% AEP (Defended Tidal)

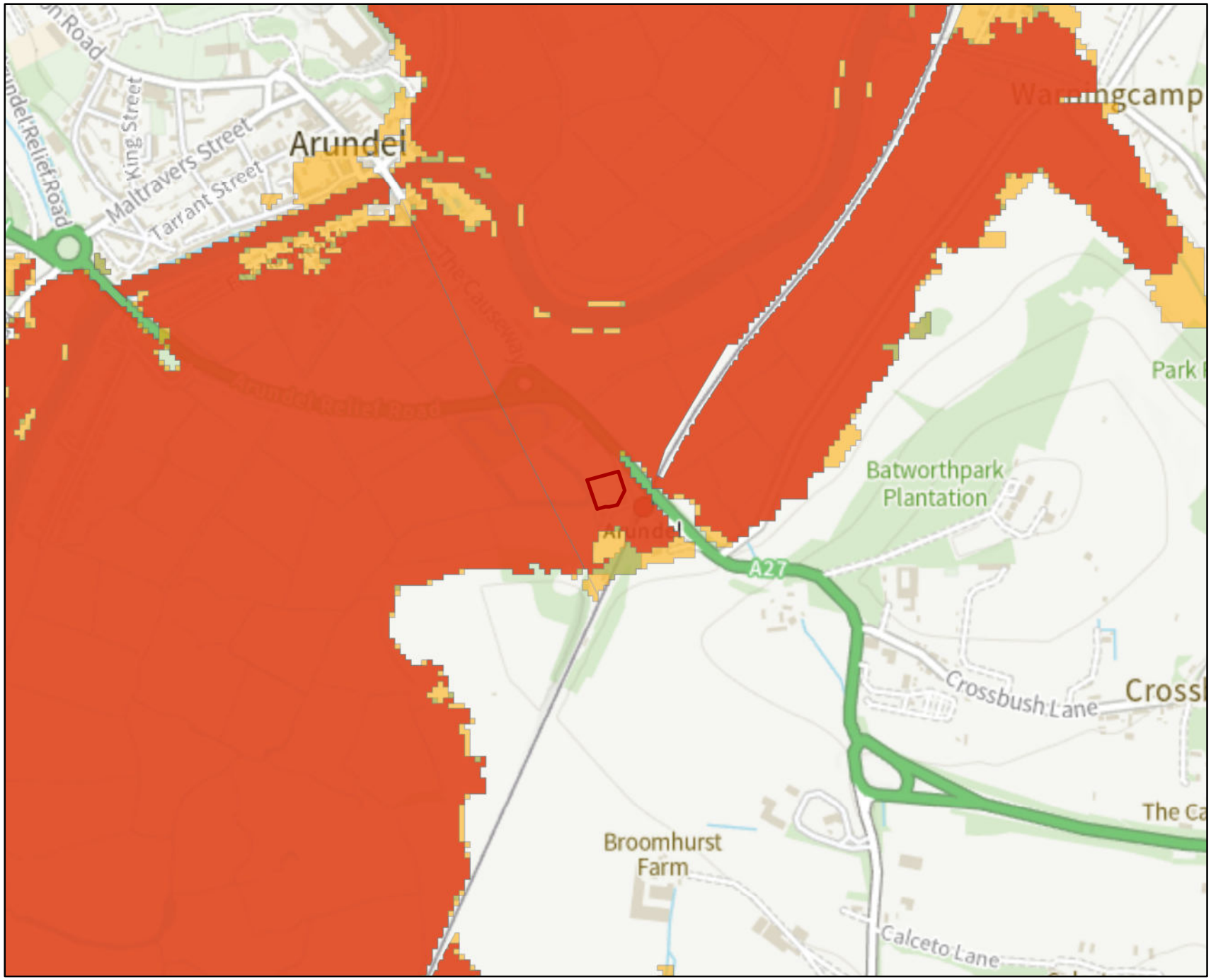
Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000

0 0.225 0.45
Kilometers

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Modelled Flood Outlines (Undefended Tidal). Centred BN18 9JL. Created 15/07/2025.



Environment Agency

N

Legend

- Site Boundary
- 0.5% AEP (Undefended Tidal)
- 0.5% AEP (2110) (Undefended Tidal)
- 0.1% AEP (Undefended Tidal)

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:10,000

0 0.225 0.45
Kilometers

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FRA Site Boundary & Node Points. Centred BN18 9JL. Created 15/07/2025.



Environment Agency

N

Legend

- Site Nodes
- Site Boundary

Annual Exceedance Probability (AEP) The probability of a flood of a particular magnitude, or greater occurring in any given year.

Scale: 1:750

0 0.015 0.03
Kilometers

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Product 4 Flood Risk Data Requested by: Thomas Smith

Site: Land adjacent to Roseland, The Causeway, Arundel, BN18 9JL

Table 1: Water Levels: Fluvial Undefended

	NGR		Modelled Flood Levels in Metres AOD Undefended Annual Exceedance Probability			
Node Ref	Eastings	Northings	5%	1%	1% +CC*	0.1%
1	502344	106447	2.32	2.41	3.33	2.72
2	502388	106459	-	2.41	3.33	2.73
3	502371	106432	2.32	2.41	3.33	2.72
4	502358	106404	2.33	2.41	3.33	2.71
5	502393	106418	2.32	2.41	3.33	2.72

Table 2: Water Levels: Fluvial Defended

	NGR		Modelled Flood Levels in Metres AOD Defended Annual Exceedance Probability			
Node Ref	Eastings	Northings	5%	1%	1% +CC*	0.1%
1	502344	106447	-	-	1.79	1.75
2	502388	106459	-	-	-	-
3	502371	106432	-	-	1.79	1.75
4	502358	106404	-	-	1.78	1.75
5	502393	106418	-	-	-	-

Table 3: Water Levels: Tidal Undefended

	NGR		Modelled Flood Levels in Metres AOD Undefended Annual Exceedance Probability		
Node Ref	Eastings	Northings	0.5%	0.5% (2110)**	0.1%
1	502344	106447	2.99	3.59	3.05
2	502388	106459	2.98	3.59	3.04
3	502371	106432	2.99	3.60	3.05
4	502358	106404	2.99	3.60	3.06
5	502393	106418	2.98	3.59	3.05

Table 4: Water Levels: Tidal Defended

	NGR		Modelled Flood Levels in Metres AOD Defended Annual Exceedance Probability		
Node Ref	Eastings	Northings	0.5%	0.5% (2110)**	0.1%
1	502344	106447	1.57	3.50	1.62
2	502388	106459	-	3.50	
3	502371	106432	1.57	3.50	1.62
4	502358	106404	-	3.50	1.62
5	502393	106418	-	3.50	

Table 5: Water Depths: Fluvial Undefended

	NGR		Modelled Flood Depths in Metres Undefended Annual Exceedance Probability			
Node Ref	Eastings	Northings	5%	1%	1% +CC*	0.1%
1	502344	106447	0.77	0.86	1.77	1.17
2	502388	106459	-	0.08	1.00	0.40
3	502371	106432	0.59	0.68	1.60	0.99
4	502358	106404	0.36	0.44	1.36	0.74
5	502393	106418	0.42	0.51	1.43	0.83

Table 6: Water Depths: Fluvial Defended

	NGR		Modelled Flood Depths in Metres Defended Annual Exceedance Probability			
Node Ref	Eastings	Northings	5%	1%	1% +CC*	0.1%
1	502344	106447	-	-	0.22	0.32
2	502388	106459	-	-	-	-
3	502371	106432	-	-	0.23	0.22
4	502358	106404	-	-	0.20	0.15
5	502393	106418	-	-	-	-

Table 7: Water Depths: Tidal Undefended

	NGR		Modelled Flood Depths in Metres Undefended Annual Exceedance Probability		
Node Ref	Eastings	Northings	0.5%	0.5% (2110)**	0.1%
1	502344	106447	1.43	2.03	1.49
2	502388	106459	0.65	1.26	0.71
3	502371	106432	1.25	1.86	1.32
4	502358	106404	1.03	1.63	1.09
5	502393	106418	1.09	1.69	1.15

Table 8: Water Depths: Tidal Defended

	NGR		Modelled Flood Depths in Metres Defended Annual Exceedance Probability		
Node Ref	Eastings	Northings	0.5%	0.5% (2110)**	0.1%
1	502344	106447	0.01	1.93	0.05
2	502388	106459	-	1.36	-
3	502371	106432	0.01	1.94	0.06
4	502358	106404	-	1.91	0.03
5	502393	106418	-	1.64	-

All levels taken from: Lower Tidal River Arun Strategy Study, completed by Atkins in 2010.

Produced on: 15/07/2025

*** The flood risk data provided is based on existing EA hydraulic models with an allowance for climate change. Please note the climate change allowances provided are not up to date. These were updated on 17 December 2019.**

You should refer to 'Flood risk assessments: climate change allowances' for the most up to date allowances. You will need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

There is no additional information or health warnings for these levels/depths or the model from which they have been produced.

Strategic flood risk assessments

We recommend that you check the relevant local authority's strategic flood risk assessment (SFRA) as part of your work to prepare a site specific flood risk assessment.

This should give you information about:

- the potential impacts of climate change in this catchment
- areas defined as functional floodplain
- flooding from other sources, such as surface water, ground water and reservoirs

Your Lead Local Flood Authority is West Sussex County.

About this data

This data has been generated by strategic scale flood models and is not intended for use at the individual property scale. If you're intending to use this data as part of a flood risk assessment, please include an appropriate modelling tolerance as part of your assessment. The Environment Agency regularly updates its modelling. We recommend that you check the data provided is the most recent, before submitting your flood risk assessment.

Flood risk activity permits

Under the Environmental Permitting (England and Wales) Regulations 2016 some developments may require an environmental permit for flood risk activities from the Environment Agency. This includes any permanent or temporary works that are in, over, under, or nearby a designated main river or flood defence structure.

Find out more about flood risk activity permits

Help and advice

Contact the Solent and South Downs Environment Agency team at ssdenquiries@environment-agency.gov.uk for:

- more information about getting a product 5, 6, 7 or 8
- general help and advice about the site you're requesting data for

Appendix C

Business Flood Plan Checklists

Taking simple steps can go a long way to protect your business from flooding. Preparing in advance will make it easier to respond to and recover from a flood.

Your business should have a flood plan. Keep it in a safe and accessible place, away from potential flood water.

Read our personal flood plan advice for core steps to take to stay safe in a flood.

1. Before a flood

Actions you can take to protect your business include:

- check your insurance covers you for flood damage, business interruption and lost revenue
- adapt your business to the risk of flooding
- check that your flood prevention products or flood warning systems function properly
- use your existing maintenance procedures as an opportunity to reduce your flood risk
- include potential impacts of a flood on staff in your health and safety assessments
- agree flood contingency plans with suppliers and customers and contract management
- plan for preventing business disruption and assisting recovery (known as business continuity)

2. Business flood plan checklist

Here are examples of information you could include in your plan:

- trigger points for action that make the most sense for your plan, for example water in the car park
- what should happen at these trigger points and what might change if the flood gets worse
- security procedures you might need to activate during a flood
- a description or map of emergency routes and evacuation points
- shut off points for gas, electricity and water, and details of any emergency power source
- details of items that may need special protective measures, for example hazardous or refrigerated materials, and what to do with them

For your data and information:

- safe storage of data and information, for example customer and staff records
- moving important documents to a location where they won't be damaged by flood water

For your people:

- emergency contact information, including out of normal hours
- a note of staff who may need assistance when flooding happens
- details of where a first aid kit, safety equipment or medical supplies are located
- details of actions for your staff to take and the training they may need to carry out these roles and responsibilities

Make a person, or group of people, responsible for managing a flood emergency, including:

- carrying out your flood plan
- making decisions
- contacting relevant people on and off site
- speaking with public authorities
- managing other staff

You should make a list of important contacts, including:

- building services
- utilities
- suppliers
- evacuation contacts for staff

These organisations may be able to help with:

- installing flood protection products
- moving stock and important items to safe locations
- emergency storage
- emergency supplies
- medical support

Others who can help might include:

- local business and community networks
- chambers of commerce
- your local council

Make sure you know what you must do under relevant regulations and legislation, including:

- health and safety
- liability
- environmental management
- financial management

3. Immediately before a flood

If flooding is about to happen, check your staff:

- are safe
- know what to do in a flood
- know their role and responsibilities
- know how to communicate in an emergency

4. When a flood happens

Follow your flood plan. You can also follow advice in:

- personal flood plan
- what to do before or during a flood

5. After a flood

Follow your flood plan. You can also follow advice in:

- personal flood plan
- what to do after a flood

6. Campsites and caravan parks

We have specific guidance for managing the flood risk of your campsite or caravan park.

www.westsussex.gov.uk/flooding #floodaware

Your essential Flood Guide

Information and forward planning



WEST SUSSEX Flood Risk Partnership

FLOODS DESTROY BE PREPARED

National Flood Forum

About this guide

This guide has been produced by West Sussex County Council as Lead Local Flood Authority in association the National Flood Forum (NFF) and the West Sussex Flood Risk Partnership which includes WSCC, all district and borough councils, Environment Agency, NFF and Southern Water. It offers practical advice about potential emergency situations we could face in the future due to flooding.

The risk of flooding is an increasingly important issue across West Sussex, with over 100,000 properties at risk. The coastline of the county is generally low-lying and many of our towns and villages are located near rivers. As a result we are vulnerable to flooding both from the sea, from the County's rivers following heavy rainfall, from surface water run-off and groundwater.

Due to climate change the risk of flooding will increase as sea levels rise, winter rainfall increases and flash storms become more frequent. This means more people will be at risk more often. Flood protection measures are in place in many areas across the county, however the risk of flooding cannot be completely eliminated, nor can flood damage be entirely prevented.

A considerable amount of work and financial investment has been undertaken by the County and District Councils, the Environment Agency and Southern Water Services to reduce the risk of flooding. These include improved highways drainage schemes and new flood alleviation projects through projects such as Operation Watershed which is an £8.25 million commitment to invest in highway drainage and environmental improvements in areas of the county worst affected by floods.

Whilst the risk of flooding can be reduced, it cannot be prevented entirely. However, there are a number of simple steps that can be taken to make sure we are prepared before a flood happens.

3 **Am I at risk of flooding?**

9 **How can my community prepare?**

13 **During a flood**

18 **After a flood**

22 **Useful contacts**

Am I at risk of flooding?

To best prepare for the possibility of flooding, it's a good idea to find out whether your house or business is at risk.

The best available mapping indicates that over 100,000 properties are in areas susceptible to flood risk within the West Sussex. Even if your home is not directly at risk from flooding, we can all be affected by the consequences of an unexpected event. Surface water or flash flooding, usually resulting from torrential rain over a short space of time, has caused much disruption historically. Unlike river and coastal flooding, surface water flooding is much more difficult to predict.

You can check the risk of river flooding to your property by looking at the environment agency flood map at **www.environmentagency.gov.uk/homeandleisure/floods** and type in your postcode.

The flood risk map is intended only as a guide and is not designed to be accurate at an individual property level.

Visit **www.westsussex.gov.uk/flooding** where you can sign up to severe weather alerts from West Sussex County Council and find out more about signing up for other free flood warnings.



What is a 1-in-100 year flood risk?

The phrase can be confusing. Many mistakenly believe that it is a flood that occurs every 100 years. However, the phrase really means a flood that has a 1 percent chance of occurring in any year. The Bognor Regis rainfall event in June 2012 saw over 100mm of rain fall in 24 hours. This area may see 600mm annually. In Bognor Regis, this downpour equated to a 1 in 200 year rainfall event, or a 0.5 % annual probability event.

If you have a watercourse on your land

Blocked ditches are common cause of flooding in West Sussex, if the drainage ditches have not been kept clear they are unable to do their job in carrying water away and as a result contribute significantly to the effects of localised flooding.

If you live next to a watercourse and own at least one of the banks you are a 'riparian owner'. You may not even be aware that you have a drainage ditch at the bottom of your garden. It is important to check however, as you have responsibility for the maintenance and upkeep of the watercourse to ensure that it is not a flood risk to other people or property. If you are a riparian owner and this has not been disclosed to your insurance company it could affect your ability to claim in the event of a flood.

The Environment Agency leaflet 'Living on the Edge - A guide to your rights and responsibilities of riverside ownership' available on the Environment Agency website explains riparian ownership further. **www.environmentagency.gov.uk/homeandleisure/floods**.

More information on your responsibilities as a Riparian owner can be found at www.westsussex.gov.uk/flooding

Act now: Be prepared

If you live in an area at risk of flooding, act now and plan what you would do in a flood.

Flooding can happen quickly so preparing in advance can reduce the damage and disruption flooding can cause.

Sign up for **Floodline Warnings direct**

Floodline Warnings Direct is a free service provided by the Environment Agency to warn residents in flood risk areas, about river flooding. Alerts can be sent by phone, mobile, email, text message and pager.

Sign up online at www.environment-agency.gov.uk or call Floodline 0845 988 1188

Sewer Flooding

Southern Water is responsible for the public sewer network which most commonly carries both wastewater and rainwater.

When the sewerage network is overwhelmed by heavy rainfall, flows can back up and flood homes and streets from toilets and manholes.

Southern Water has measures in place to help protect homes against flooding. However, sometimes the sheer volume of water and other problems like sewer blockages mean flooding will occur.

About three quarters of sewer blockages are caused by wet wipes and other non-biodegradable items which have been flushed down toilets and cooking oils which have been poured down sinks.

Customers can help keep the sewers clear by putting these items in the bin.

For more information on what to do if you are affected by sewer flooding and on how to keep the sewers running clear, visit www.southernwater.co.uk/floodingfacts

Southern Water

Understand the environment agency **Flood Warning Codes**

These are the flood codes/symbols used by the Environment Agency to warn of river flooding. Please be aware the 'Severe Flood Warning' symbol may be issued after some flooding has already occurred.



Flood Alert
Flooding is possible
Be prepared



Flood Warning
Flooding is expected
Immediate action required



Severe Flood Warning
Danger to life



Surface water flood warnings

Whilst we have good data on where has flooded previously during heavy rainfall, accurate predictions of difficult and are based on monitoring where rain is expected to fall and the intensity of the rainfall.

The Met Office and Flood Forecasting Centre put out rainfall warnings and Flood Guidance statements. At West Sussex County Council we forward the higher risk alerts (amber and above) to all subscribers via AlertMe, which is our email alert system.

Find out more at www.westsussex.gov.uk/flooding

River and Sea level live monitoring

The Environment Agency measure river and sea levels across England and Wales by collecting data from their monitoring stations along the rivers and the coast.

Find out more at www.environment-agency.gov.uk/homeandleisure/floods/riverlevels

Make a Flood Plan

A Flood Plan can help you act quickly and make practical decisions in the event of a flood. A personal Flood Plan template is available from the environment agency's website **www.environment-agency.gov.uk/homeandleisure/floods** but these are some of the key things to consider:

- Keep a list of useful telephone numbers handy, for example for your relatives and friends and insurance company etc.
- Avoid keeping key contact numbers solely in your mobile phone as it may get lost or wet.
- Make sure you have the correct insurance cover. The National Flood Forum has more information on obtaining flood insurance on their website **www.floodforum.org.uk** or can be contacted on 01299 403055 for advice. Government information and advice can be obtained from the Defra website **www.defra.gov. uk/publications/2012/07/19/pb13082flood-insurance/**
- Check you know how to turn off your gas, electricity and water supplies.
- Make an emergency kit (see over page)
- Put important documents out of flood risk and protect with polythene or dry bags.
- Think about what belongings you can move now and what you would want to move during a flood.
- Identify what you would need to take with you if you had to leave your home.
- Think about where you could move your car to, if you were able to safely, before flooding.
- Talk about possible flooding with your family, or anyone who lives with you. You and your family should agree how you will contact each other and where you will go in case you become separated during flooding.





Emergency Kit

- ☑ Insurance documents, other important documents
- ☑ Insurance emergency helpline, local council and emergency services numbers, family & friends telephone numbers, local radio frequencies
- ☑ Torch
- ☑ Batteries (not rechargeable)
- ☑ Portable radio (wind-up preferable)
- ☑ Mobile phone
- ☑ First aid kit with essential prescription medication / repeat prescription form
- ☑ Bottled water (check use-by date)
- ☑ Non-perishable food items (including energy or cereal bars)
- ☑ Blankets, warm clothes
- ☑ Wash kit and essential toiletries (including toilet paper and wet wipes)
- ☑ Children's essentials (milk, baby food, sterilised bottles & spoons, nappies, wipes, nappy bags, clothing, comforter, teddy or favourite toy)
- ☑ Camera (disposable) to record damage for insurance purposes
- ☑ Emergency cash
- ☑ Additional items for flood kit: wellington boots, waterproof clothing, rubber gloves

Visit www.westsussex.gov.uk/flooding for further information and a short film on how to prepare an emergency kit.



How can my community prepare?



Community Emergency Plans

West Sussex County Council have been encouraging local communities e.g. parishes/wards, to develop their own Community Emergency Plan for all emergencies that may affect the local community including flooding. The aim is to support emergency response arrangements the authorities have in place and building on the resilience of communities by enhancing 'good neighbour' support and enabling effective action in support of the most vulnerable.

If your community has a Community Emergency Plan there may be support available if you are flooded. If you aren't at risk of flooding you could volunteer to assist in an emergency. Contact your local Parish Council to see if your community has an Emergency Plan.

Forming a Flood Action Group

Flood Action Groups are a representative voice for their community and their aim is to work in partnership with the Agencies and Authorities whose work involves flood risk.

Forming a community based flood action group to work on behalf of the wider community in finding ways to reduce flood risk, has proved very effective across England and Wales.

The National Flood Forum **www.nationalfloodforum.org.uk** supports communities in the formation of Flood Action Groups, gives tools to ensure their success and sustainability and initiates the first meeting with all the right professionals needed.

Flood protection for your home

Although it isn't possible to completely flood proof a property, if your house is at risk of flooding, or has flooded in the past, there are steps you can take to reduce the damage flooding can cause.

The most important thing is to prepare in advance as you won't have time to buy or put measures in place once flooding is likely.

Try to keep water out:

- **Doors** – consider purpose built flood board/gates that can be put in place when flooding is imminent. It may be possible to replace your existing external door with one that is flood-proof. Door thresholds can also be raised.
- **Walls and floors** – consider raising damp-proof brick courses. Sealing floors and 'tanking' can prevent water rising up through the ground.
- **Air bricks** – replace with those that automatically close when flood water rises or fit specially designed covers that can be placed over ventilation bricks when flooding is imminent.



- **Drains and pipes** – non-return valves on drains and water inlets/outlets can prevent water from coming back up the drains and toilet foul pipe.
- **Sandbags** – West Sussex County Council and the Environment Agency do not supply sandbags to protect personal property. Contact local builders' merchants for stocks of bags and sand. Alternatively, you can find suppliers of modern non-sand bags designed for flooding on the National Flood Forum Blue Pages Directory.

If flood water is more than 1m high, you may cause more harm than good by keeping water out. The force of the water may cause structural damage to your property.

There are numerous other flood protection products on the market which may give you more time to move your possessions off the ground floor to safety.

For more information on flood protection products and services the National Flood Forum publishes the 'Blue Pages Directory' **www.bluepages.org.uk**

If you are going to buy a flood protection product, check it displays the British Standards Institute (BSI) Kitemark to show it has been properly tested and achieved Kitemark accreditation. The BSI maintain a list of all manufacturers of flood protection products that have achieved Kitemark accreditation on their website **www.kitemark.com**

To reduce the cost and repair time after any future flood, you could:

- Fit plug sockets, boilers, and service meters higher on walls.
- Choose water-resistant door and window frames (and use silicone sealant).
- Get a chemical damp-proof course below joist level; and install automatic airbricks or those with removable covers.
- Replace mineral insulation within walls with closed cell insulation.
- Have non-return valves in drainage pipes to prevent sewage backing up into the house.
- Check access points for pipes (e.g. washing machines) for gaps and fill.
- Use waterproof sealant on external walls; waterproof paint on internal walls.
- Replace carpets with floor tiles.

And if there's a choice, you can:

- Go for solid flooring (concrete covered with treated timber or sealed tiles) - more resistant than floorboards or chipboard.
- Have wood or plastic kitchen/ bathroom units rather than MDF/ chipboard.
- Pick lime or cement render – more water-resistant than normal plaster.
- Replace ovens with raised, built-under types.
- Choose rugs rather than fitted carpets.

Remember to check with your insurer to ensure they are aware of any flood resilience improvements you have made and see if any work you carry out will lead to lower premiums.

If you're going to make permanent changes to protect your property against flooding, it is strongly recommended you seek professional advice. Currently there is no formal assurance scheme for flood surveyors but the following institutions hold lists of members who have undergone internal vetting and adhere to a common code of conduct:

Royal Institute of Chartered Surveyors (RICS)
www.rics.org

[redacted]

Royal Institute of British Architects (RIBA)
www.architecture.com

[redacted]



During a Flood



If floods are forecast

- Check for severe weather warnings and flood warnings by listening to the radio and TV. Phone Floodline on 0845 9881188 for river flooding information.
- Protect what you can by moving pets, vehicles, valuables, sentimental items (photo albums) and important documents to safety/higher ground.
- Prepare food that you can eat without cooking, clean bottled water, warm clothes.
- Charge your mobile phone.

If floods are imminent

- If you have a flood plan put it into action.

  BBC local radio has a special role to provide information in emergencies.
- For the latest travel information, and to hear about what Council services may be disrupted, tune in to local radio or TV. West Sussex County Council will put messages out via the following stations:
  - BBC Sussex (95.3, 104.5 and 104.8 FM)
  - Heart Sussex FM (102.4 and 103.5 FM)
  - Spirit FM (96.6, 102.3, 106.6 FM)
  - Splash FM (107.7 FM
- Follow us on Twitter **#floodaware** and **#westsussex** and lookout for updates.
- Alert vulnerable neighbours.
- Switch off gas, electricity and water at the mains.
- Ensure sandbags or flood boards, airbrick covers and other flood protection products are in place.



- Plug sinks/baths or low level shower trays and weigh them down to prevent backflow.
- If you do not have non-return valves fitted, plug water inlet pipes with towels or cloths and disconnect any equipment that uses water and plug or seal if possible to prevent water entering your home (e.g. washing machine and dishwasher).
- Store smaller electrical appliances and furniture as high as possible.
- Do as much as you can in daylight. It will be much harder at night, particularly if the electricity fails.
- In the case of flash flooding, evacuate basement flats immediately and seek higher ground.

Stay alert to localised flooding - surface water' or flash flooding, usually happens where drainage systems are unable to cope with heavy spells of rainfall. The Environment Agency cannot provide direct warnings for this type of flooding. Instead they forecast where it might be a problem in certain counties and put a daily flood risk forecast on their website.

You can find out about the possibility of surface water flooding in your area by checking local weather forecasts and traffic news. If surface water flooding is possible, District Councils and West Sussex Highways monitor those areas that are more susceptible and take measures to reduce potential flooding where possible.

If you have to evacuate

- Emergency services will tell you if you need to evacuate. Follow their instructions carefully. However, a situation may arise when you have to make the decision to leave your home and seek safety. Let the emergency services know you have left as soon as you can.
- Remain calm and leave as quickly as possible.
- Get your family and pets together.
- Check if neighbours need help.
- Make sure fires are out and appliances are turned off.
- Shut all windows and lock doors.
- You may be able to arrange to stay with family or friends, or your insurance may cover the cost of alternative accommodation.
- Emergency accommodation will be provided by local authorities at a Rest Centre, if you are unable to make alternative arrangements. You will be told where the Rest Centre is located, and transport will be provided for those without.
- If you decide to stay with family or friends let the Police or your council know.
- Do not return home unless you are told by authorities that it is safe to do so.
- Take your emergency kit, including any prescription medicines.

Staying safe in a Flood

At home

- Call 999 if life is at risk.
- Listen to advice given on local radio
  - BBC Sussex (95.3, 104.5 and 104.8 FM)
  - Heart Sussex FM (102.4 and 103.5 FM)
  - Spirit FM (96.6, 102.3, 106.6 FM)
  - Splash FM (107.7 FM)
- Avoid electric shocks – keep extension cables out of water and wear wellington boots. Don't use damp electrical items-get them checked by a professional.
- Flood water may be contaminated by silt, sewage, oil or chemicals. Try to avoid coming into contact with it.

- Don't eat any foods that may have been contaminated with flood water.
- Only use crockery, cutlery and work surfaces that have been disinfected.
- Wear protective gear (e.g. gloves, face mask) and wash your hands after any contact with flood water. Cover cuts and grazes with waterproof plasters.

Beware of carbon monoxide fumes from petrol or diesel generators or gas heaters - they can kill. Do not use indoors. Electric pumps should only run through a circuit breaker.

- Only pump out water when flood levels outside your property start to be lower than inside. This reduces the risk of structural damage.
- Seek medical advice if diarrhoea, fever or abdominal pain affects anyone.
- Mould can be a health hazard for babies, people with allergies, asthmatics, and the elderly. They should stay away during the clean up.
- Gas and electricity supplies should remain switched off until a qualified professional has checked the systems thoroughly.

If you have children…

- Don't let them play in floodwater – they risk drowning and infections.
- Contaminated toys will need disinfecting.

If your garden floods…

- Don't let children or pets onto affected grass or paved areas until cleaned.



- Remove any toilet waste from affected areas by shovelling it into black bags, and sealing them.
- After the grass has grown and been cut once there should be no further risk as sunlight and soil will usually destroy harmful bacteria within a week.
- Don't eat any vegetables you may be growing that have been contaminated with flood water.

Walking outside…

- Avoid walking through flood water – six inches of fast flowing water can knock you over
- Man hole covers may have come off and there may be other hazards you can't see.
- Don't walk along riverbanks or across river bridges if avoidable - they may collapse in extreme situations. on the road:
- Avoid travel but if you must, drive slowly and cautiously. You may know your local roads well, but a flood can alter the landscape dramatically and turn a quiet road into a potential hazard.
- Don't drive through water if you can't tell how deep it is. Around two feet of water is all it takes to float many cars.
- Aqua-planing is much more likely in flood conditions.
- Drive considerately: remember your bow-wave could flood nearby homes.
- Don't drive down closed roads.
- 80% of flood-related deaths occur inside a vehicle. If your car stalls in the water, do not attempt to recover it - leave it and move yourself to safe ground.
- Let someone know your travel plans.

Water advice

Follow the advice of your local water company regarding the safety of the water supply.

If in doubt, boil all water intended for drinking, brushing teeth, washing food and cooking.

Take precautions for formula-fed infants. The preferred option is to use bowser or bottled water, brought to a 'rolling boil' and cooled. Unboiled water should not be used.

Useful sources of information

- Health Protection Agency **www.hpa.org.uk/flooding**
- NHS Direct on 0845 4647 or **www.nhsdirect.nhs.uk**

After a flood

If you are unfortunate enough to be flooded, here are a few pointers for when you first get home.

Insurance

If you are insured, contact your insurer. If possible take photos or video of the damage (if you have lost your camera in the flood use a disposable camera or mobile phone). Do not undertake any clearance or repair work until your insurer has given approval. A loss adjuster will visit your house and advise you what to do. Do not dispose of anything until your loss adjuster advises you what to do.

First tips

Clean taps and run them before use. Have power and gas supplies checked by a professional electrician or gas plumber before turning them back on. Throw away food (including freezer items if power has been off) that may be contaminated and restock your supplies.

The three-step clean-up

If possible, don't fully re-occupy your property until after the following:

1. Remove water and mud

- The Fire & Rescue Service can pump out standing water but will charge for non-emergencies. Otherwise use a pump (from a hire or DIY shop), or use buckets followed by a wet/dry vacuum.

See overleaf for safety advice

- Shovel out mud (which may be contaminated) then hose out or use a garden sprayer.

2. Clean and disinfect

- Wear protective clothes, boots and rubber gloves.
- Use a brush, soapy water and heavy duty cleaner, then rinse.
- Floodwater may be contaminated so disinfect all areas affected after cleaning.
- Make sure you wash your hands with disinfectant after cleaning up.
- Disinfecting also avoids mildew and moulds.



3. Dry

- Take furniture, bedding and clothing outside, to avoid mould.
- Use fans plus industrial heaters and dehumidifiers.
- Have the central heating on at 22°C or above.
- Drying out can take weeks or even months. If it's done too quickly, it can cause structural damage and long-term problems.
- Good ventilation is essential - keep windows and doors open on dry days and remove any air brick covers.

Who can I speak to?

- Insurance Contact your company's (24 Hour) Emergency Helpline as soon as you can. If paying for help, keep receipts for any emergency pumping or repair work done. Keep photographic records of ALL flood damage.
- Your district council's Environmental Health department

Personal help

Coping with the aftermath

Experiencing a flood can be frightening, and the activities of normal life can be disrupted. For most people, feeling distressed does not interfere with their ability to cope with the process of recovery. However, it is important not to underestimate the stress and strain of being flooded and cleaning up after floods.

Take the time to consider you and your family's mental and physical health and well-being; for example remember to eat regularly, try and find ways to relax, perhaps by taking a quiet walk. Do not overdo it when cleaning up, and remember that tiredness, difficulty sleeping and anxiety are normal in these circumstances.

It is important to not underestimate the effect flooding can have, seek help and advice as soon as possible. Visit you GP for help and advice of you feel you are suffering from prolonged anxiety or stomach upsets for example.

Public Health England has published information to help people cope after being involved in a major incident or event, like flooding.

The leaflet 'Mental health and flooding - Advice for the Public' is available from **www.hpa.org.uk/flooding** and provides important advice and information about the impacts of being flooded on people's mental health.

Samaritans

The Samaritans offer confidential and emotional support to those experiencing personal crises. Samaritan volunteers are trained to listen without judgement, whatever the concerns of the caller are and regardless of their race, gender, religion, ability or sexual orientation.

You can ring the Samaritans on 08457 90 90 90 every day, 24 hours a day. **www.samaritans.org**



Financial help

Council tax relief and benefits

If you are unable to live or work in your property, you may be able to get a discount on paying council tax or business rates. Contact your district council.

Citizens advice Bureau

Citizens Advice Bureau provide free, confidential and independent advice from offices within West Sussex. If you're having problems because of the flooding, an experienced adviser should be able to help answer your questions.

Advice is available face-to-face and by telephone.
www.citizensadvice.org.uk

Insurance

Zurich Home Insurance says "Your insurance company should confirm the level of cover available to you and provide a loss adjuster and other specialists to project-manage the repair work to your home. They will return it to the condition it was in before flood damage. Remember, drying out can take weeks or even months, depending on how long the water was in the property, and how deep it was. Your insurance cover should help pay for alternative accommodation whilst the property is uninhabitable."

"Unfortunately, if you have no insurance, you won't be covered for any damage already caused by taking out a new policy after you have been flooded. Speak to your district council or Citizens Advice Bureau to find out if any grant or alternative support is available."

Distraction burglaries and cold callers

After a flood, beware of doorstep callers who may try to trick you into allowing them access to your home and steal from you. They may try to gain entry by asking to turn off your water or check the electricity.

- Always put the chain on when answering the door and make sure windows and other doors are locked (just in case an accomplice tries to enter elsewhere while you are talking).
- Check a caller's ID and phone the company to check they are genuine if you have any doubts.
- Call a neighbour or 999 for assistance if you are worried.

Rogue traders

If callers offer to do work, the Association of British Insurers recommend that you should:

- Beware of tradesmen who can start the next day - reputable ones are usually busy.
- Ask to be put in touch with past clients to see samples of work.
- Beware of someone who gives only a mobile phone number and no business address.
- Look out for vulnerable neighbours who may be falling victim to rogue traders.
- Beware of cold selling door to door of flood protection products.

Don't pay in advance, do pay in stages and don't make the final payment until you are happy with the work.

Useful contacts and further information

West Sussex County Council

www.westsussex.gov.uk
Tel: 01243 777100

West Sussex Highways
www.westsussexhighways.org/
Tel: 01243 777100

Flooding and drainage
www.westsussex.gov.uk/flooding

Preparing for emergencies
www.westsussex.gov.uk/emergencies

Trading Standards
www.tradingstandards.gov.uk

District Councils

Adur District Council
Telephone: +44 (0)1273 263000
www.adur-worthing.gov.uk

Crawley Borough Council
Telephone: +44 (0)1293 438000
www.crawley.gov.uk

Arun District Council
Telephone: +44 (0)1903 737500
www.arun.gov.uk

Horsham District Council
Telephone: +44 (0)1403 215100
www.arun.gov.uk

Chichester District Council
Telephone: +44 (0)1243 785166
www.chichester.gov.uk

Mid Sussex District Council
Telephone: +44 (0)1444 458166
www.chichester.gov.uk

Worthing Borough Council
Telephone: +44 (0)1903 239999
www.adur-worthing.gov.uk/

Environment Agency
www.environment-agency.gov.uk/homeandleisure/floods

[redacted] ies

NHS Direct
www.nhsdirect.nhs.uk

[redacted]

Health Protection Agency
www.hpa.org.uk/flooding

National Flood Forum
www.floodforum.org.uk

[redacted]

Citizens Advice
www.citizensadvice.org.uk

Association of British Insurers
www.abi.org.uk

[redacted]

Chartered Institute of Loss Adjusters (CILA)
Guidance note in the event of flood damage
www.cila.co.uk

[redacted]

Construction Industry Research and Information Association (CIRIA)
www.ciria.com/flooding

[redacted]

Electrical Safety Council
Flood Damage and Electrical Safety document
www.esc.org.uk/public/news-andcampaigns/news/news/article/ -electrical-safety-1/

[redacted]

British Damage Management Association
www.bdma.org.uk/publications/flooddocs

[redacted]

www.westsussex.gov.uk/flooding #floodaware

Your essential
Flood Guide
Information and forward planning



WS1346 10.13

WEST SUSSEX Flood Risk Partnership

FLOODS DESTROY BE PREPARED

National Flood Forum