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Cotswold Level 2 Strategic Flood Risk Assessment Site Summary

Site C71 - Land adjacent 'Donside', off Barnway

Final Draft Report

Prepared for	Date
Cotswold District Council	August 2026

COTSWOLD
District Council

Document Status

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Contract

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JBA Project Code	2025s1921

This report describes work commissioned by Cotswold District Council by an instruction dated 28 May 2026. The Client's representative for the contract was Joanne Corbett of Cotswold District Council. Laura Thompson-Jones of JBA Consulting carried out this work.

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Acknowledgements

We would like to thank the Environment Agency for their assistance with this work.

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1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site C71. The content of this report assumes the reader has already consulted the 'Cotswold Level 1 SFRA' (2026) and the 'Cotswold Level 2 SFRA Main Report' (2026) and is therefore familiar with the terminology used in this report.

1.1 Site C71

- Location: Land adjacent ‘Donside’, off Barnway (NGR 401353, 203296)
- Existing site use: Wooded greenspace
- Existing site use vulnerability: Water compatible
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 0.33
- Watercourse: Gloucester Road Bypass Channel (Daglingworth Stream)
- Environment Agency (EA) flood model: Daglingworth Stream 2016 model
- Summary of requirements from Level 2 SFRA scoping stage:
    - Assessment of fluvial flood depths, velocities and hazards
    - Assessment of surface water flood extent, depths and hazards
    - Assessment of all other sources of flood risk
    - Assessment of flood risk management measures and natural flood management

Figure 1-1: Site location boundary

Figure 1-2: Topography

The topography of the site slopes gently from west to east towards the floodplain of Daglingworth Stream.

2 Flood risk from rivers

2.1 Existing risk

2.1.1 Flood Map for Planning and functional floodplain

Based on the EA's Flood Map for Planning (accessed May 2026) and Flood Zone 3b (functional floodplain), as updated through the Cotswold Level 1 SFRA, the percentage areas of the site within each flood zone are stated in Table 2-1 and can be viewed on Figure 2-1. The Flood Map for Planning does not consider flood defence infrastructure (Section 2.4).

The site is partially within the functional floodplain due to risk from Daglingworth Stream and the Gloucester Road Bypass Channel though the majority of the site is within Flood Zone 1 and therefore at low risk from rivers and the sea. The functional floodplain in this location is based on the EA's New National Model (NNM) dataset 'Rivers and Sea 3.3% defended flood risk extents - present day'. The ordinary watercourse to the south of the site is unmodelled.

Table 2-1: Present day flood risk based on percentage area of site at risk

Flood Zone 1 (% area)	Flood Zone 2 (% area)	Flood Zone 3a (% area)	Flood Zone 3b (% area)
96	1	2	1

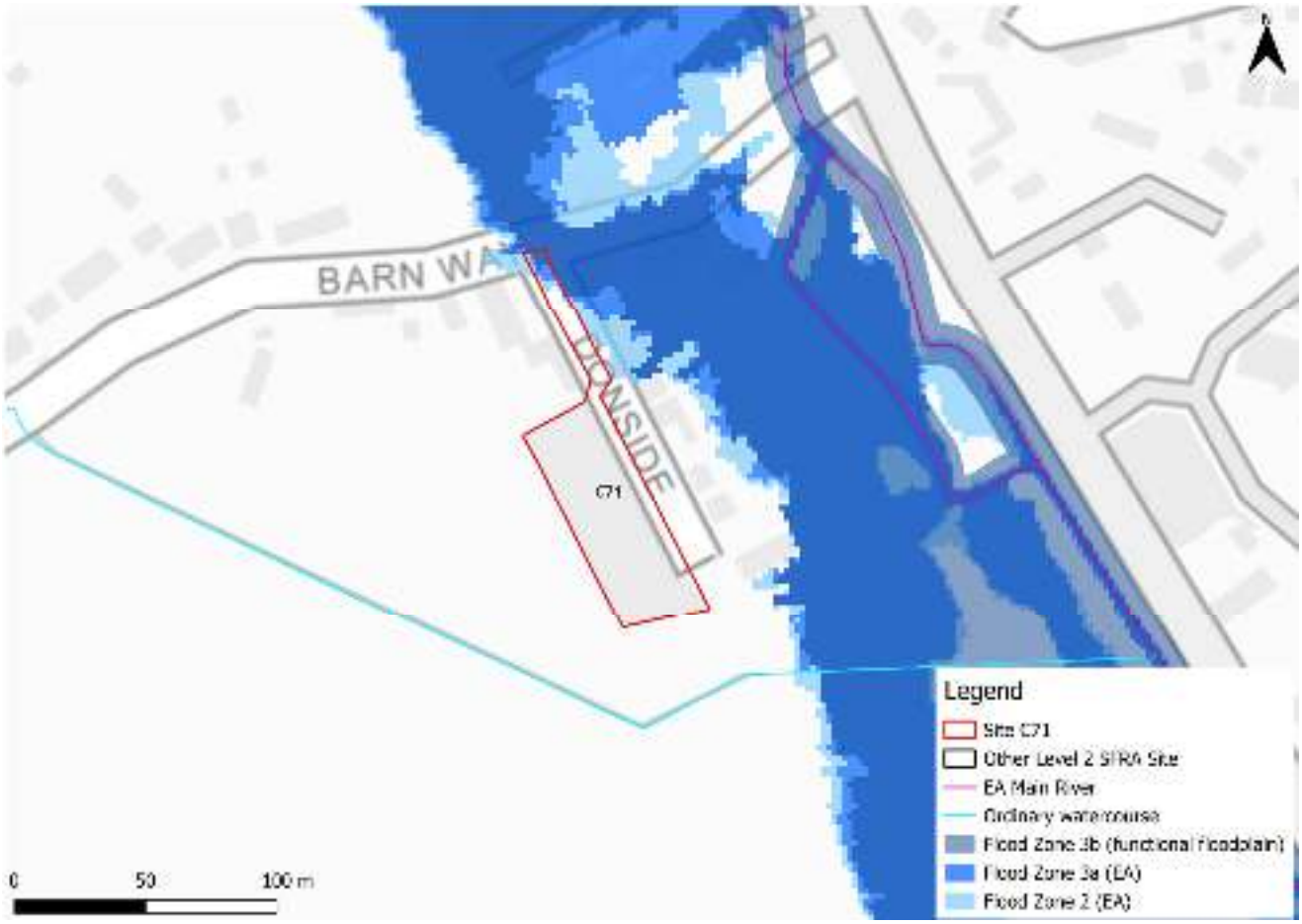

Figure 2-1: Present day risk

2.1.2 Daglingworth Stream 2016 model outputs

The Daglingworth Stream 2016 model is a 1D model and therefore does not contain any velocity or hazard information. Present day risk to the site comes from the Gloucester Road Bypass Channel of Daglingworth Stream. However, the detailed modelling shows that the site is not at risk from the 1% AEP undefended event. Figure 2-2 shows the modelled flood depths for the 1% AEP undefended event which is the event Flood Zone 3 of the Flood Map for Planning would normally represent. However, the Flood Map for Planning in this location is based on the NNM, not the outputs from the Daglingworth Stream 2016 model. The NNM does not contain depth or hazard data. The Daglingworth Stream 2016 model will require updating to robustly inform on risk to the site.

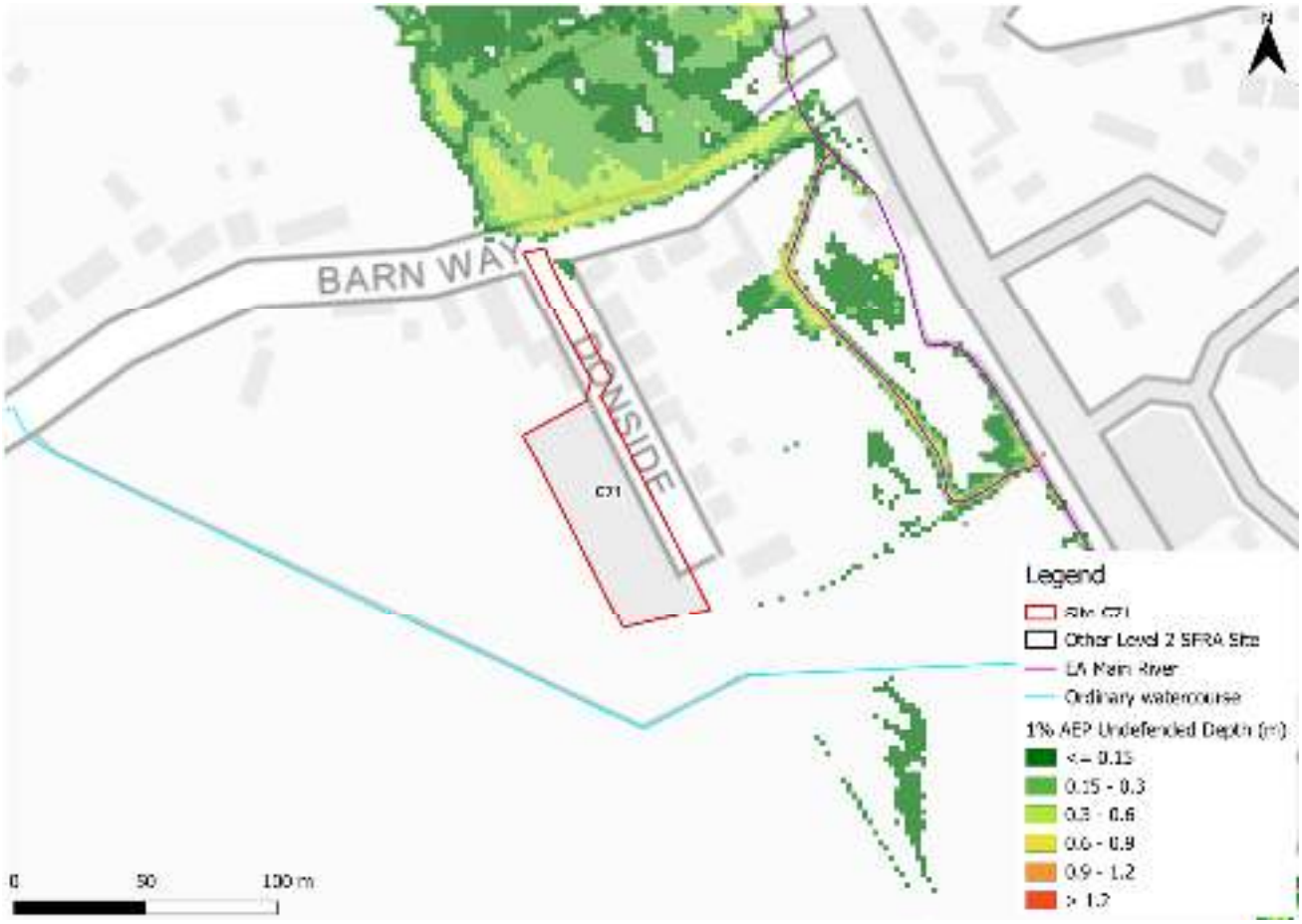

Figure 2-2: Flood depths for the 1% AEP undefended flood event

2.2 Impacts from climate change

2.2.1 Daglingworth Stream 2016 model outputs

The EA's SFRA guidance states that SFRAs should assess the central allowance for the 2080s epoch for peak river flows. The site is located within the Gloucestershire and the Vale Management Catchment. The central allowance within this catchment is 26% on peak flows (Table 2-2). The impacts of climate change on flood risk are included in the model for

the 1% AEP undefended event using 30% on peak flows rather than the current central allowance of 26%.

Table 2-2: Modelled climate change allowances for peak river flows within the Gloucestershire and the Vale Management Catchment

Epoch	Central (%)	Higher (%)	Upper (%)
2020s	11	17	33
2050s	11	19	43
2080s	26	41	84

Figure 2-3 shows the modelled flood depths for the 1% AEP undefended event plus the central allowance for peak river flows. There is risk to the access road on Barn Way with some significant flood depths apparent. However, it is likely that this model does not provide a up to date representation of flood risk along this watercourse.

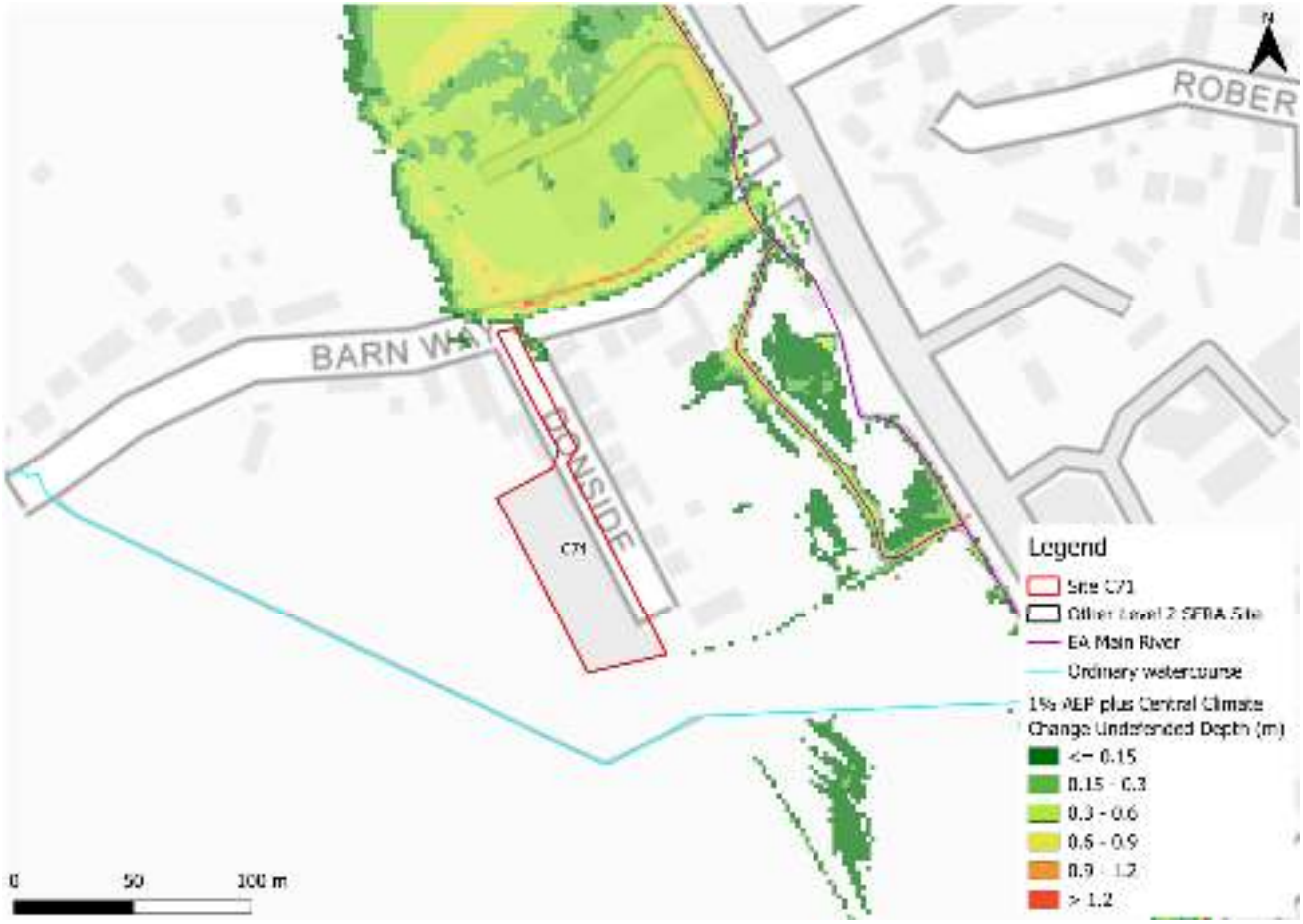

Figure 2-3: Flood depths for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

2.2.2 Flood Map for Planning - Flood Zones plus Climate Change

Figure 2-4 shows the Flood Map for Planning - Flood Zones plus Climate Change dataset which includes the central allowance for the 2080s epoch. This represents the impact of climate change on Flood Zone 3a and Flood Zone 2 combined. This shows a greater extent of flooding than the modelled event. This is due to the Flood Map for Planning outputs being based on the NNM and not the outputs from the Daglingworth Stream 2016 model, and also the fact that the Flood Zones plus Climate Change dataset also includes the larger 0.1% AEP event.

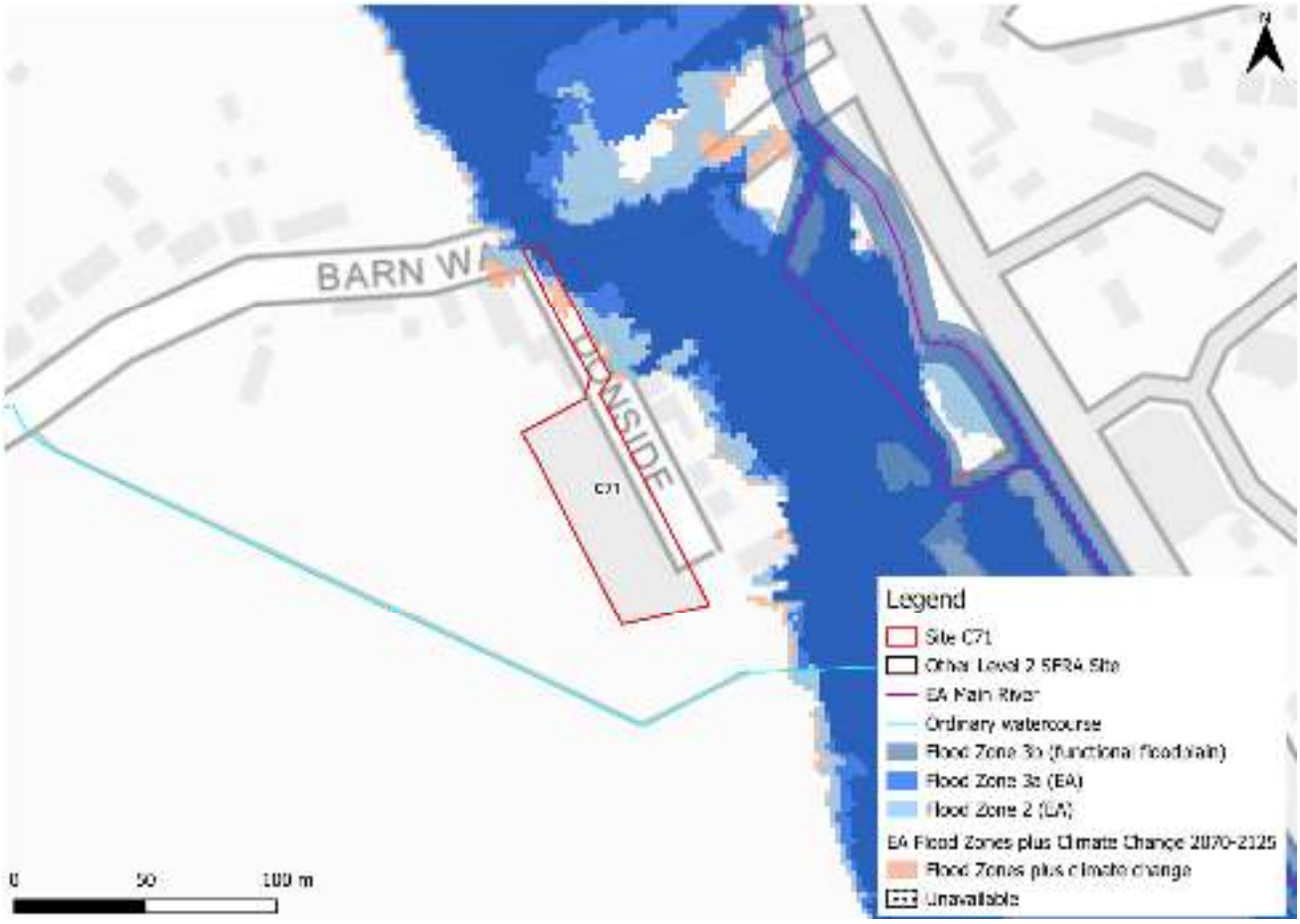

Figure 2-4: EA Flood Zones plus Climate Change

2.3 Historic flood incidents

The EA's Historic Flood Map (HFM) and Recorded Flood Outlines (RFO) datasets have been considered. There are no recorded historic flood events within the vicinity of the site, according to these datasets. The LLFA provided its historic floods register. There have been two recorded flooding incidents within the Stratton Ward within which the site is located.

2.4 Flood risk management

2.4.1 Flood defences

The site does not benefit from any formal engineered flood defences, according to the EA's spatial flood defences dataset.

2.4.2 Working with Natural Processes

The EA's Working with Natural Processes (WwNP) dataset has been interrogated to identify opportunities for Natural Flood Management (NFM) to reduce flood risk to the site and surrounding areas. Figure 2-5 shows that the site and wider area could benefit from riparian and floodplain tree planting. Tree planting can help to slow the flow to benefit areas downstream. The WwNP mapping is broadscale and indicative. Further investigation is required for any land shown to have potential for WwNP.

Figure 2-5: Working with Natural Processes

2.5 Emergency planning

2.5.1 Flood warnings and alerts

The EA operates a Flood Warning Service for properties located within a Flood Warning Area (FWA) for when a flood event is expected to occur. The site is not located within a FWA.

Flood alerts may be issued before a flood warning for properties located within a Flood Alert Area (FAA) to provide advance notice of the possibility of flooding. A flood alert may be issued when there is less confidence that flooding will occur in a FWA. The site and the adjacent floodplains are partially located within a FAA, namely the 'River Churn and its tributaries' FAA.

Figure 2-6: Flood warnings and alerts

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes could be challenging to achieve during a flood event, from the likely route of Barn Way. However, flood depths and hazards will need to be modelled to fully inform on safe access and escape routes (Figure 2-7).

Figure 2-7: Potential access and escape routes

2.6 Observations, mitigation options, site suitability, sequential approach to development management - fluvial

- Observations:
  - The vast majority of the site is located within Flood Zone 1 and therefore at low risk from rivers. However, there may be challenges achieving safe access and escape via Barn Way.
  - The Daglingworth Stream 2016 model is out of date and the EA's NNM is considered to be the most up to date information on fluvial risk to the site and surrounding area. The NNM does not contain depth or hazard information, therefore risk cannot be robustly defined at this stage.
  - The Flood Map for Planning shows the site could be at additional risk from climate change.
  - Risk from the unmodelled ordinary watercourse must be quantified through appropriate investigations and potential modelling, in consultation with the LLFA.

- Mitigation:
  - It is not appropriate at this stage to advise on potential mitigations, given the absence of sufficiently robust and up to date flood risk information. An updated model for Daglingworth Stream must be developed to robustly define risk to the site and the surrounding area.
  - EA flood warnings and alerts should continue to be in place to ensure early evacuation of site users before an extreme flood event occurs.
- Access and escape:
  - Based on current information, safe access and escape routes will be challenging to achieve. Updated modelling must be carried out to inform on access and escape routes.

3 Flood risk from surface water

3.1 Existing risk

3.1.1 Flood Map for Planning - Surface Water Spatial Planning Extents and Depths Present Day

Based on the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Extents Present Day maps (May 2026), the site is predominantly at low risk of surface water flooding as shown in Table 3-1 and Figure 3-1 and also the depth map in Figure 3-2.

Safe access and escape routes are achievable via Barn Way, when considering surface water risk only.

Table 3-1: Existing surface water flood risk based on percentage area at risk based on the Flood Map for Planning - Surface Water Spatial Planning Extents Present Day datasets

Less than 0.1% AEP event (% area)	0.1% AEP event (% area)	1% AEP event (% area)	3.3% AEP event (% area)
99	1	0	0

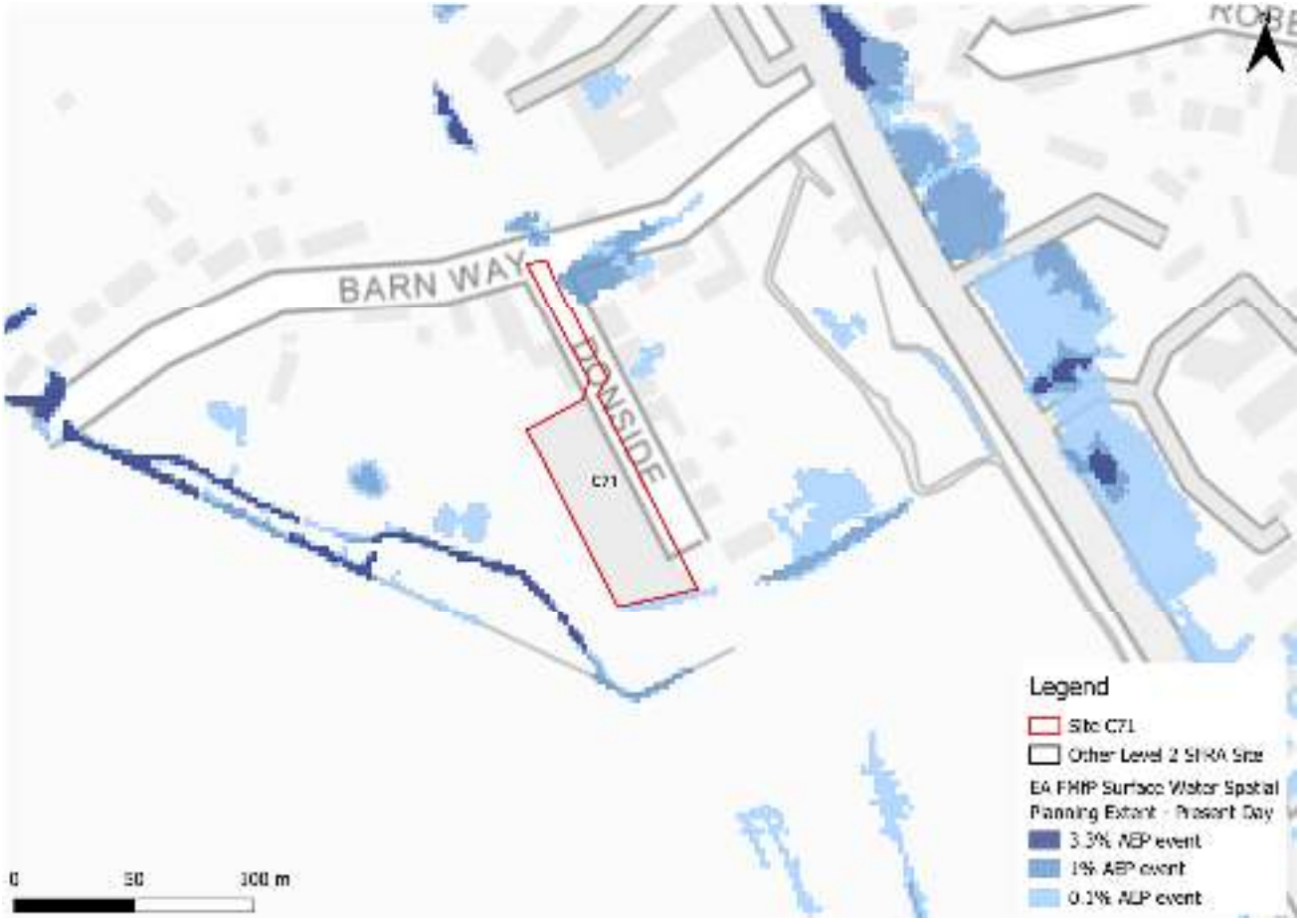

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

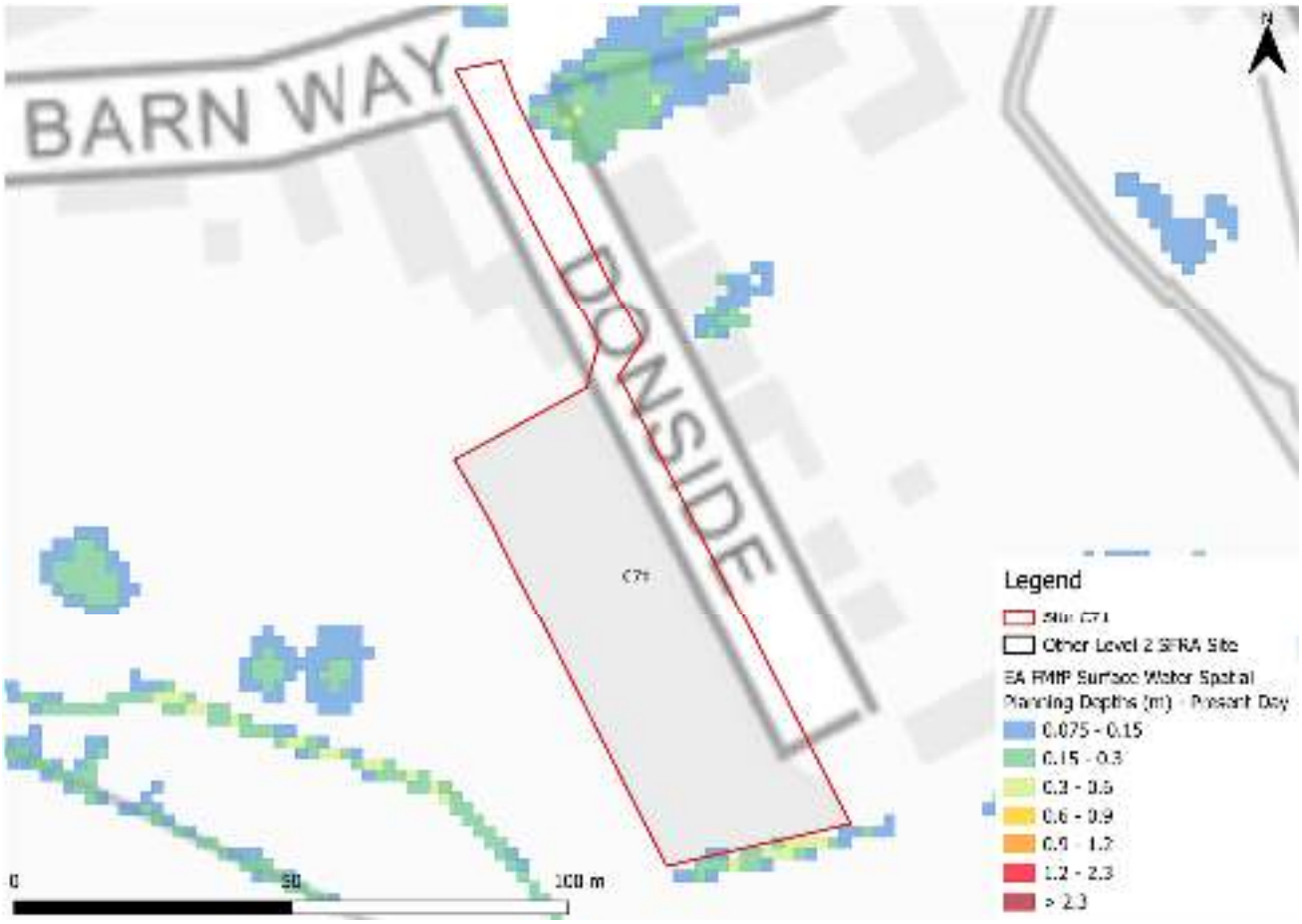

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 0.1% AEP event flood depths (m)

3.1.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning data does not include hazard information suitable for planning purposes. Therefore, this Level 2 SFRA considers the third generation Risk of Flooding from Surface Water (RoFSW) hazard mapping in addition to the Flood Map for Planning - Surface Water Spatial Planning extents and depths, as the best available information.

The RoFSW map shows there to be a low flood hazard at the access point on Barn Way (Figure 3-3). There are minor differences between the Flood Map for Planning - Surface Water Spatial Planning map and the third generation RoFSW hazard mapping. However, updated surface water hazard information should be confirmed at the site-specific FRA stage.

Note: the Flood Map for Planning - Surface Water Spatial Planning data does not map flooding less than 0.075m (7.5cm) in depth. Therefore, where the map may show no flooding, there may be shallow flooding up to a depth of 0.075m. In contrast, the third generation RoFSW does not map flooding with a hazard rating of less than 0.575.

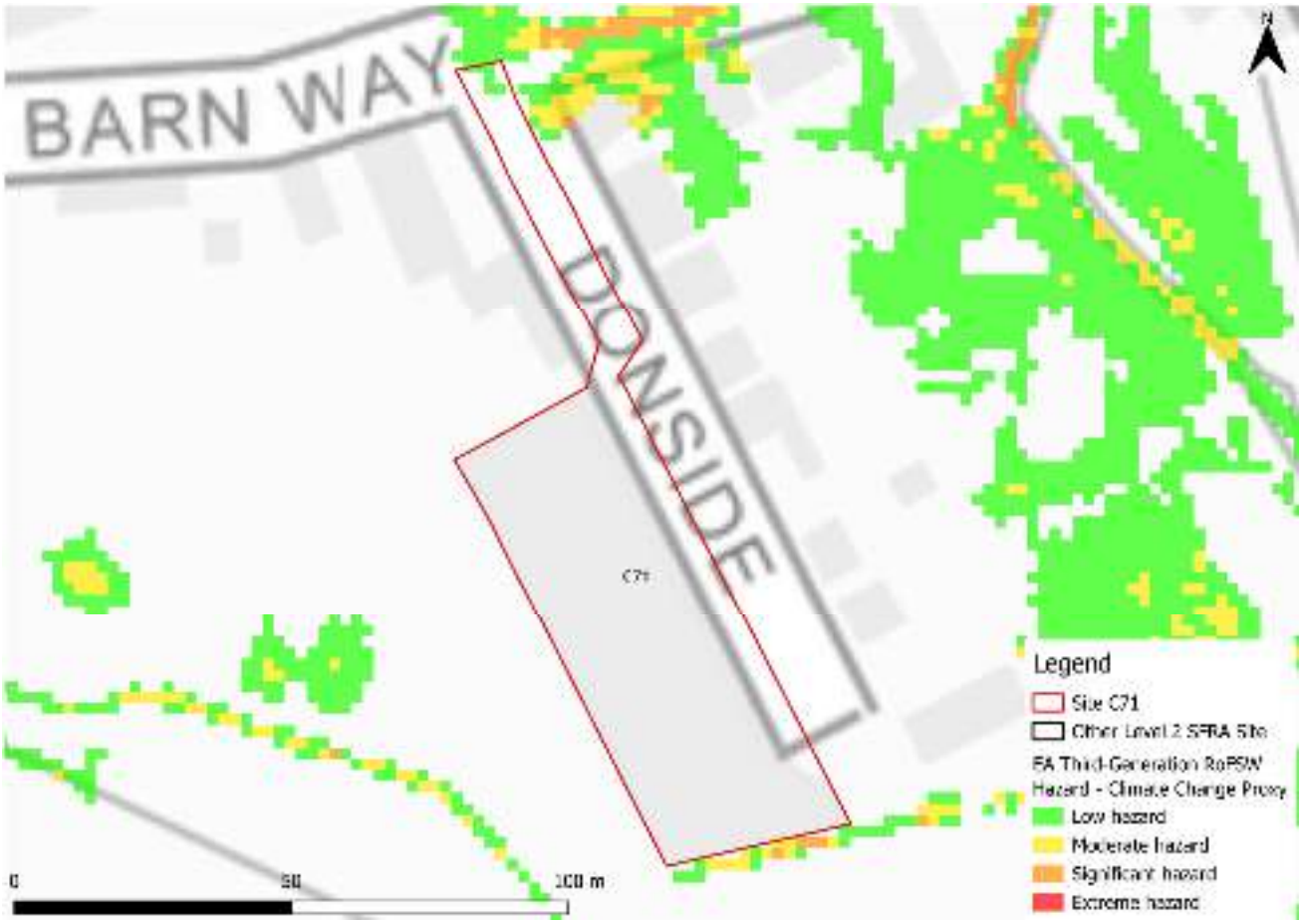

Figure 3-3: Third generation - Risk of Flooding from Surface Water map present day low risk surface water flood hazard[1]

3.2 Impacts from climate change

3.2.1 Flood Map for Planning - Surface Water Spatial Planning Extents and Depths Climate Change

The EA's climate change allowance guidance states that SFRA's should assess the upper end peak rainfall allowance for the 2070s epoch. This dataset is included in the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Climate Change dataset (May 2026). The peak rainfall intensity allowances for the Gloucestershire and the Vale management catchment are shown in

Table 3-2. The allowance for the 0.1% AEP event is not stated in the EA guidance.

1 Based on Section 7.5 Hazard rating. What is the Risk of Flooding from Surface Water map? Report version 2.0. April 2019. Environment Agency.

Table 3-2: Peak rainfall intensity allowances for the Gloucestershire and the Vale Management Catchment

Return period	Central allowance 2070s (% increase)	Upper end allowance 2070s (% increase)
3.3%	25	35
1%	25	40

Figure 3-4 shows the surface water flood extents for the 2070s upper end climate change scenario. The site is not shown to be at significant additional risk from surface water climate change. However, there is an area of ponding within the site in the 0.1% AEP plus climate change event. Flood depths are shallow, not exceeding 0.3m (Figure 3-5).

Safe access and escape routes would likely remain achievable via Barn Way.

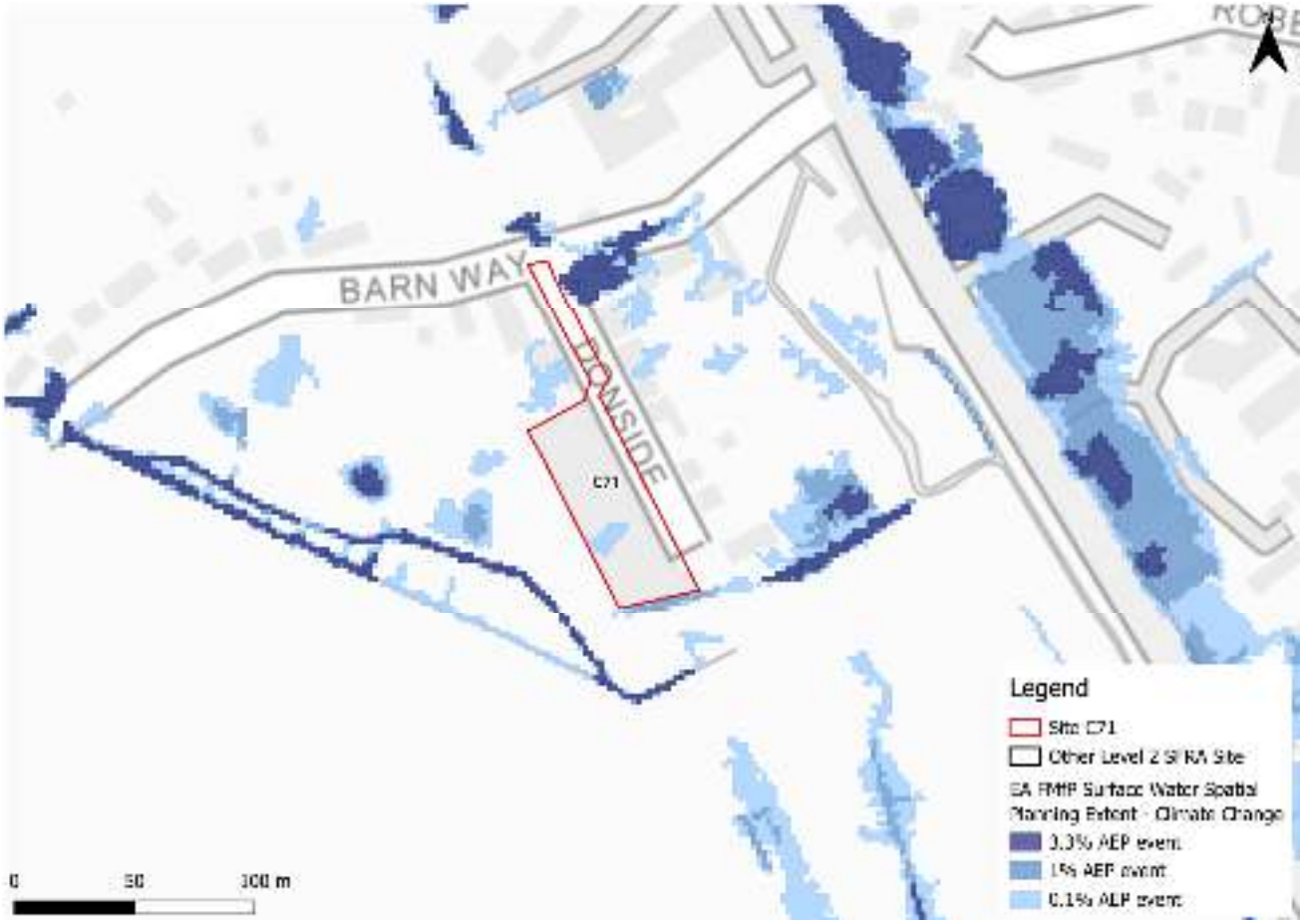

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 0.1% AEP event flood depths (m)

3.2.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning Climate Change data does not include hazard information suitable for planning purposes. This Level 2 SFRA therefore considers the low risk RoFSW surface water event as a conservative proxy for the RoFSW medium risk event plus climate change, as the best available information to assess surface water flood hazards. The impact of climate change on surface water flood hazards should be considered at the site-specific FRA stage.

Using the RoFSW low risk event as a proxy, surface water flood hazard in the medium risk event is categorised as low (Figure 3-3).

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There are no recorded sewer flooding incidents nearby the site nor within the Stratton Ward.

3.4 Observations, mitigation options, site suitability, sequential approach to development management - surface water

- Current risk to the site is predominantly low, with 99% of the site being outside of the 0.1% AEP surface water flood extent.
- Risk to the site is shown to slightly increase in extent within the site when considering the impact of climate change with a shallow area of ponding developing in the 0.1% AEP event.
- Topographic low spots should be considered and included in site design and ideally left in place to flood naturally when required.
- The drainage strategy must ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or betterment should apply. The developer should consult the LLFA and follow local and National SuDS guidance.
- Safe access and escape routes would likely be achievable via Barn Way when considering surface water risk in isolation.

4 Cumulative impacts assessment and high risk catchments

4.1 Level 1 cumulative impacts assessment

A cumulative impact assessment was completed through the Cotswold Level 1 SFRA (2026), which aimed to identify catchments sensitive to the cumulative impact of new development. This site is located within one catchment, namely, the Daglingworth Stream (Source to Churn) catchment. This catchment is ranked as a low sensitivity catchment. Planning considerations for all sites can be found in Appendix F of the Level 1 SFRA. Cumulative impacts of development should also be considered as part of a site-specific FRA.

5 Groundwater, geology and SuDS suitability

Risk of groundwater emergence is assessed in this SFRA using JBA's 5m Groundwater Emergence Map. Figure 5-1 shows the map covering this site and the surrounding areas. Table 5-1 explains the risk classifications. The site is classified as no risk and therefore any infiltration SuDS should be suitable within these areas.

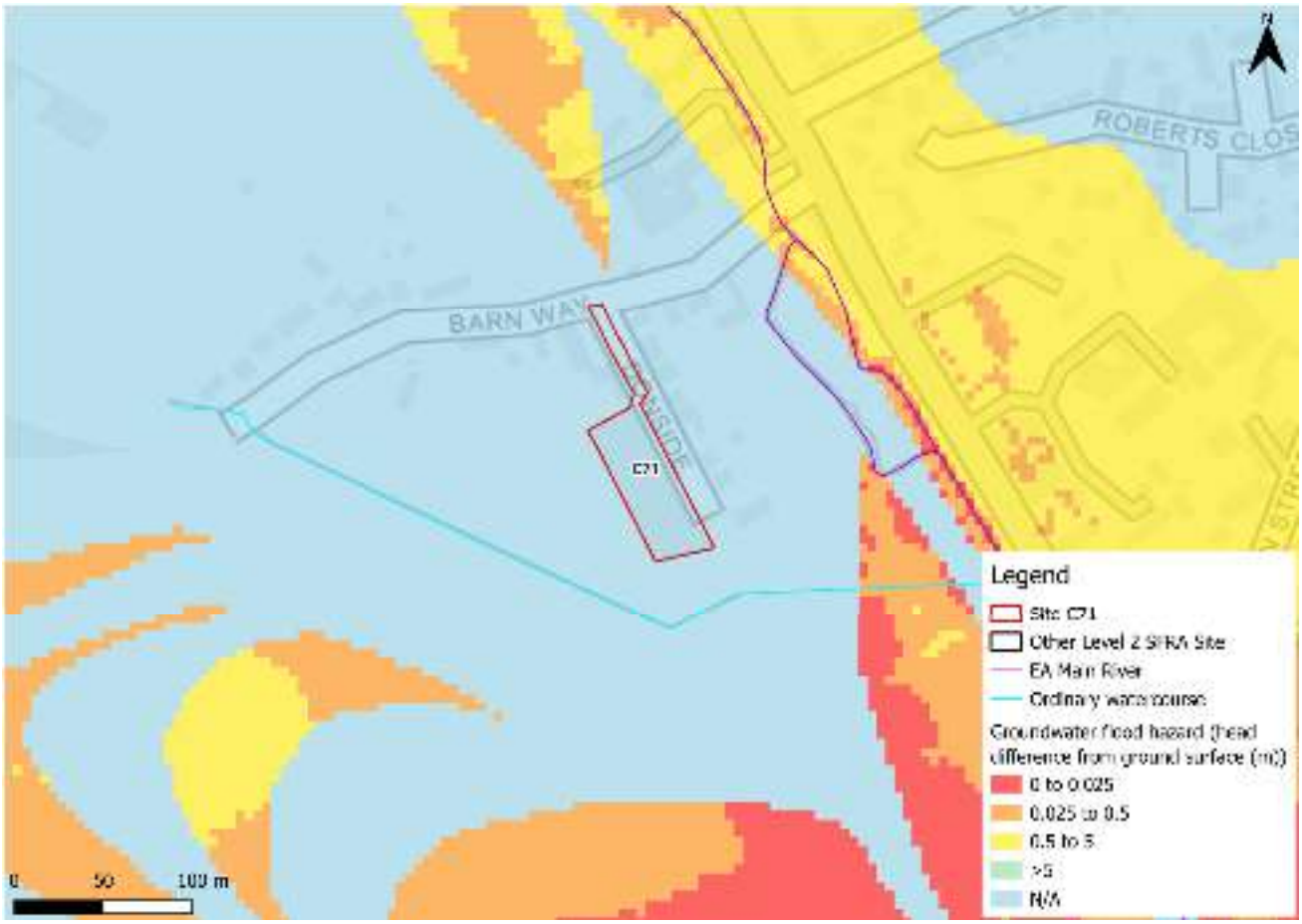

Figure 5-1: JBA 5m Groundwater Emergence Map

Table 5-1: Groundwater Hazard Classification

Groundwater head difference (m)*	Class label
0 to 0.025	Groundwater levels are either at very near (within 0.025m of) the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.
0.025 to 0.5	Groundwater levels are between 0.025m and 0.5m below the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.
0.5 to 5	Groundwater levels are between 0.5m and 5m below the ground surface in the 100-year return period flood event There is a risk of flooding to subsurface assets, but surface manifestation of groundwater is unlikely.
>5	Groundwater levels are at least 5m below the ground surface in the 100-year return period flood event. Flooding from groundwater is not likely.
N/A	No risk. This zone is deemed as having a negligible risk from groundwater flooding due to the nature of the local geological deposits.
*Difference is defined as ground surface in mAOD minus modelled groundwater table in mAOD.	

The underlying bedrock within the site is sandstone, limestone and argillaceous rocks (Figure 5-2) which generally have high permeability and porosity, allowing water to infiltrate into the rock. Infiltration SuDS at this site should be an option though the drainage strategy for the site should fully investigate water table levels and ground conditions. There is no record of superficial deposits in the area.

Figure 5-2: BGS Geology - Bedrock and superficial deposits

6 Residual risk

Although a site may be afforded some protection from defences and / or drainage infrastructure, there is always a residual risk of flooding from asset failure i.e. defence breaches, or blockages of culverts or drainage assets.

There are no defences in place along the Daglingworth Stream. However, the watercourse is culverted under Barn Way, as indicated by the green circle on Figure 6-1. There is a potential residual risk of a blockage of this culvert. This risk should be investigated at the site-specific FRA stage.

Figure 6-1: Culvert location (green circle)

6.1 Flood risk from reservoirs

The EA's Reservoir Flood Maps (RFM) (2021) show where water may go in the unlikely event of a reservoir or dam failure. The site is not modelled to be at risk from reservoir flooding.

7 Overall site assessment

7.1 Can part b) of the Exception Test be passed?

This site is required to pass part b) of the exception test as it is proposed for more vulnerable residential development and is partially located within Flood Zone 3a. The risk is confined to the access road into the site, according to the Flood Map for Planning. As stated in para 005 of the PPG, for a site to be considered safe for its lifetime, it must be proven that residents and users can safely access and exit a building during a design flood and to evacuate before an extreme flood (0.1% annual probability of flooding with allowance for climate change). Updated modelling of Daglingworth Stream is required to inform the Exception Test.

7.2 Main recommendations and site-specific FRA requirements

Based on the evidence presented in the Level 1 SFRA (2026) and this Level 2 SFRA:

- It should be possible to allocate this site based on current information. However, the Daglingworth Stream model must be updated to robustly define the risk to the site and the access road for both present day and with climate change.
- Based on the Flood Map for Planning and the functional floodplain, the access and escape route via Donside and Barn Way should be redirected to Flood Zone 1.
- Risk from the unmodelled ordinary watercourse must be quantified through appropriate investigations and potential modelling.
- A drainage strategy should ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or betterment should apply with consideration of local and national SuDS guidance.
- The site-specific FRA should be carried out in line with the latest versions of the NPPF; FRCC-PPG; EA online guidance; the CDC Local Plan, and national and local SuDS policy and guidelines.
- Throughout the FRA process, consultation should be carried out with, where applicable, the local planning authority; the lead local flood authority; emergency planning officers; the Environment Agency; the water companies; the highways authorities; and the emergency services.

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Site DA16A - Down Ampney Road

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1.1 Site DA16A

- Location: Down Ampney Road (NGR 409721, 196848)
- Existing site use: Open greenspace
- Existing site use vulnerability: Water compatible
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 2.76
- Watercourse: Ampney Brook, ordinary watercourses
- Environment Agency (EA) flood model: Ampney Brook Thames (MRL to St Johns) 2014 model
- Summary of requirements from Level 2 SFRA scoping stage:
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    - Assessment of surface water flood extent, depths and hazards
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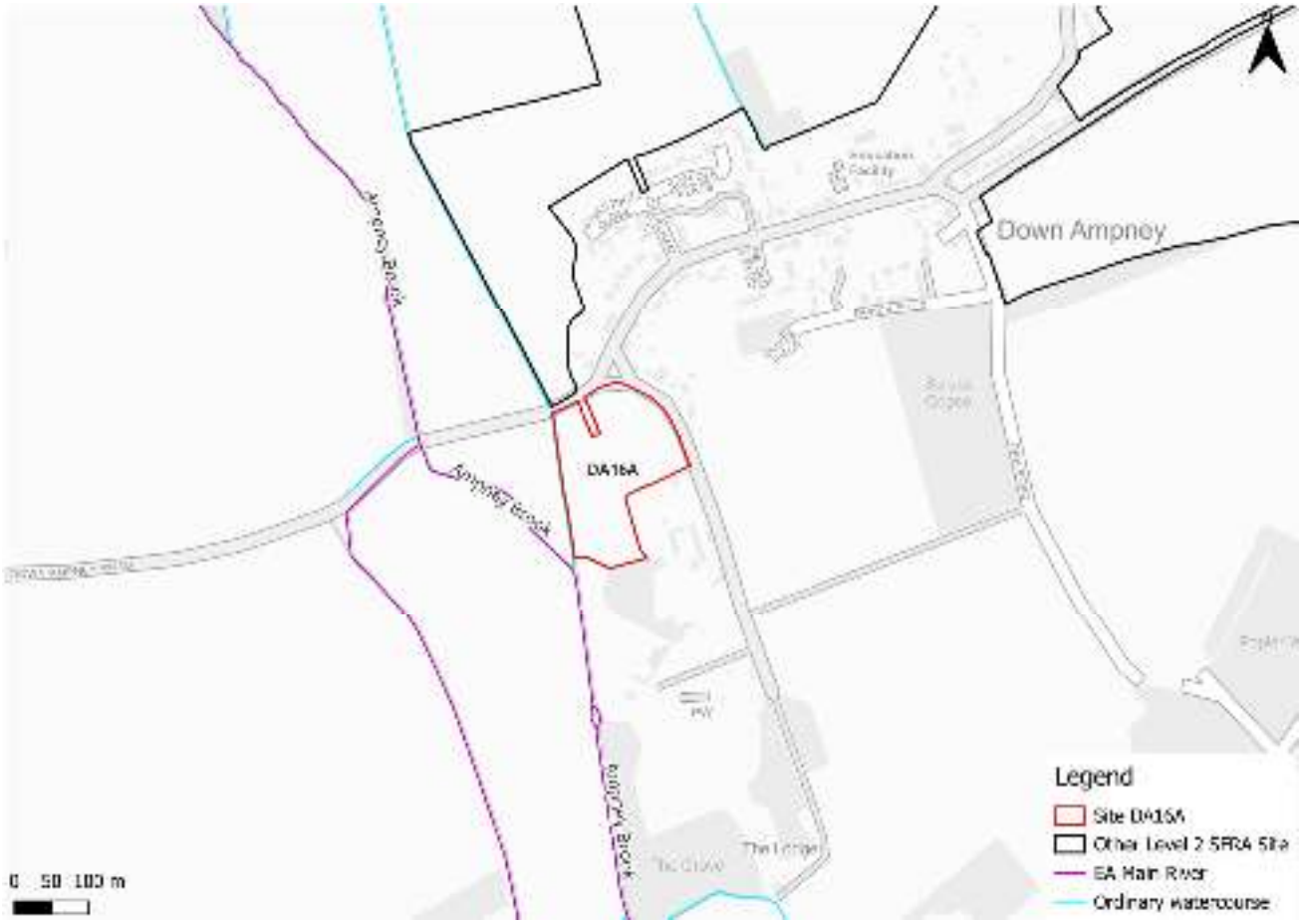

Figure 1-1: Site location boundary

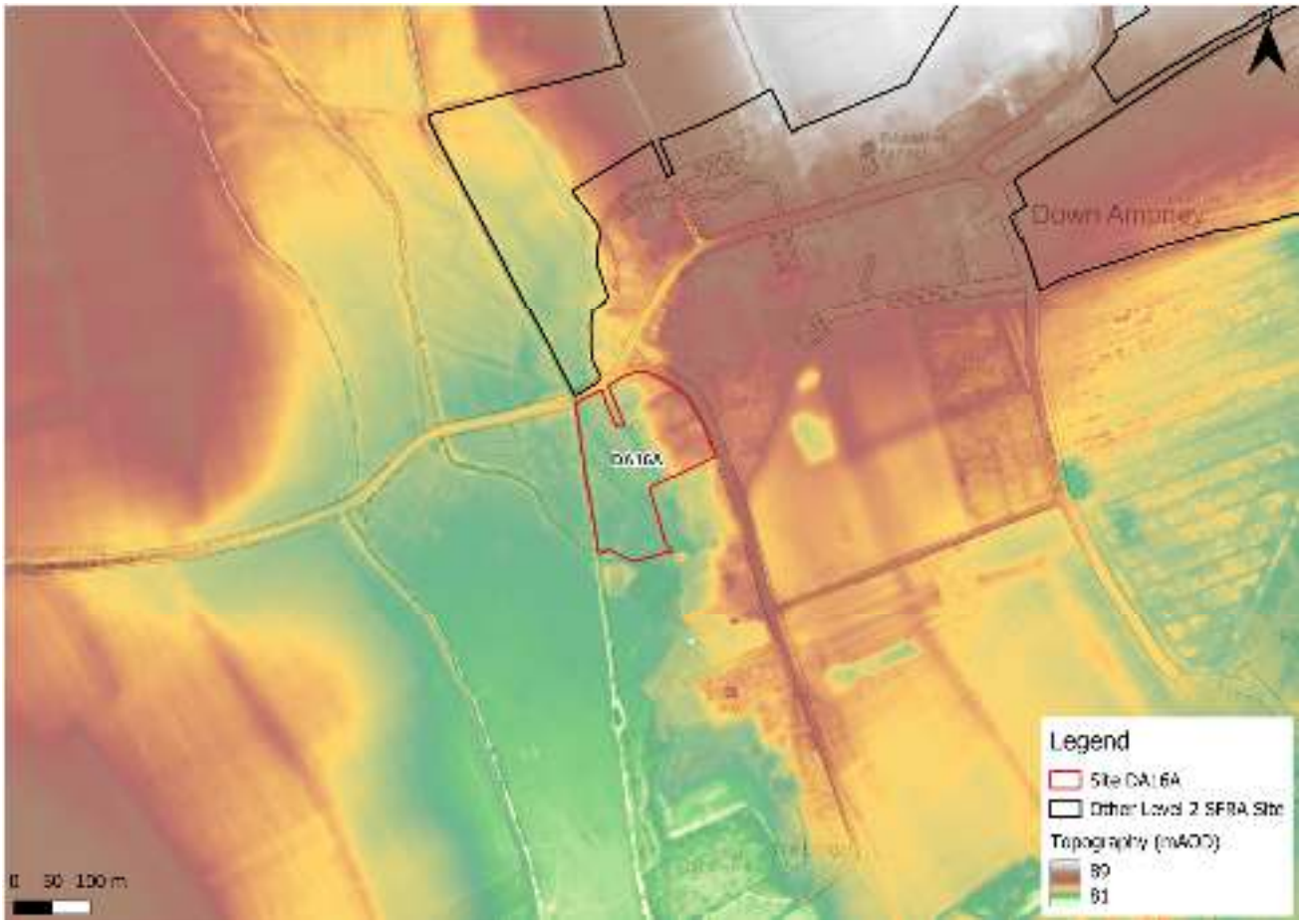

Figure 1-2: Topography

The topography of the site slopes from east to west towards the floodplain of Ampney Brook.

2 Flood risk from rivers

2.1 Existing risk

2.1.1 Flood Map for Planning and functional floodplain

Based on the EA's Flood Map for Planning (accessed May 2026) and Flood Zone 3b (functional floodplain), as updated through the Cotswold Level 1 SFRA, the percentage areas of the site within each flood zone are stated in Table 2-1 and can be viewed on Figure 2-1. The Flood Map for Planning does not consider flood defence infrastructure (Section 2.4).

Over half of the site is within the functional floodplain due to risk from Ampney Brook. The functional floodplain in this location is based on a combination of the modelled 2% AEP defended flood event from the Ampney Brook Thames (MRL to St Johns) 2014 model, and the EA's New National Model (NNM) dataset 'Rivers and Sea 3.3% defended flood risk extents - present day'. There should be no development within the functional floodplain.

Table 2-1: Present day flood risk based on percentage area of site at risk

Flood Zone 1 (% area)	Flood Zone 2 (% area)	Flood Zone 3a (% area)	Flood Zone 3b (% area)
41	2	3	54

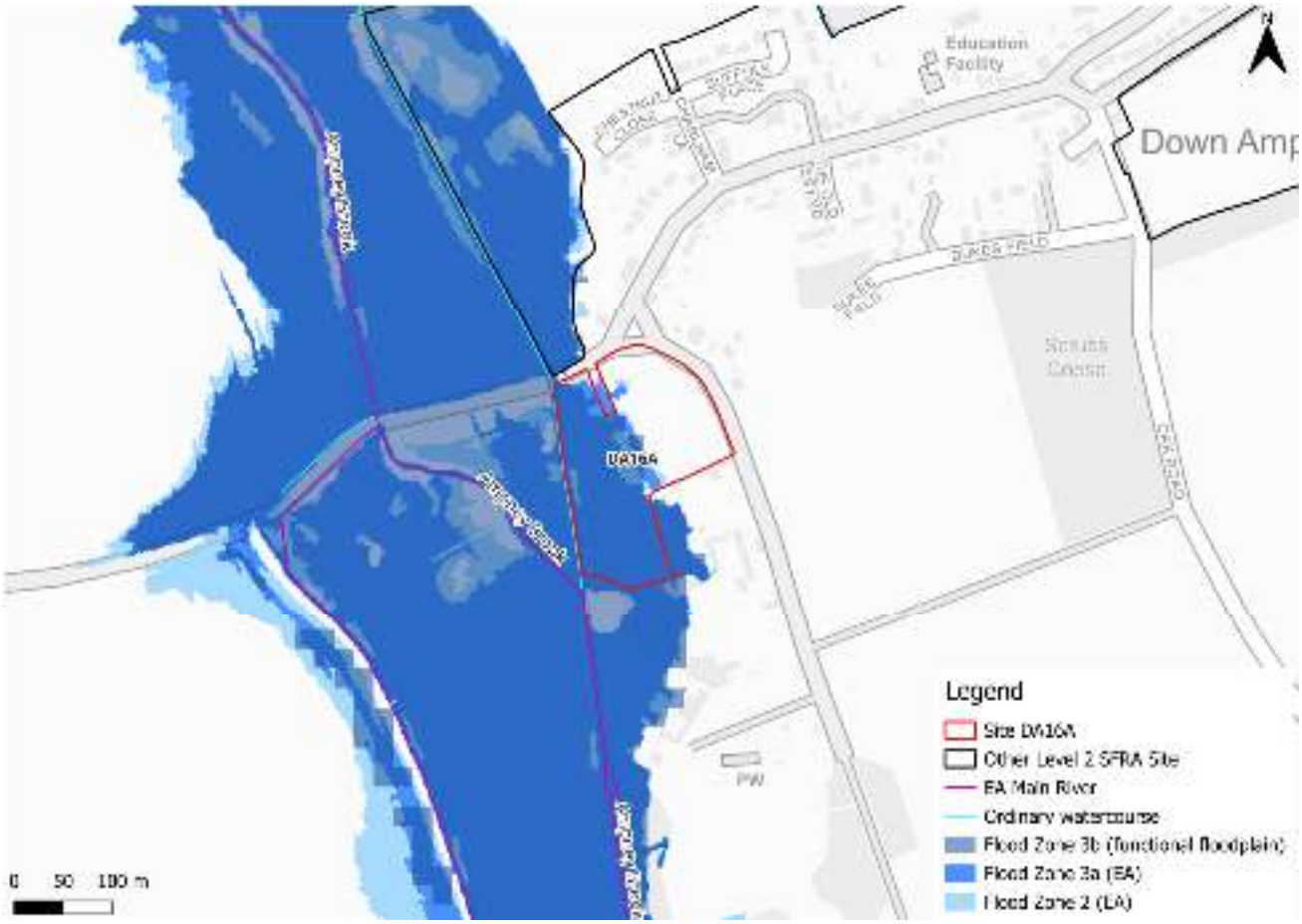

Figure 2-1: Present day risk

2.1.2 Ampney Brook Thames (MRL to St Johns) 2014 model outputs

Present day risk to the site comes from Ampney Brook to the west of the site. However, the Flood Map for Planning is not based on the outputs from this model but on the NNM. The NNM does not contain depth or hazard data. The Ampney Brook Thames (MRL to St Johns) 2014 model will therefore require updating to robustly inform on risk to the site.

However, Figure 2-2, Figure 2-3, Figure 2-4 present the modelled flood depths, velocities, and hazards respectively for the 1% AEP undefended event, this being the event Flood Zone 3 of the Flood Map for Planning would normally represent. Depths are mainly shallow, velocities low, and hazards mainly very low or danger for some.

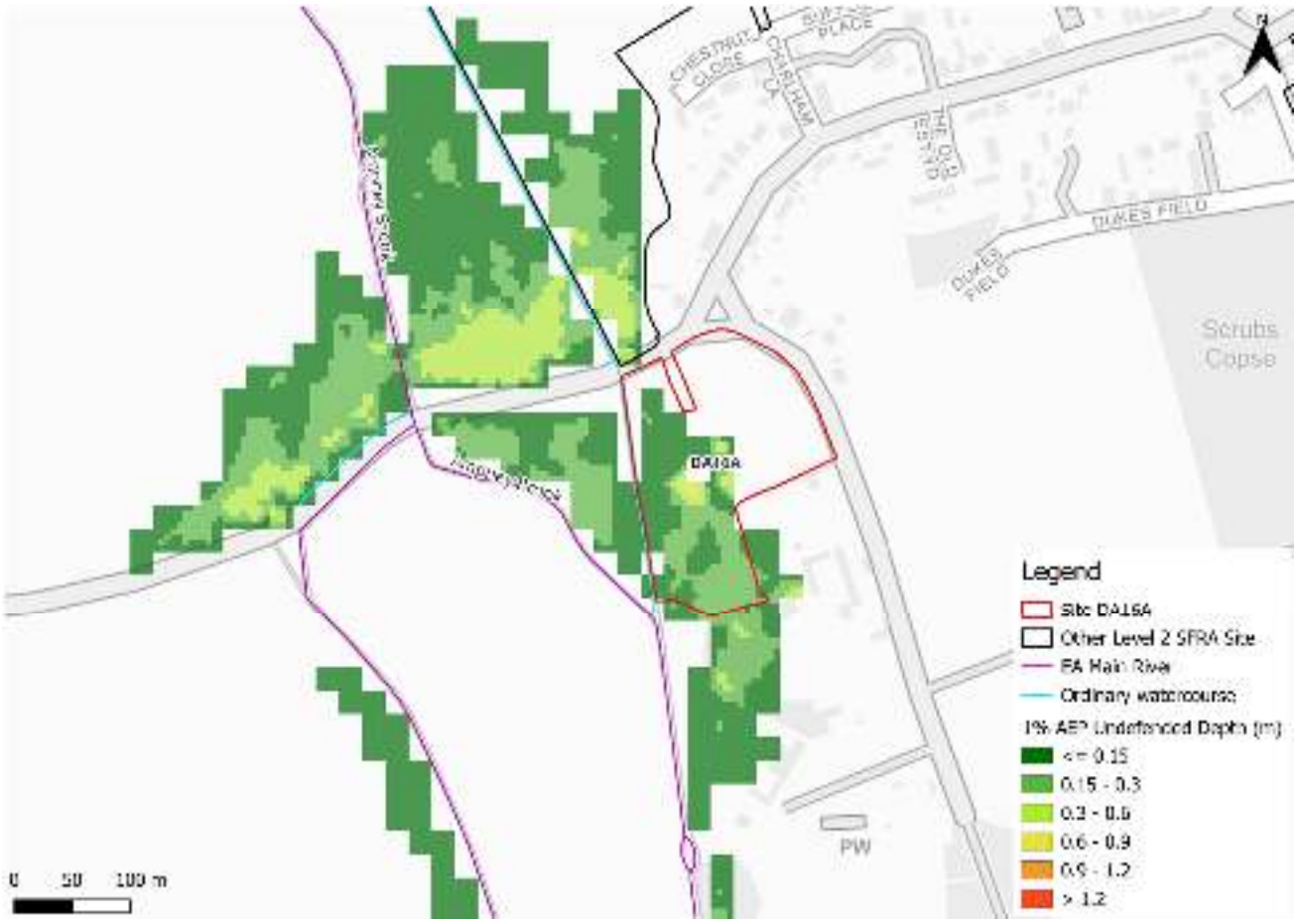

Figure 2-2: Flood depths for the 1% AEP undefended flood event

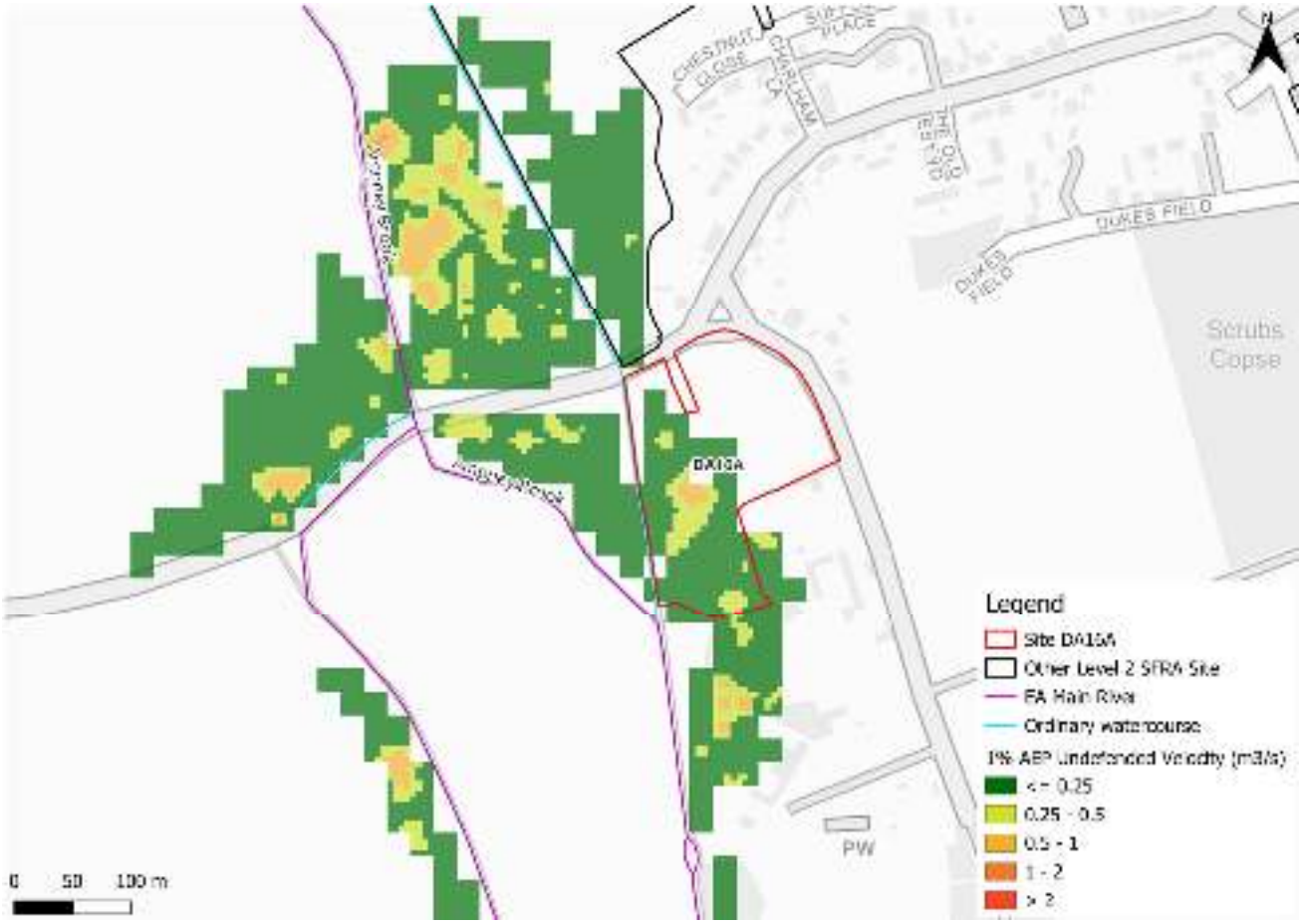

Figure 2-3: Flood velocities for the 1% AEP undefended flood event

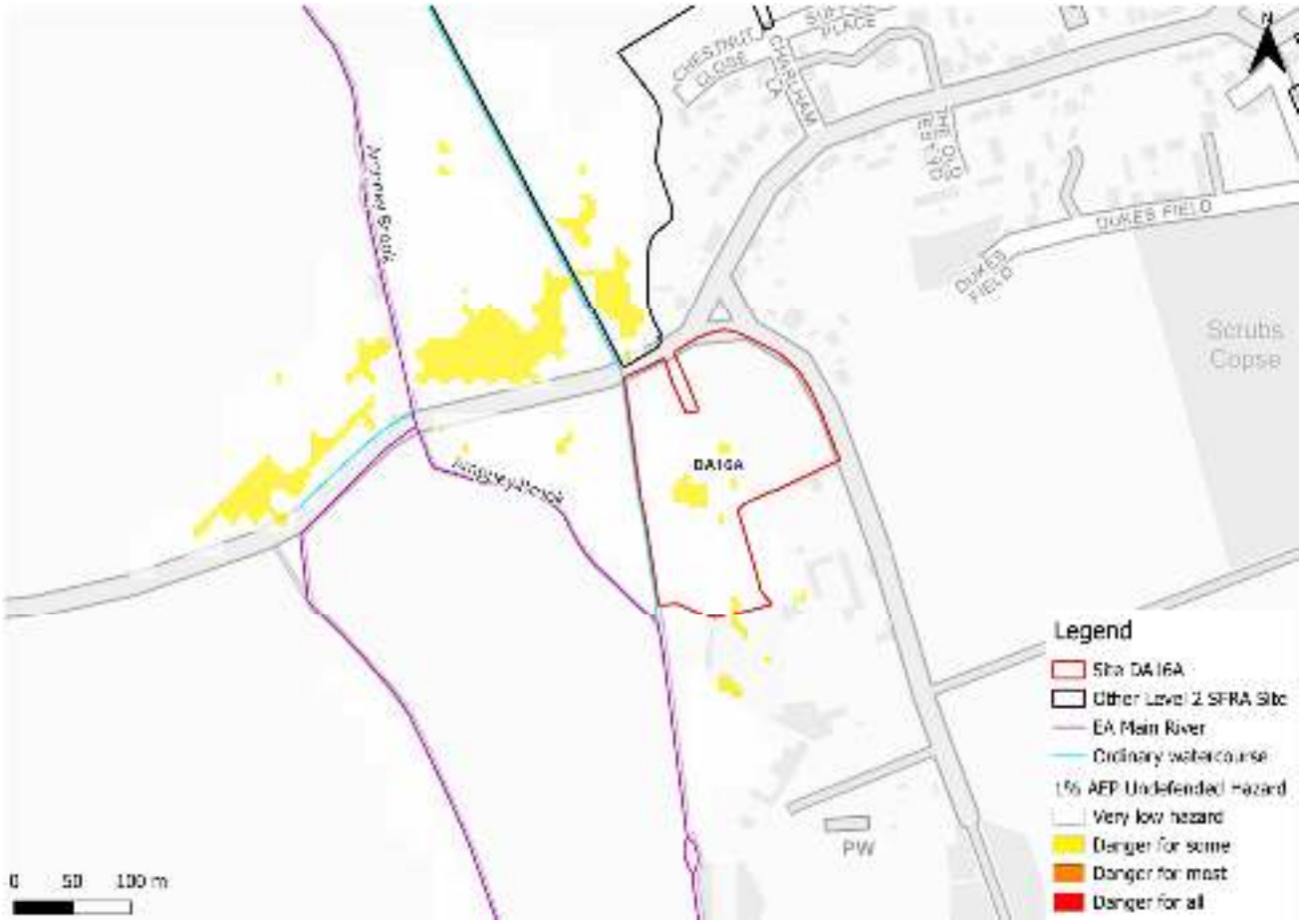

Figure 2-4: Flood hazards for the 1% AEP undefended flood event

2.2 Impacts from climate change

2.2.1 Ampney Brook Thames (MRL to St Johns) 2014 model outputs

The EA's SFRA guidance states that SFRAs should assess the central allowance for the 2080s epoch for peak river flows. The site is located within the Gloucestershire and the Vale Management Catchment. The central allowance within this catchment is 26% on peak flows (Table 2-2). The impacts of climate change on flood risk are included in the model for the 1% AEP undefended event using 30% on peak flows rather than the current central allowance of 26%.

Table 2-2: Modelled climate change allowances for peak river flows within the Gloucestershire and the Vale Management Catchment

Epoch	Central (%)	Higher (%)	Upper (%)
2020s	11	17	33
2050s	11	19	43
2080s	26	41	84

Figure 2-5, Figure 2-6, and Figure 2-7 show the modelled flood depths, velocities, and hazards respectively for the 1% AEP undefended event plus the central allowance for peak river flows. The risk area does not significantly increase in size though depths and velocities do increase across the risk area. Hazards remain the same.

Figure 2-5: Flood depths for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

Figure 2-6: Flood velocities for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

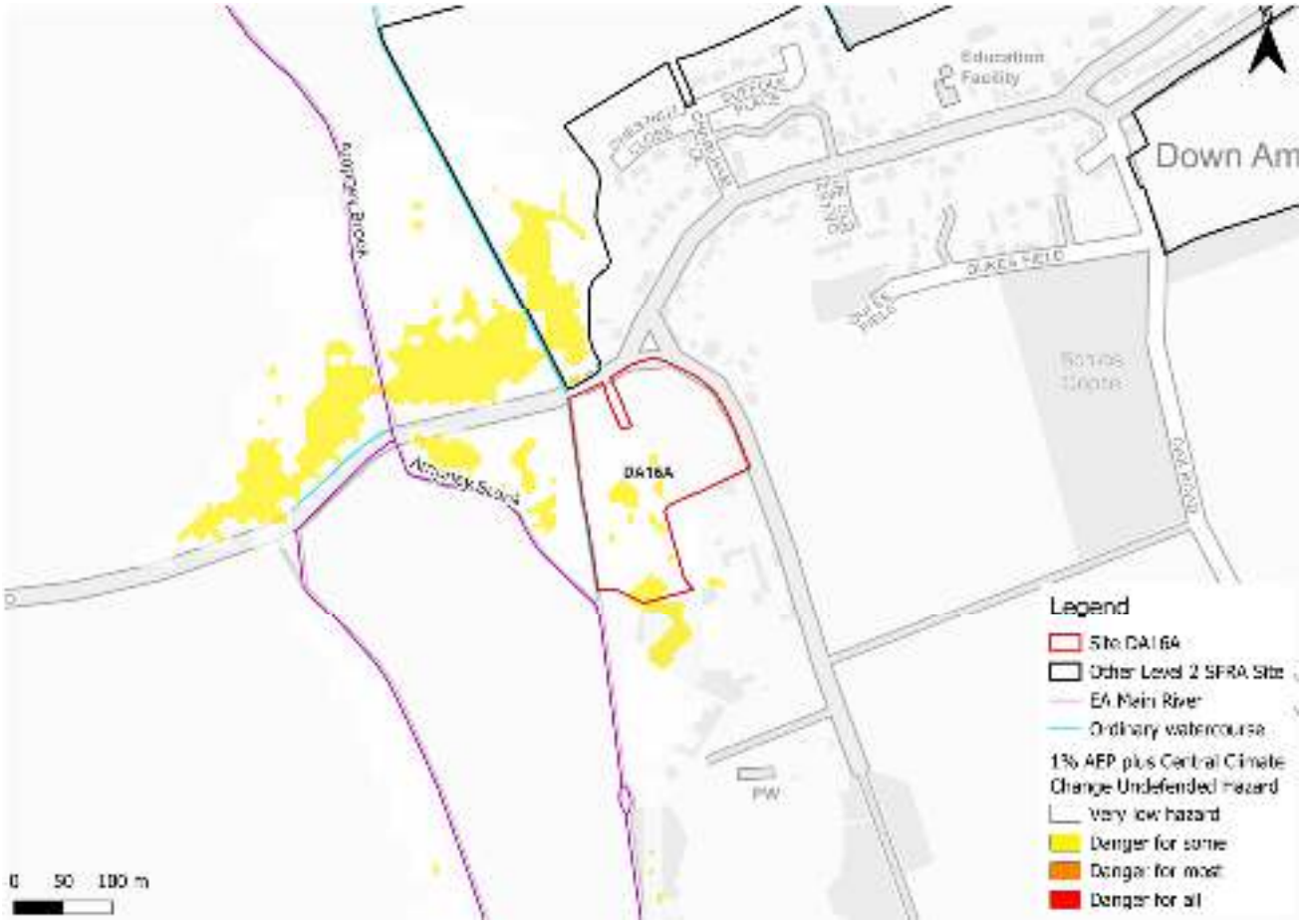

Figure 2-7: Flood hazards for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

2.2.2 Flood Map for Planning - Flood Zones plus Climate Change

Figure 2-8 shows the Flood Map for Planning - Flood Zones plus Climate Change dataset which includes the central allowance for the 2080s epoch. This represents the impact of climate change on Flood Zone 3a and Flood Zone 2 combined. This shows a greater extent of flooding than the modelled event. This is due to the Flood Map for Planning outputs being based on the NNM and not the outputs from the Ampney Brook Thames (MRL to St Johns) 2014 model, and also the fact that the Flood Zones plus Climate Change dataset also includes the larger 0.1% AEP event.

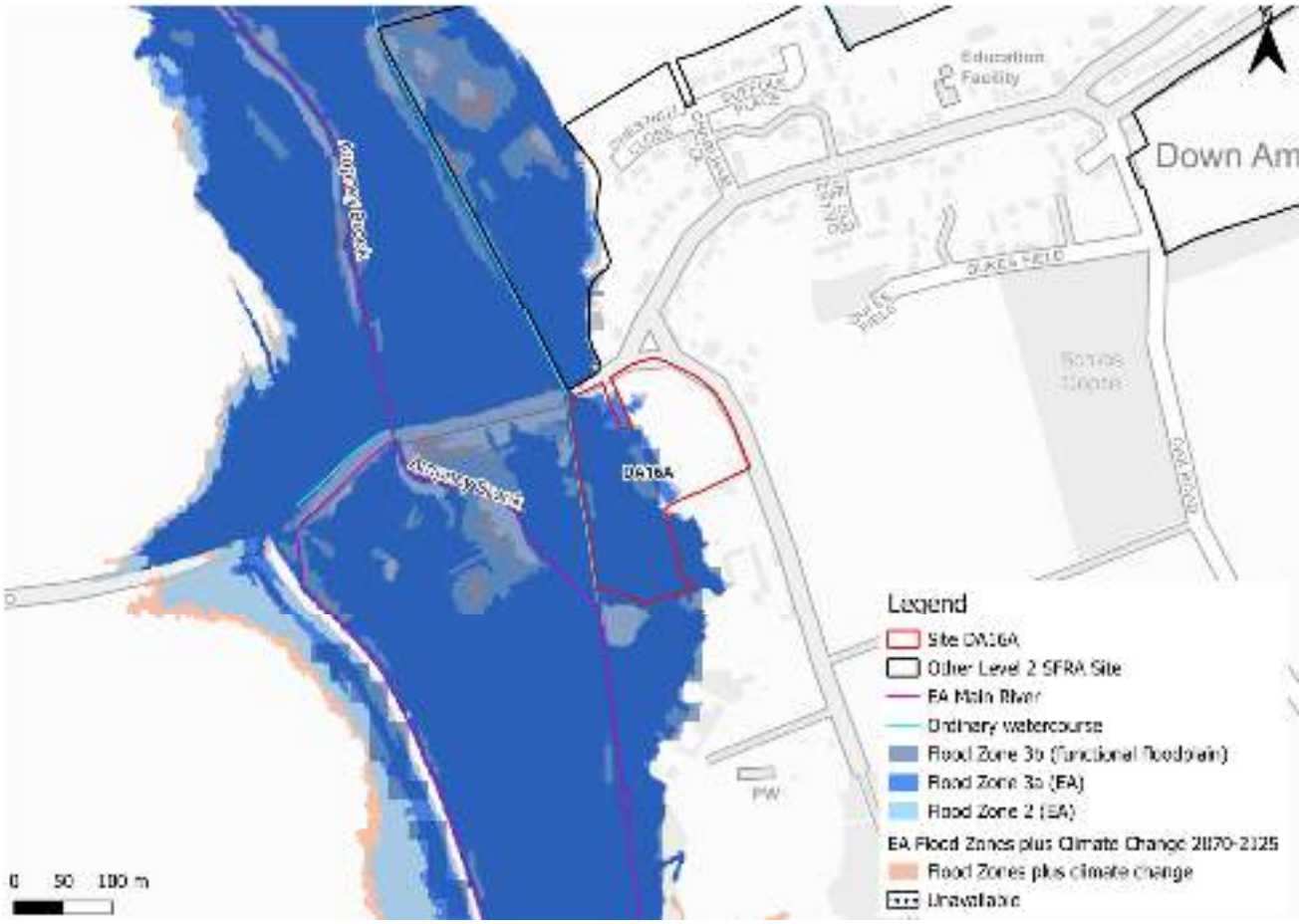

Figure 2-8: EA Flood Zones plus Climate Change

2.3 Historic flood incidents

The EA's Historic Flood Map (HFM) and Recorded Flood Outlines (RFO) datasets have been considered. There are no recorded historic flood events within the vicinity of the site, according to these datasets. The LLFA provided its historic floods register. There have been 11 recorded flooding incidents within the Ampneys & Hampton Ward within which the site is located.

2.4 Flood risk management

2.4.1 Flood defences

The site does not benefit from any formal engineered flood defences, according to the EA's spatial flood defences dataset.

2.4.2 Working with Natural Processes

The EA's Working with Natural Processes (WwNP) dataset has been interrogated to identify opportunities for Natural Flood Management (NFM) to reduce flood risk to the site and surrounding areas. Figure 2-9 shows that the site and wider area could benefit from riparian, floodplain, and wider catchment tree planting. Tree planting can help to slow the

flow to benefit areas downstream. There is also potential for floodplain reconnection to restore the natural floodplain which can help with floodwater attenuation. The WwNP mapping is broadscale and indicative. Further investigation is required for any land shown to have potential for WwNP.

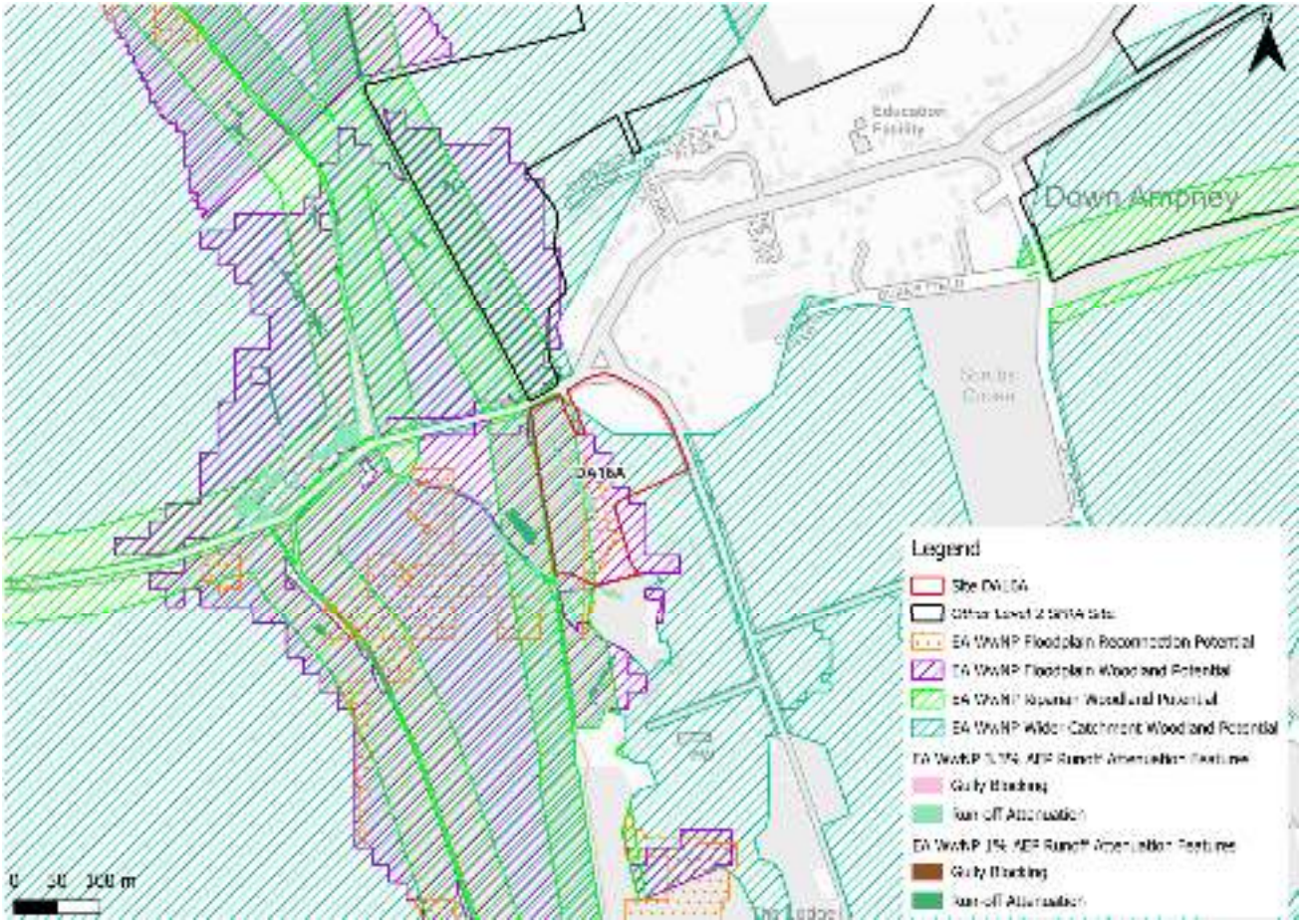

Figure 2-9: Working with Natural Processes

2.5 Emergency planning

2.5.1 Flood warning and alerts

The EA operates a Flood Warning Service for properties located within a Flood Warning Area (FWA) for when a flood event is expected to occur. The majority of the risk area is included within a FWA, namely the 'Ampney Brook from Ampney Crucis to Sheeppen Bridge' FWA, as shown in Figure 2-10.

Flood alerts may be issued before a flood warning for properties located within a Flood Alert Area (FAA) to provide advance notice of the possibility of flooding. A flood alert may be issued when there is less confidence that flooding will occur in a FWA. The site and the adjacent floodplains are partially located within a FAA, namely the 'Ampney Brook from Barnsley Wood to Sheeppen Bridge' FAA, as shown in Figure 2-10.

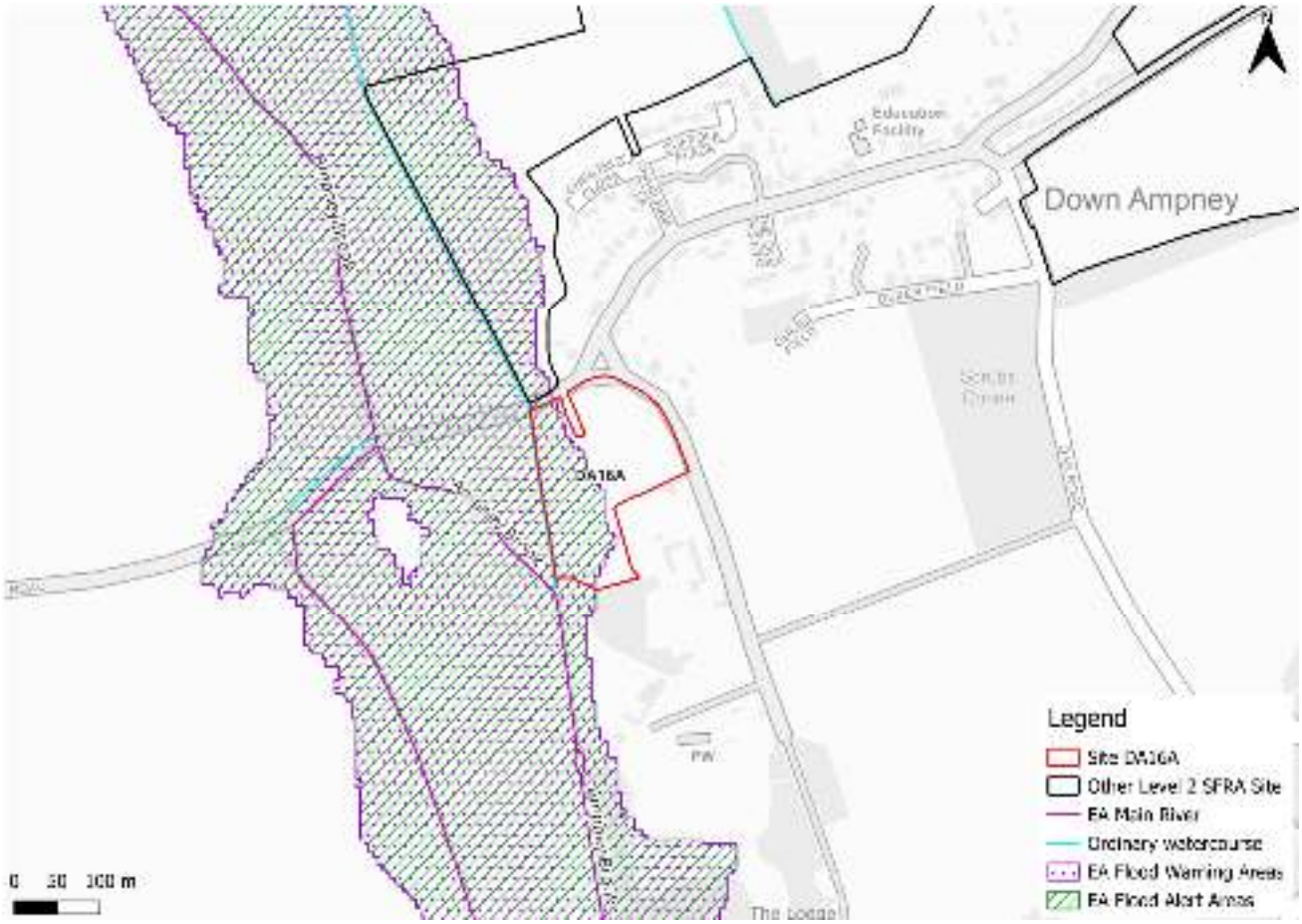

Figure 2-10: Flood warnings and alerts

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes could likely be achieved during a flood event via the north of the site to Charlham Way. However, updated modelling of Ampney Brook will be required to fully inform on safe access and escape routes (Figure 2-11).

Figure 2-11: Potential access and escape routes

2.6 Observations, mitigation options, site suitability, sequential approach to development management - fluvial

- Observations:
  - The area of the site within the functional floodplain should not be developed and should remain as open greenspace. Ideally, all built development would be directed to Flood Zone 1 whilst also accounting for the impacts of climate change. More vulnerable development should not be permitted within the undefended 0.5% AEP plus upper end climate change event risk area. All risk areas would ideally be utilised as open green space, providing a flood storage function as well as providing Biodiversity Net Gain (BNG), ecological, amenity, social, and wellbeing benefits.
  - The Ampney Brook Thames (MRL to St Johns) 2014 model is out of date and the EA's NNM is considered to be the most up to date information on fluvial risk to the site and surrounding area. The NNM does not contain depth or hazard information, therefore risk cannot be robustly defined at this stage.
  - The Flood Map for Planning shows the site could be at additional risk from climate change.

- Mitigation:
  - It is not appropriate at this stage to advise on potential mitigations, given the absence of sufficiently robust and up to date flood risk information. An updated model for Ampney Brook must be developed to robustly define risk to the site and the surrounding areas.
  - EA flood warnings and alerts should continue to be in place to ensure early evacuation of site users before an extreme flood event occurs.
- Access and escape:
  - Based on current information, safe access and escape routes appear achievable via the north of the site. Updated modelling must be carried out to inform on access and escape routes.

3 Flood risk from surface water

3.1 Existing risk

3.1.1 Flood Map for Planning - Surface Water Spatial Planning Extents and Depths Present Day

Based on the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Extents Present Day maps (May 2026), the site is predominantly at low risk of surface water flooding as shown in Table 3-1 and Figure 3-1 and also the depth map in Figure 3-2. There are two flow paths in the centre of the site of shallow flood depths <0.3m.

Safe access and escape routes are achievable in several locations, when considering surface water risk only.

Table 3-1: Existing surface water flood risk based on percentage area at risk based on the Flood Map for Planning - Surface Water Spatial Planning Extents Present Day dataset

Less than 0.1% AEP event (% area)	0.1% AEP event (% area)	1% AEP event (% area)	3.3% AEP event (% area)
91	4	3	2

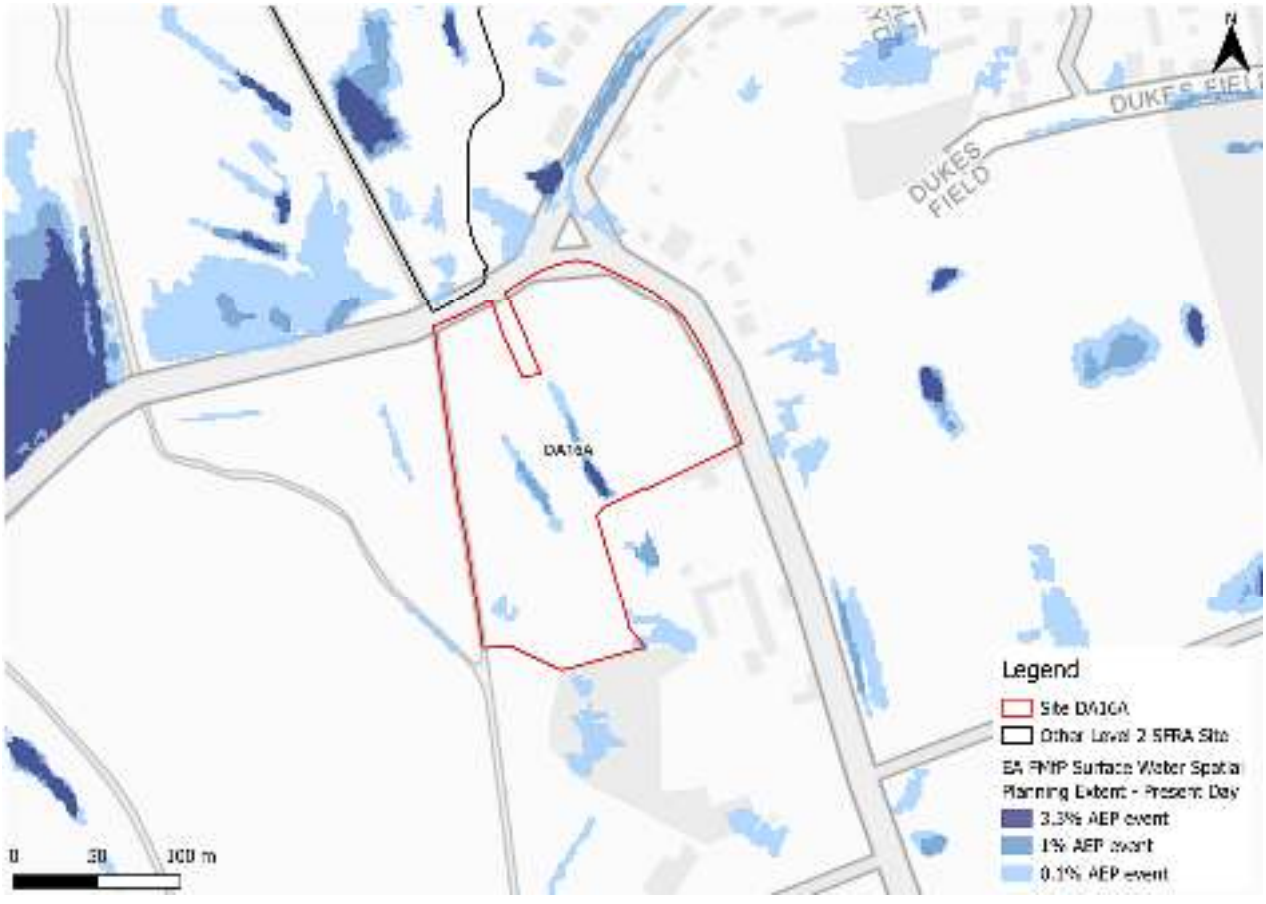

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

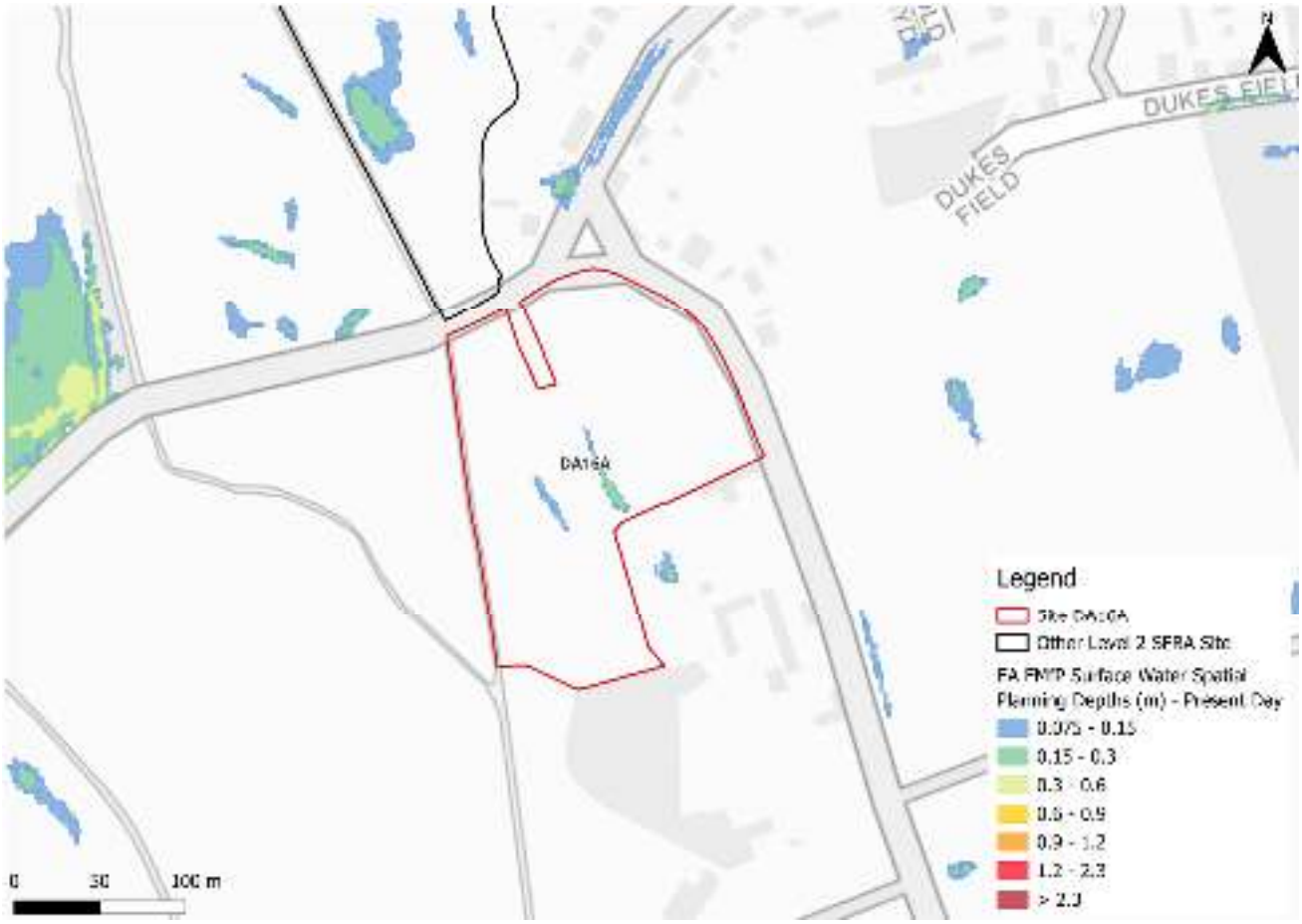

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 1% AEP event surface water flood depths (m)

3.1.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning data does not include hazard information suitable for planning purposes. Therefore, this Level 2 SFRA considers the third generation Risk of Flooding from Surface Water (RoFSW) hazard mapping in addition to the Flood Map for Planning - Surface Water Spatial Planning extents and depths, as the best available information.

The RoFSW map shows there to be areas of moderate to significant flood hazard in the centre of the site and along the western site boundary (Figure 3-3). There are clearly differences between the Flood Map for Planning - Surface Water Spatial Planning map and the third generation RoFSW hazard mapping whereby the RoFSW shows a much larger area to be at risk. Given the significant differences between the two datasets, the hazard information should be discounted and assessed further at the FRA stage.

Note: the Flood Map for Planning - Surface Water Spatial Planning data does not map flooding less than 0.075m (7.5cm) in depth. Therefore, where the map may show no flooding, there may be shallow flooding up to a depth of 0.075m. In contrast, the third generation RoFSW does not map flooding with a hazard rating of less than 0.575.

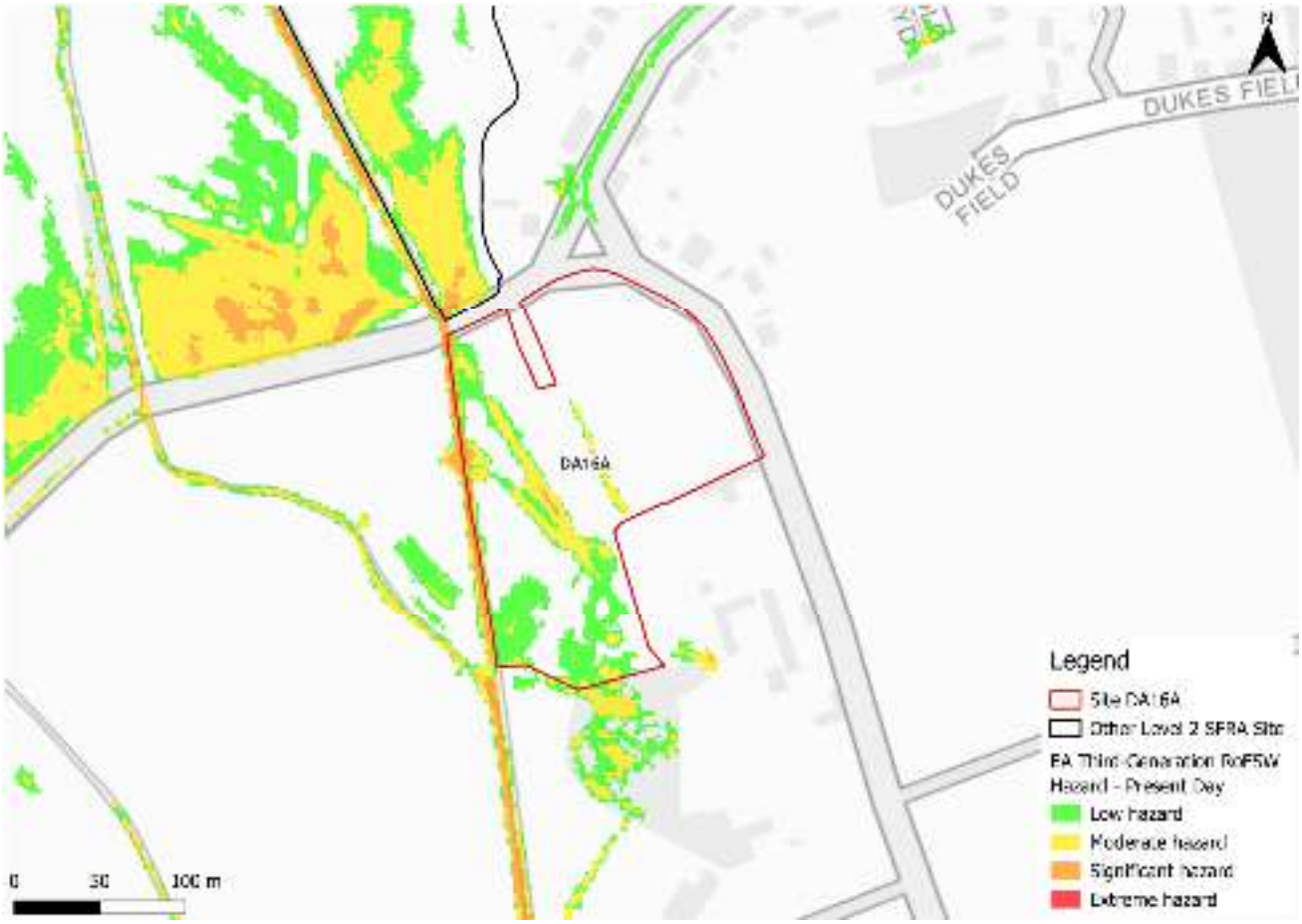

Figure 3-3: Third generation - Risk of Flooding from Surface Water map present day medium risk surface water flood hazard[1]

3.2 Impacts from climate change

3.2.1 Flood Map for Planning - Surface Water Spatial Planning extents and depths

The EA's climate change allowance guidance states that SFRA's should assess the upper end peak rainfall allowance for the 2070s epoch. This dataset is included in the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Climate Change dataset (May 2026). The peak rainfall intensity allowances for the Gloucestershire and the Vale management catchment are shown Table 3-2. The allowance for the 0.1% AEP event is not stated in the EA guidance.

Table 3-2: Peak rainfall intensity allowances for the Gloucestershire and the Vale Management Catchment

Return period	Central allowance 2070s (% increase)	Upper end allowance 2070s (% increase)
3.3%	25	35

1 Based on Section 7.5 Hazard rating. What is the Risk of Flooding from Surface Water map? Report version 2.0. April 2019. Environment Agency.

Return period	Central allowance 2070s (% increase)	Upper end allowance 2070s (% increase)
1%	25	40

Figure 3-4 shows the surface water flood extents for the 2070s upper end climate change scenario. The site is not shown to be at significant additional risk from surface water climate change. However, there are additional areas of ponding in the 0.1% AEP event and the flow paths increase in size and risk.

Flood depths are mainly shallow, with only a small area between 0.3m - 0.6m deep (Figure 3-5).

Safe access and escape routes would likely remain achievable via several locations.

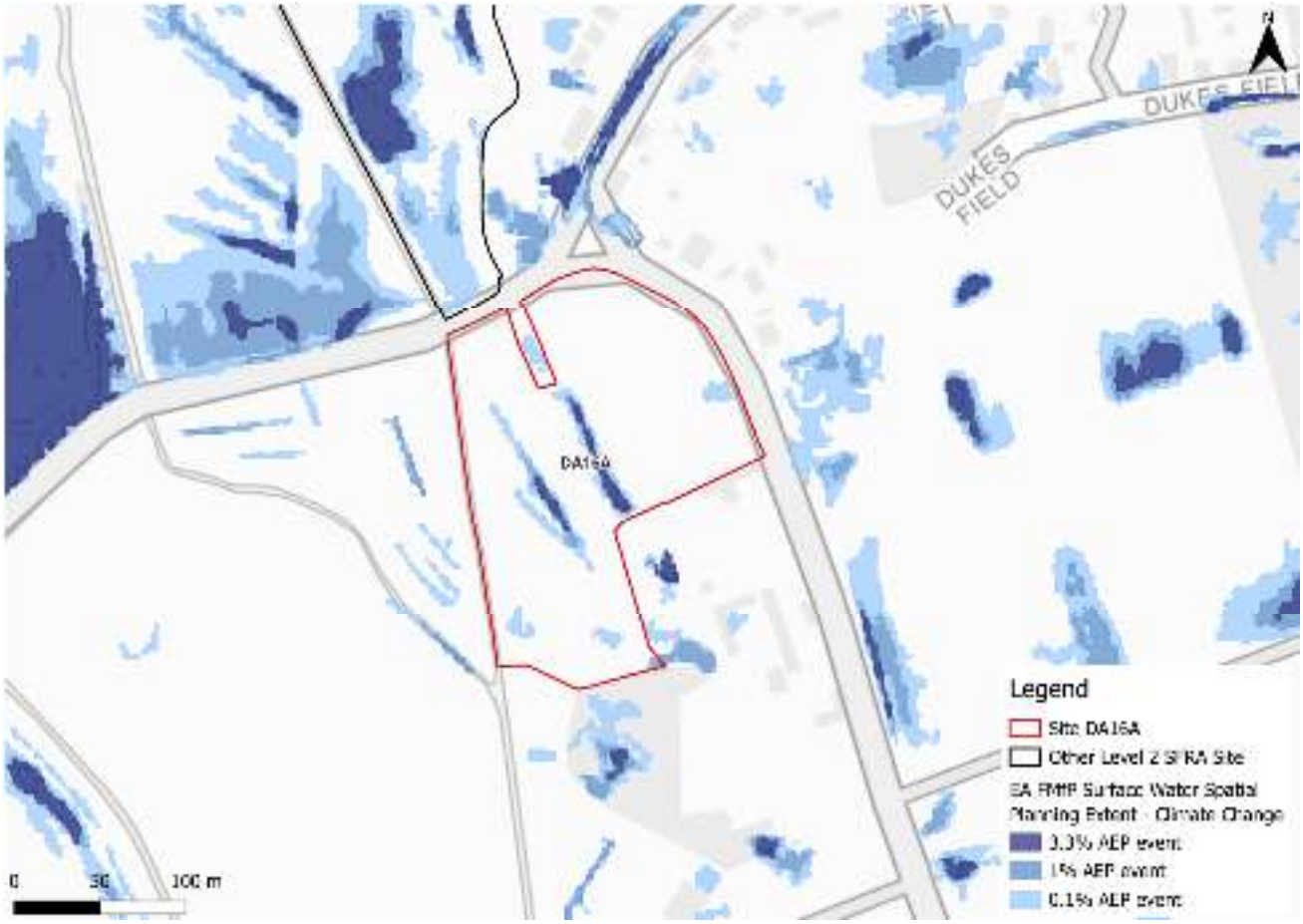

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

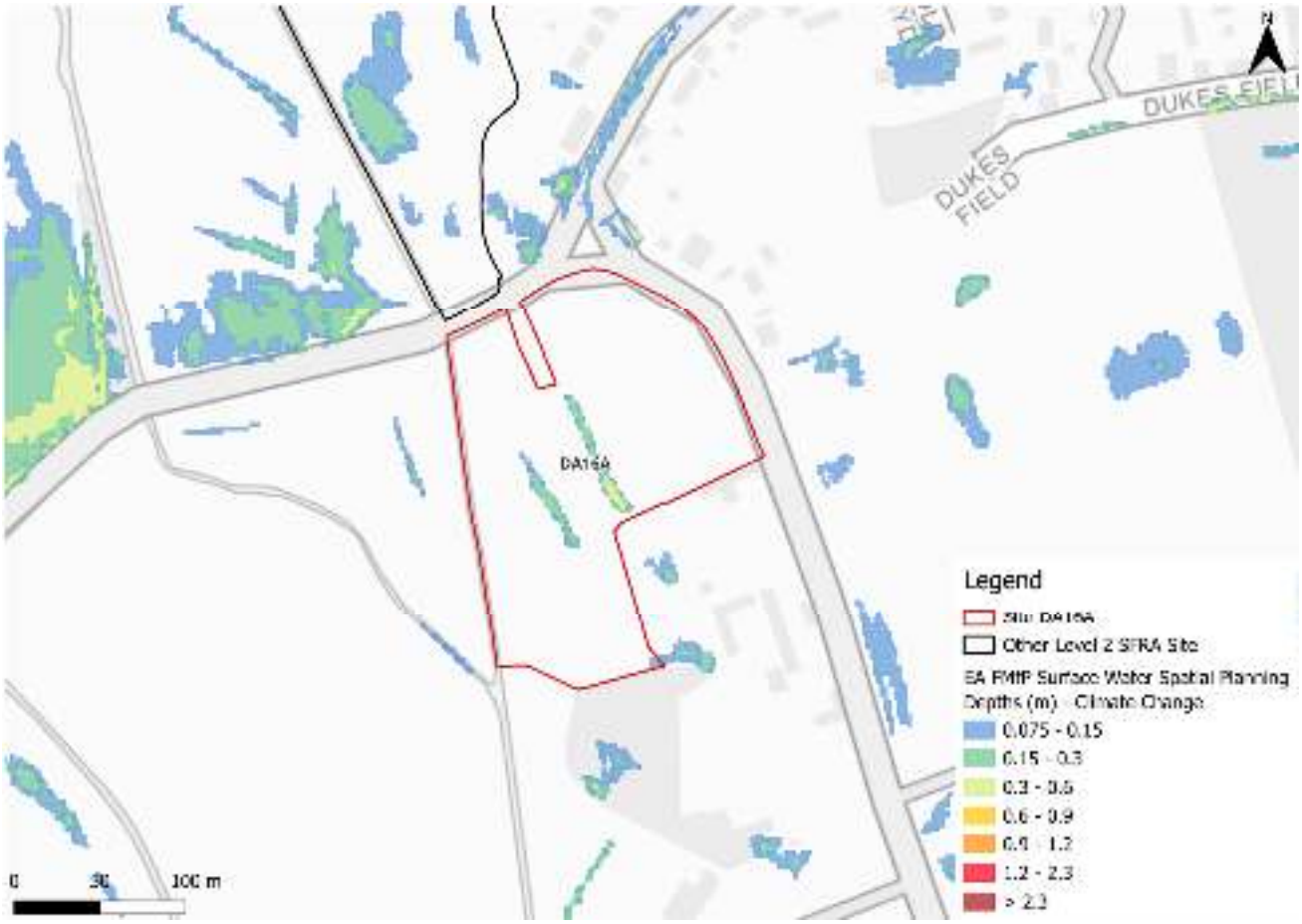

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 1% AEP event surface water flood depths (m)

3.2.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning climate change data does not include hazard information suitable for planning purposes. This Level 2 SFRA therefore considers the RoFSW low risk surface water event as a conservative proxy for the RoFSW medium risk event plus climate change, as the best available information to assess surface water flood hazards (Figure 3-6). However, given the differences between the two datasets, the hazard information should be discounted and assessed further at the FRA stage.

Figure 3-6: Third generation - Risk of Flooding from Surface Water map present day low risk surface water flood hazard as a climate change proxy

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There are no recorded sewer flooding incidents nearby the site nor within the The Ampneys & Hampton Ward.

3.4 Observations, mitigation options, site suitability, sequential approach to development management - surface water

- Current risk to the site is predominantly low, with 91% of the site being outside of the 0.1% AEP surface water flood extent.
- Risk to the site is shown to slightly increase in extent within the site when considering the impact of climate change.
- Topographic low spots and flow paths should be considered and included in site design and ideally left in place to flood naturally when required.
- The drainage strategy must ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or betterment should apply. The developer should consult the LLFA and follow local and National SuDS guidance.

- Safe access and escape routes would likely be achievable via multiple locations when considering surface water risk in isolation.

4 Cumulative impacts assessment and high risk catchments

4.1 Level 1 cumulative impacts assessment

A cumulative impact assessment was completed through the Cotswold Level 1 SFRA (2026), which aimed to identify catchments sensitive to the cumulative impact of new development. This site is located within one catchment, namely, the Ampney and Poulton Brooks (Source to Thames) catchment. This catchment is ranked as a low sensitivity catchment. Planning considerations for all sites can be found in Appendix F of the Level 1 SFRA. Cumulative impacts of development should also be considered as part of a site-specific FRA.

5 Groundwater, geology and SuDS suitability

Risk of groundwater emergence is assessed in this SFRA using JBA's 5m Groundwater Emergence Map. Figure 5-1 shows the map covering this site and the surrounding areas. Table 5-1 explains the risk classifications. The map shows there is a risk of groundwater flooding to both surface and subsurface assets, and groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.

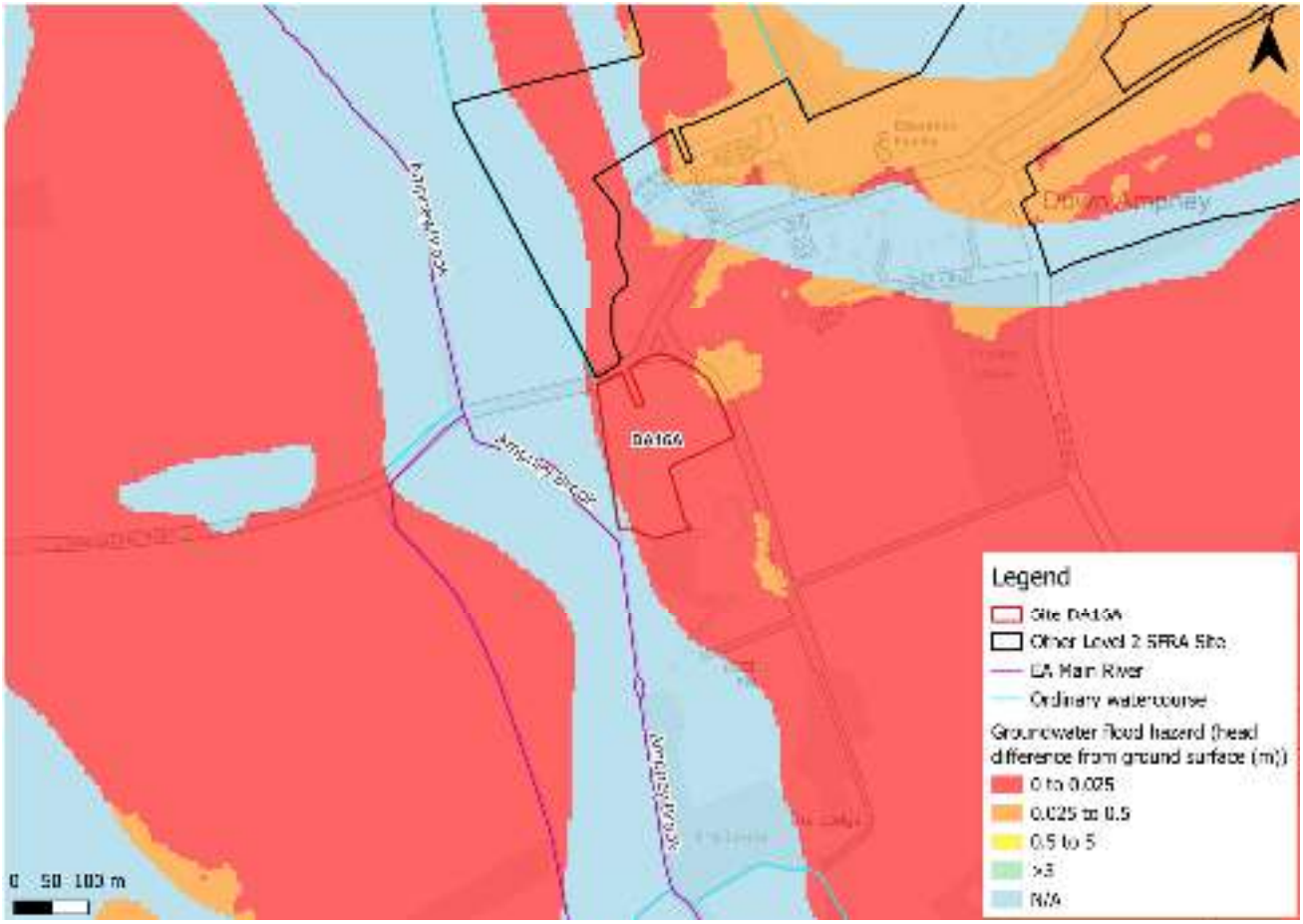

Figure 5-1: JBA 5m Groundwater Emergence Map

Table 5-1: Groundwater Hazard Classification

Groundwater head difference (m)*	Class label
0 to 0.025	Groundwater levels are either at very near (within 0.025m of) the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.
0.025 to 0.5	Groundwater levels are between 0.025m and 0.5m below the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.
0.5 to 5	Groundwater levels are between 0.5m and 5m below the ground surface in the 100-year return period flood event There is a risk of flooding to subsurface assets, but surface manifestation of groundwater is unlikely.
>5	Groundwater levels are at least 5m below the ground surface in the 100-year return period flood event. Flooding from groundwater is not likely.
N/A	No risk. This zone is deemed as having a negligible risk from groundwater flooding due to the nature of the local geological deposits.
*Difference is defined as ground surface in mAOD minus modelled groundwater table in mAOD.	

The underlying bedrock within the site is mudstone, siltstone, and sandstone (Figure 5-2). Mudstone and siltstone generally have a low permeability and low level of porosity, reducing infiltration rates. Superficial deposits include clay and silt which also have low permeability. Infiltration SuDS at this site may not be an option though the drainage strategy for the site should fully investigate water table levels through standpipe monitoring during the period of highest groundwater levels e.g. November to April.

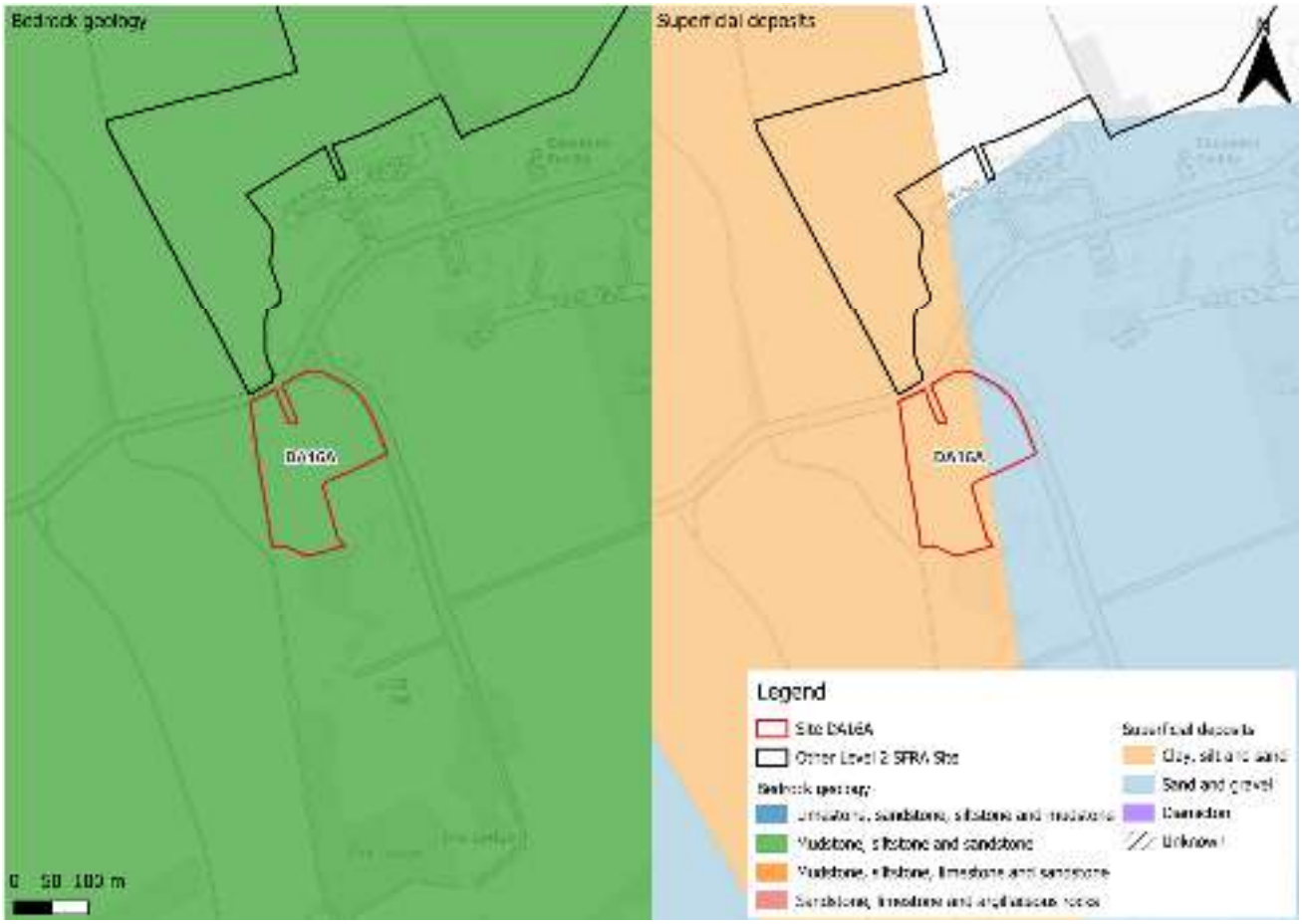

Figure 5-2: BGS Geology - Bedrock and superficial deposits

6 Residual risk

Although a site may be afforded some protection from defences and / or drainage infrastructure, there is always a residual risk of flooding from asset failure i.e. defence breaches, or blockages of culverts or drainage assets.

There are no defences in place along Ampney Brook. However, the watercourse is culverted in two places under Down Ampney Road, as indicated by the green circle on Figure 6-1. There is a potential residual risk of a blockage of these culverts. This risk should be investigated at the site-specific FRA stage.

Figure 6-1: Culvert location (green circle)

6.1 Flood risk from reservoirs

The EA's Reservoir Flood Maps (RFM) (2021) show where water may go in the unlikely event of a reservoir or dam failure. The site is not modelled to be at risk from reservoir flooding.

7 Overall site assessment

7.1 Can part b) of the Exception Test be passed?

This site is required to pass part b) of the exception test as it is proposed for more vulnerable residential development and is partially located within Flood Zone 3a. Half of the site is within the functional floodplain and cannot be developed. As stated in para 005 of the PPG, for a site to be considered safe for its lifetime, it must be proven that residents and users can safely access and exit a building during a design flood and to evacuate before an extreme flood (0.1% annual probability of flooding with allowance for climate change). Updated modelling of Ampney Brook is required to inform the Exception Test.

7.2 Main recommendations and site-specific FRA requirements

Based on the evidence presented in the Level 1 SFRA (2026) and this Level 2 SFRA:

- Based on current information, it is recommended that this site is not allocated for residential development. However, the area currently in Flood Zone 1 and not at risk from climate change may be developed, though updated modelling of Ampney Brook must be carried out to robustly define the risk to the site for both present day and with climate change.
- A drainage strategy should ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or betterment should apply with consideration of local and national SuDS guidance.
- Groundwater conditions must be investigated further through the site-specific FRA. This should be assessed through standpipe monitoring during the period of highest groundwater levels e.g. November to April.
- The site-specific FRA should be carried out in line with the latest versions of the NPPF; FRCC-PPG; EA online guidance; the CDC Local Plan, and national and local SuDS policy and guidelines.
- Throughout the FRA process, consultation should be carried out with, where applicable, the local planning authority; the lead local flood authority; emergency planning officers; the Environment Agency; the water companies; the highways authorities; and the emergency services.

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Cotswold Level 2 Strategic Flood Risk Assessment Site Summary

Site SD15 - Plummers Farm, east of Ashton Road

Final Draft Report

Prepared for	Date
Cotswold District Council	August 2026

COTSWOLD
District Council

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Contract

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JBA Project Code	2025s1921

This report describes work commissioned by Cotswold District Council by an instruction dated 28 May 2026. The Client's representative for the contract was Jo Corbett of Cotswold District Council. Kira Khangura and Laura Thompson-Jones of JBA Consulting carried out this work.

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The methodology adopted and the sources of information used by JBA in providing its services are outlined in this Report. The work described in this Report was undertaken in August 2026 and is based on the conditions encountered and the information available during the said period. The scope of this Report and the services are accordingly factually limited by these circumstances.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate.

Acknowledgements

We would like to thank the Environment Agency for their assistance with this work.

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Contents

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1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site SD15. The content of this report assumes the reader has already consulted the 'Cotswold Level 1 SFRA' (2026) and the 'Cotswold Level 2 SFRA Main Report' (2026) and is therefore familiar with the terminology used in this report.

1.1 Site SD15

- Location: Plummers Farm, east of Ashton Road (NGR 403455, 199344)
- Existing site use: Agriculture
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 3.17
- Watercourse: River Churn
- Environment Agency (EA) flood model: River Churn (Churn (Baunton to Siddington) 2011 model
- Summary of requirements from Level 2 SFRA scoping stage:
    - Assessment of fluvial flood depths, velocities and hazards
    - Assessment of surface water flood extent, depths and hazards
    - Assessment of all other sources of flood risk
    - Assessment of flood risk management measures and natural flood management

Figure 1-1: Site location boundary

The topography of the site slopes from west to east towards the floodplain of the River Churn (Figure 1-2).

Figure 1-2: Topography

2 Flood risk from rivers

2.1 Existing risk

2.1.1 Flood Map for Planning and functional floodplain

Based on the EA's Flood Map for Planning (accessed May 2026) and Flood Zone 3b (functional floodplain), as updated through the Cotswold Level 1 SFRA, the percentage areas of the site within each flood zone are stated in Table 2-1 and can be viewed on Figure 2-1. The Flood Map for Planning does not consider flood defence infrastructure (Section 2.4).

The majority of the site is in Flood Zone 1 and therefore at low risk of from flooding from rivers. There is a small area of Flood Zone 2 (1%) at the southern boundary of the site.

Table 2-1: Present day flood risk based on percentage area of site at risk

Flood Zone 1 (% area)	Flood Zone 2 (% area)	Flood Zone 3a (% area)	Flood Zone 3b (% area)
99	1	0	0

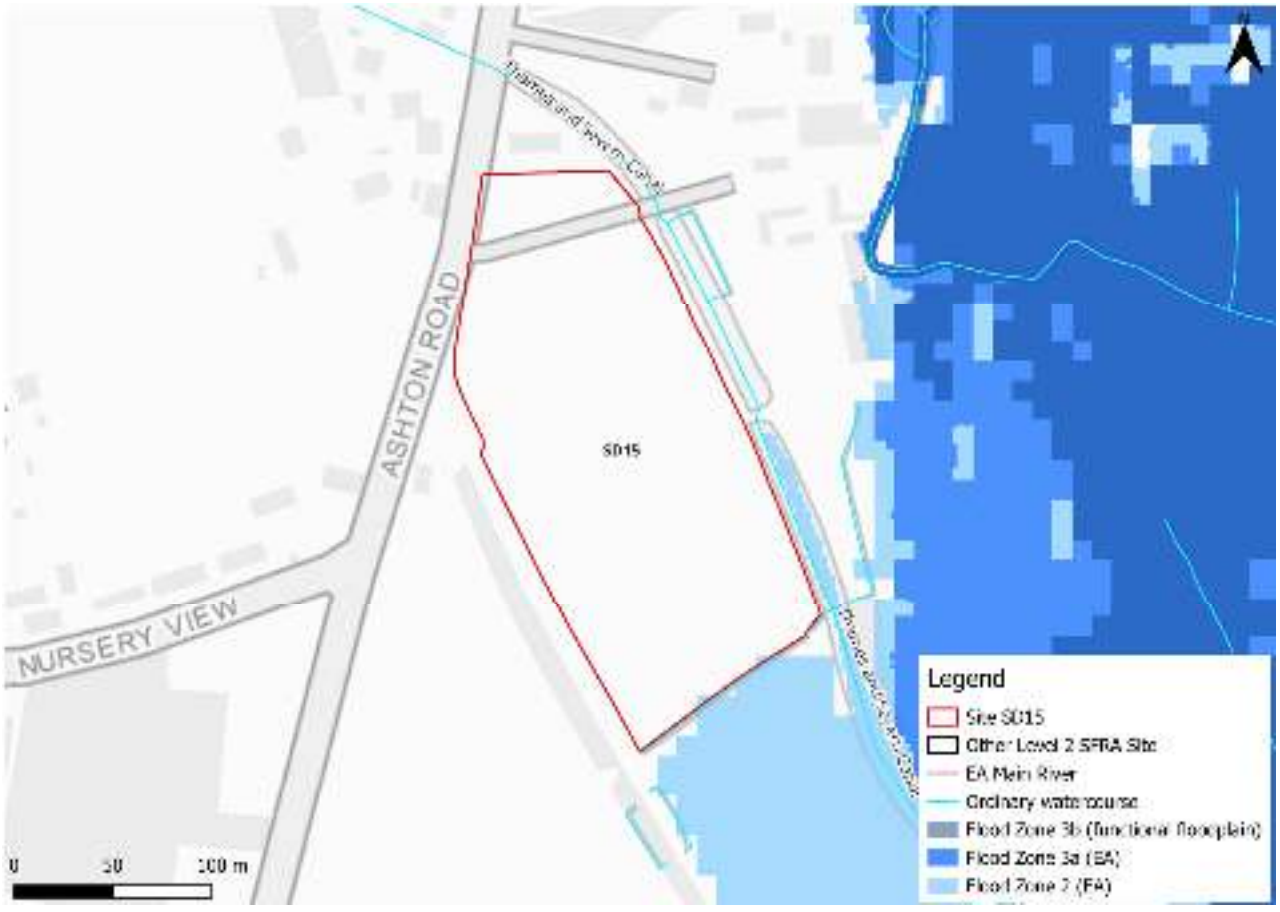

Figure 2-1: Present day risk

2.1.2 River Churn (Baunton to Siddington) 2011 model outputs.

Present day risk to the site comes from the River Churn to the east of the site. The 0.1% AEP undefended event from the River Churn (Baunton to Siddington) 2011 model shows the same extent of flooding to the site as Flood Zone 2 of the Flood Map for Planning (Figure 2-2). Risk is modelled to be confined to a very small area along the southern site boundary, with depths of less than 0.15 m.

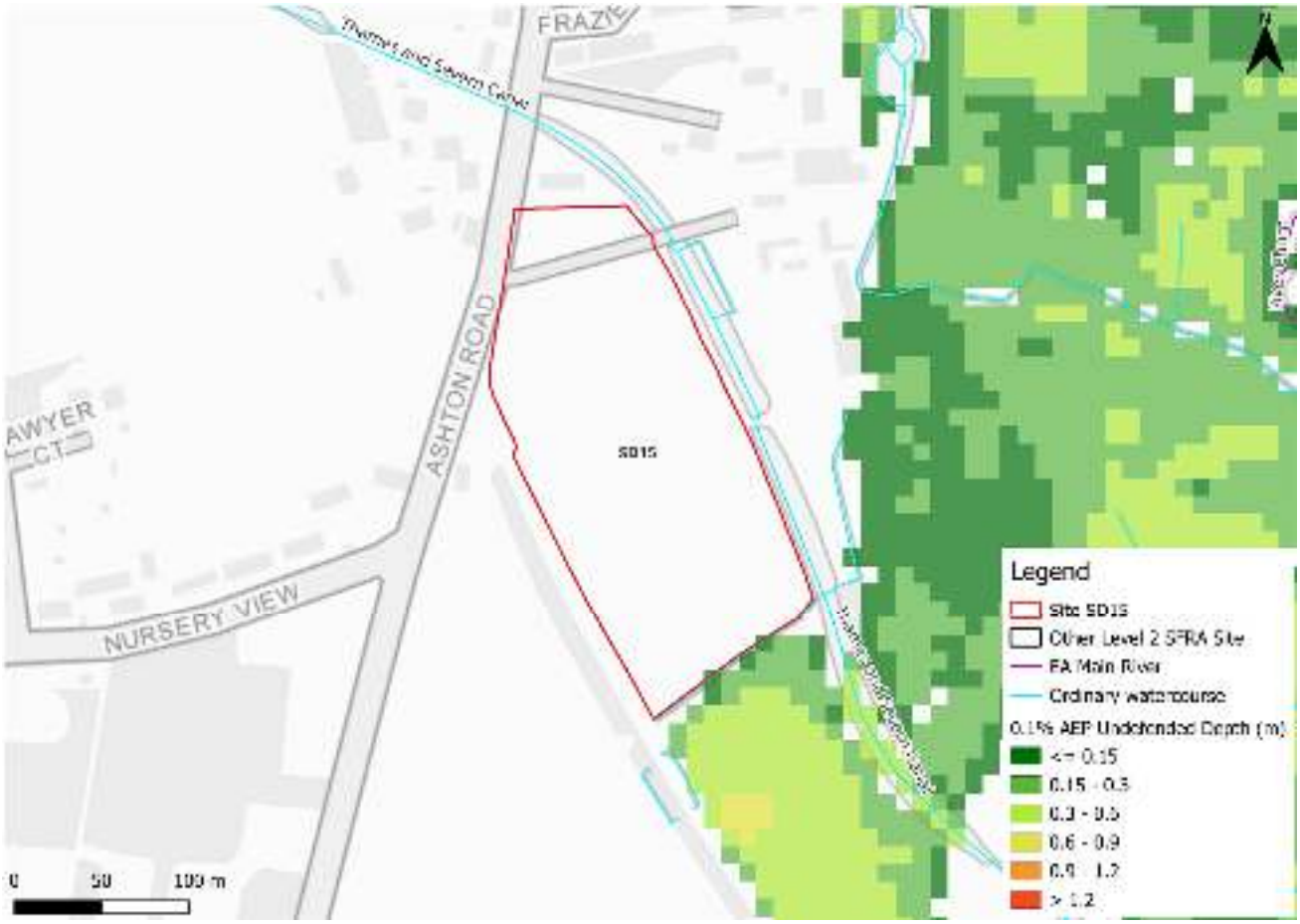

Figure 2-2: Flood depths for the 0.1% AEP undefended flood event

2.2 Impacts from climate change

2.2.1 River Churn (Baunton to Siddington) 2011 model outputs

The EA's SFRA guidance states that SFRAs should assess the central allowance for the 2080s epoch for peak river flows. The site is located within the Gloucestershire and the Vale Management Catchment. The central allowance within this catchment is 26% on peak flows (Table 2-2). The impacts of climate change on flood risk are included in the model for the 1% AEP undefended event using 30% on peak flows rather than the current central allowance of 26%.

Table 2-2: Modelled climate change allowances for peak river flows within the Gloucestershire and the Vale Management Catchment

Epoch	Central (%)	Higher (%)	Upper (%)
2020s	11	17	33
2050s	11	19	43
2080s	26	41	84

Figure 2-3 shows the modelled flood depths for the 0.1% AEP undefended event plus the central allowance for peak river flows. The risk area does not significantly increase in size, and the site remains at low modelled risk. There is no modelled risk to the site in the 1% AEP undefended plus central climate change event.

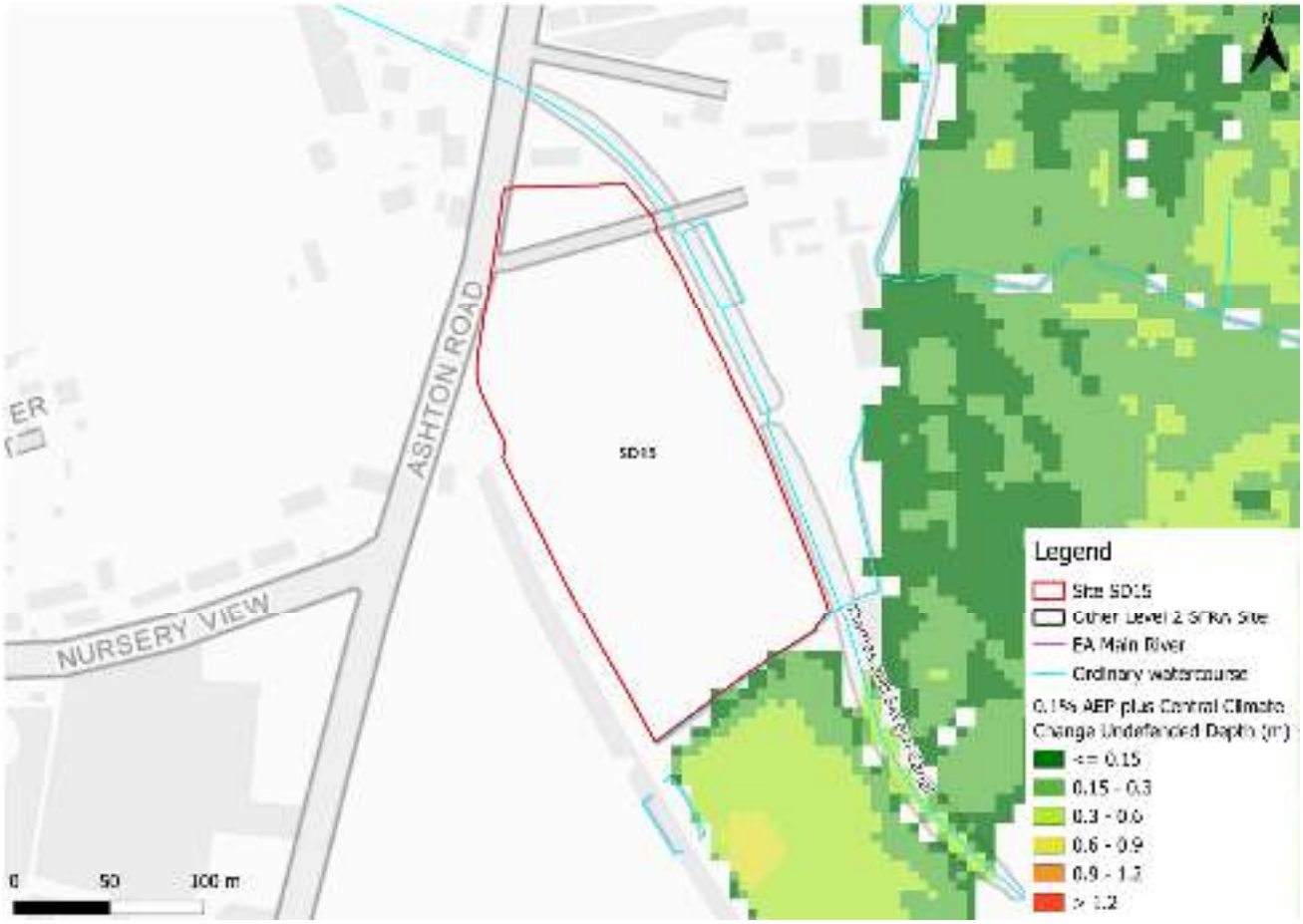

Figure 2-3: Flood depths for the 0.1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

2.2.2 Flood Map for Planning - Flood Zones plus Climate Change

Figure 2-4 shows the Flood Map for Planning - Flood Zones plus Climate Change dataset which includes the central allowance for the 2080s epoch. This represents the impact of climate change on Flood Zone 3a and Flood Zone 2 combined. This shows a greater extent of flooding than the modelled event. This is due to the fact that the Flood Zones plus

Climate Change dataset also includes the larger 0.1% AEP event. However, risk to the site does not increase.

Figure 2-4: EA Flood Zones plus Climate Change

2.3 Historic flood incidents

The EA's Historic Flood Map (HFM) and Recorded Flood Outlines (RFO) datasets have been considered. There are no recorded historic flood events within the vicinity of the site, according to these datasets. The LLFA provided its historic floods register. There have been six recorded flooding incidents within the Siddington and Cerney Rural Ward within which the site is located.

2.4 Flood risk management

2.4.1 Flood defences

The site does not benefit from any formal engineered flood defences, according to the EA's spatial flood defences dataset.

2.4.2 Working with Natural Processes

The EA's Working with Natural Processes (WwNP) dataset has been interrogated to identify opportunities for Natural Flood Management (NFM) to reduce flood risk to the site and

surrounding areas. Figure 2-5 shows that the east of the site could benefit from riparian woodland tree planting, with areas outside of the site potentially benefitting from floodplain woodland tree planting. Tree planting can help to slow the flow of water to benefit areas downstream. The WwNP mapping is broadscale and indicative. Further investigation is required for any land shown to have potential for WwNP.

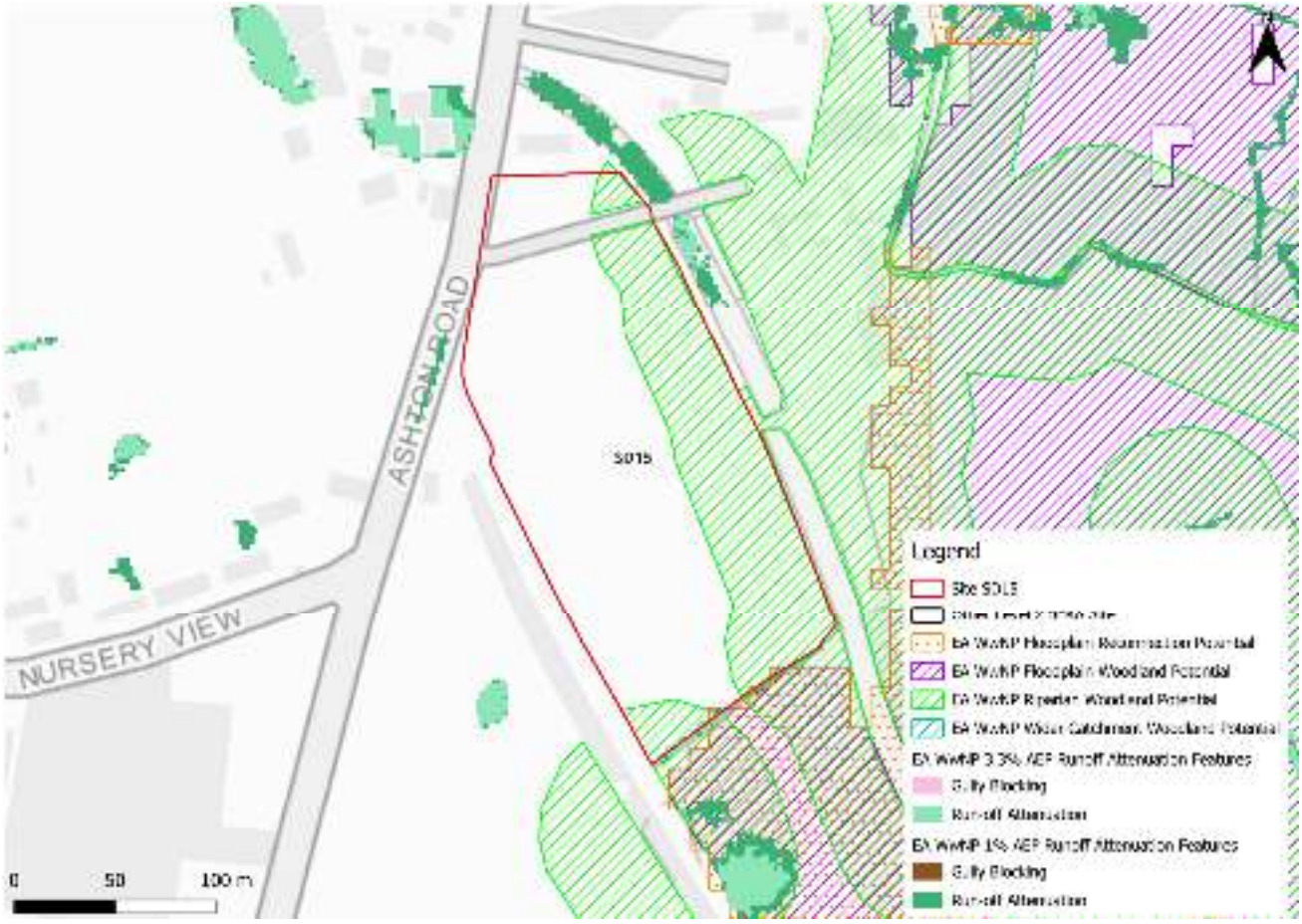

Figure 2-5: Working with Natural Processes

2.5 Emergency planning

2.5.1 Flood warning and alerts

The EA operates a Flood Warning Service for properties located within a Flood Warning Area (FWA) for when a flood event is expected to occur. A small area along the southern boundary of the site is included within a FWA, namely 061FWF02Cirncstr - River Churn from Baunton to Siddington including Cirencester, as shown in Figure 2-6.

Flood alerts may be issued before a flood warning for properties located within a Flood Alert Area (FAA) to provide advance notice of the possibility of flooding. A flood alert may be issued when there is less confidence that flooding will occur in a FWA. A small area along the southern boundary of the site is located within a FAA, namely 061WAF02Churn - River Churn and its tributaries.

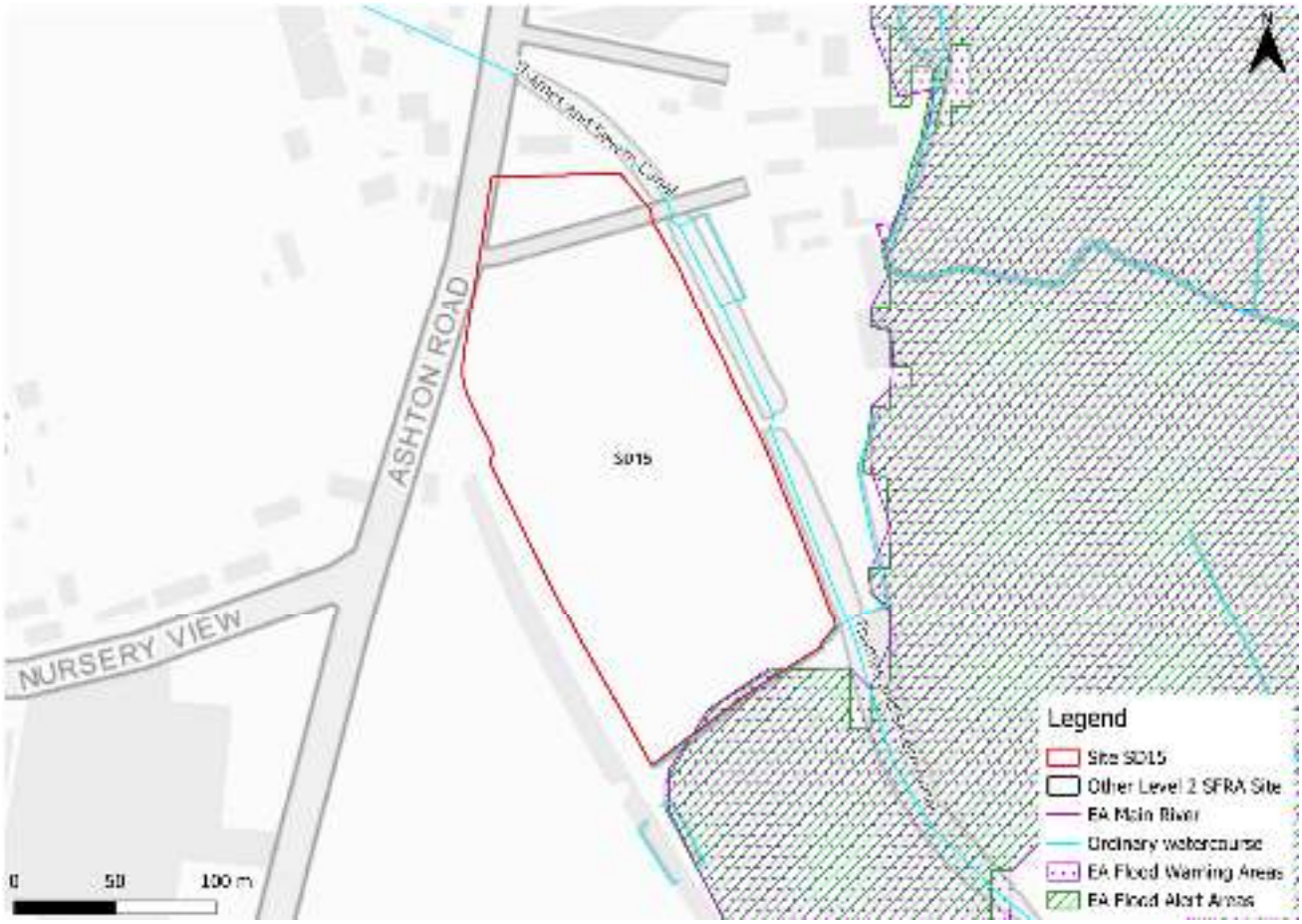

Figure 2-6: Flood warnings and alerts

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes could likely be achieved during a flood event via the northwest of the site via Ashton Road (Figure 2-7).

Figure 2-7: Potential access and escape routes

2.6 Observations, mitigation options, site suitability, sequential approach to development management - fluvial

- Observations:
  - The majority of the site is located within Flood Zone 1 and therefore at low risk from rivers.
  - There is no significant additional risk to the site when considering climate change.
- Mitigation:
  - EA flood warnings and alerts should continue to be in place to ensure early evacuation of site users before an extreme flood event occurs.
- Access and escape:
  - Based on current information, safe access and escape routes appear achievable via the northwest of the site via Ashton Road.

3 Flood risk from surface water

3.1 Existing risk

3.1.1 Flood Map for Planning - Surface Water Spatial Planning Extents and Depths Present Day

Based on the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Extents Present Day maps (May 2026), the site is predominantly at low risk of surface water flooding as shown in Table 3-1 and Figure 3-1, and also the depth map in Figure 3-2.

There is a small flow path along the southern boundary of the site with depths of between 0.3 and 0.6m. In the 0.1% AEP event, there is a small area of ponding in the northeast of the site. Safe access and escape routes would likely be achievable via Ashton Road to the northwest of the site in all events.

Table 3-1: Existing surface water flood risk based on percentage area at risk based on the Flood Map for Planning - Surface Water Spatial Planning Extents Present Day datasets

Less than 0.1% AEP event (% area)	0.1% AEP event (% area)	1% AEP event (% area)	3.3% AEP event (% area)
95	3	1	1

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

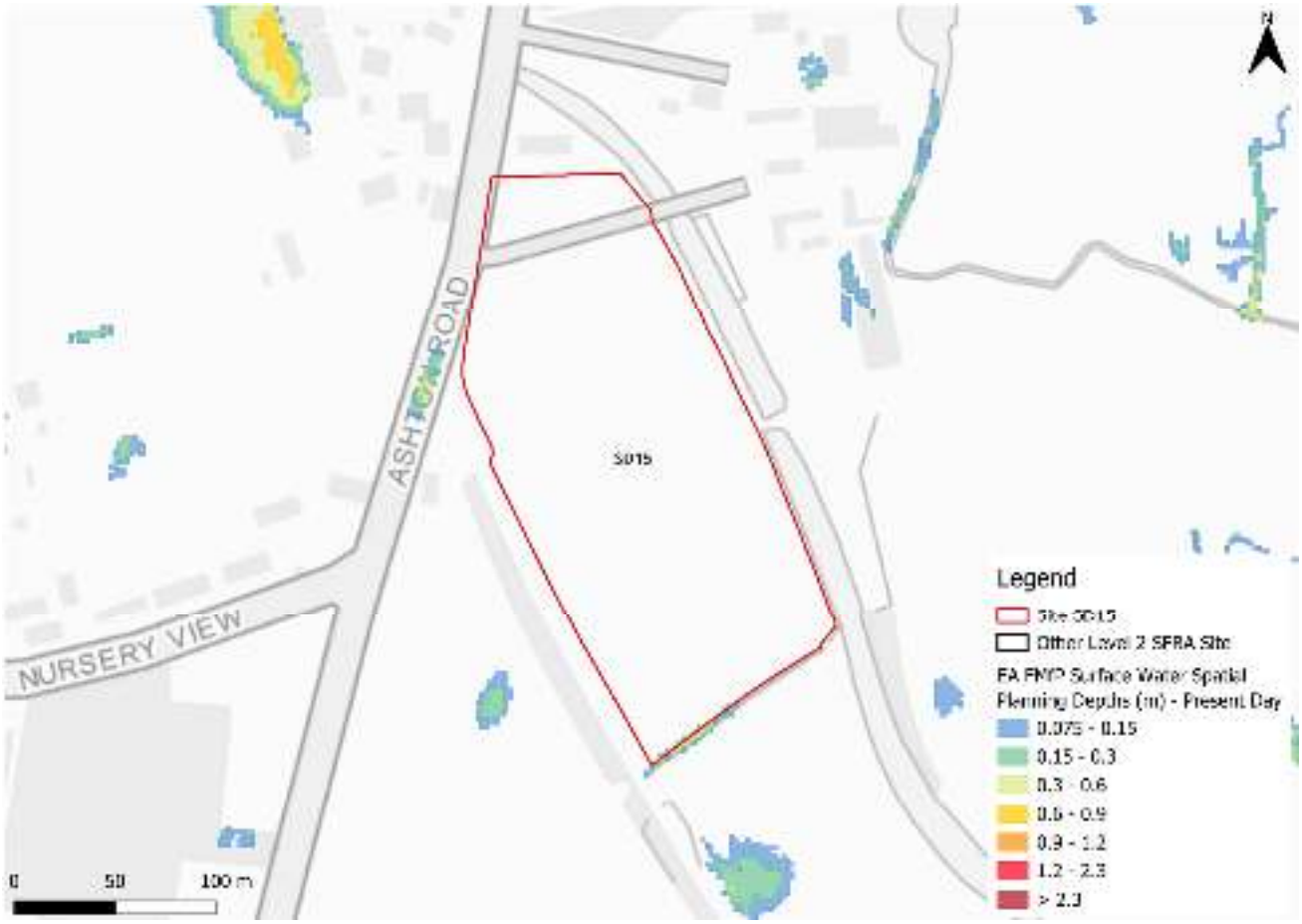

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 1% AEP event flood depths (m)

3.1.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning data does not include hazard information suitable for planning purposes. Therefore, this Level 2 SFRA considers the third generation Risk of Flooding from Surface Water (RoFSW) hazard mapping in addition to the Flood Map for Planning - Surface Water Spatial Planning Extents and Depths Present Day, as the best available information.

The RoFSW map indicates the flow path at the south of the site to be at moderate to significant hazard. Risk mapped to the site does not differ between the Flood Map for Planning - Surface Water Spatial Planning maps and the third generation RoFSW hazard mapping.

Note: the Flood Map for Planning - Surface Water Spatial Planning data does not map flooding less than 0.075m (7.5cm) in depth. Therefore, where the map may show no flooding, there may be shallow flooding up to a depth of 0.075m. In contrast, the third generation RoFSW does not map flooding with a hazard rating of less than 0.575.

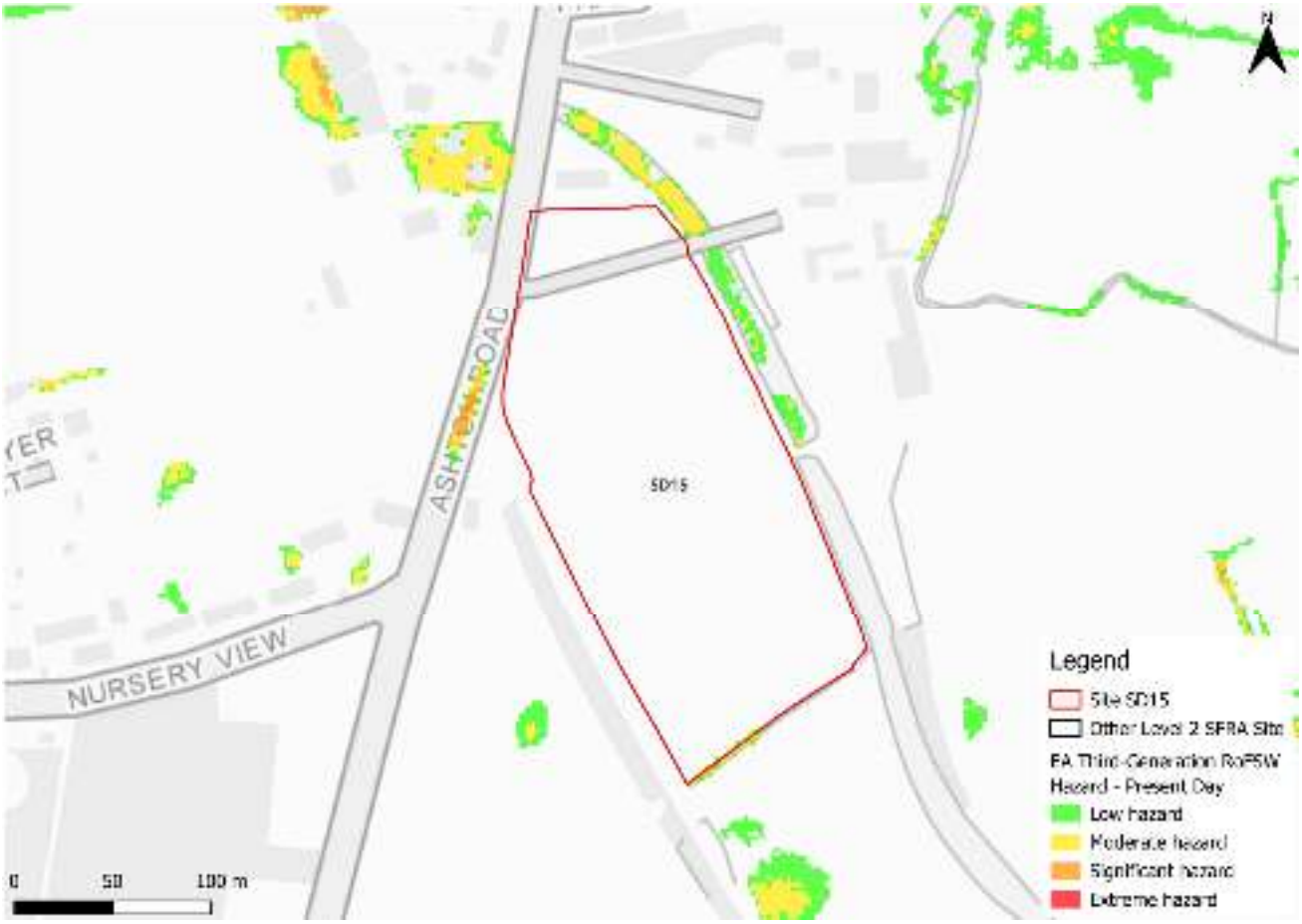

Figure 3-3: Third generation - Risk of Flooding from Surface Water map present day medium risk surface water flood hazard[1]

3.2 Impacts from climate change

3.2.1 Flood Map for Planning - Surface Water Spatial Planning Extents and Depths Climate Change

The EA's climate change allowance guidance states that SFRA's should assess the upper end peak rainfall allowance for the 2070s epoch. This dataset is included in the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Climate Change dataset (May 2026). The peak rainfall intensity allowances for the Gloucestershire and the Vale management catchment are shown in Table 3-2. The allowance for the 0.1% AEP event is not stated in the EA guidance.

1 Based on Section 7.5 Hazard rating. What is the Risk of Flooding from Surface Water map? Report version 2.0. April 2019. Environment Agency.

Table 3-2: Peak rainfall intensity allowances for the Gloucestershire and the Vale Management Catchment

Return period	Central allowance 2070s (% increase)	Upper end allowance 2070s (% increase)
3.3% (high risk)	25	35
1% (medium risk)	25	40

Figure 3-4 shows the surface water flood extents for the 2070s upper end climate change scenario. The site is not shown to be at significant additional risk from surface water climate change. Flood depths along the southern flow path remain between 0.3 and 0.6m (Figure 3-5). In the 0.1% AEP plus climate change event, the area of ponding in the northeast of the site increases in extent, and additional areas of ponding appear in the south of the site.

Safe access and escape routes would likely remain achievable via Ashton Road.

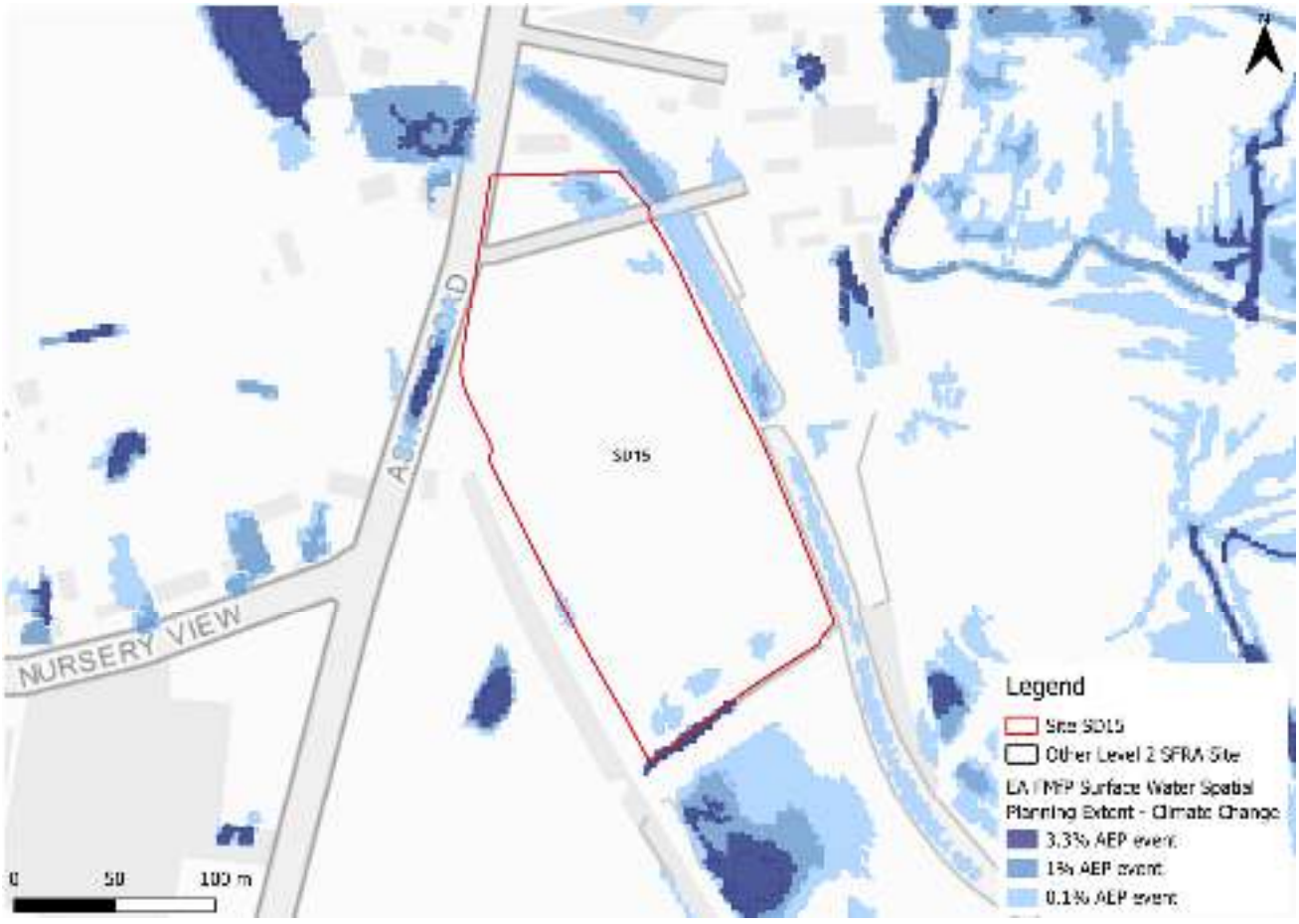

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 1% AEP event flood depths (m)

3.2.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning climate change data does not include hazard information suitable for planning purposes. This Level 2 SFRA therefore considers the RoFSW low risk surface water event as a conservative proxy for the RoFSW medium risk event plus climate change, as the best available information to assess surface water flood hazards (Figure 3-6). The RoFSW map indicates hazard to be 'significant' along the flow path at the south of the site. It also shows a flow path of low hazard in the northwest of the site.

Figure 3-6: Third generation - Risk of Flooding from Surface Water map present day low risk surface water flood hazard as a climate change proxy

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There are no recorded sewer flooding incidents nearby the site, nor within the Siddington & Cerney Rural Ward.

3.4 Observations, mitigation options, site suitability, sequential approach to development management - surface water

- Current risk to the site is predominantly low, with 95% of the site being outside of the 0.1% AEP flood extent.
- Risk to the site is shown to slightly increase in extent within the site when considering the impact of climate change.
- Topographic low spots and flow paths should be considered and included in site design and ideally left in place to flood naturally when required.
- The drainage strategy must ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or betterment should apply. The developer should consult the LLFA and follow local and National SuDS guidance.

- Safe access and escape routes would likely be achievable via Ashton Road in all events.

4 Cumulative impacts assessment and high risk catchments

4.1 Level 1 cumulative impacts assessment

A cumulative impact assessment was completed through the Cotswold Level 1 SFRA (2026), which aimed to identify catchments sensitive to the cumulative impact of new development. This site is located within one catchment, namely, the Churn (Baunton to Cricklade) catchment. This catchment is ranked as a high sensitivity catchment. Planning considerations for all sites can be found in Appendix F of the Level 1 SFRA. Cumulative impacts of development should also be considered as part of a site-specific FRA.

5 Groundwater, geology and SuDS suitability

Risk of groundwater emergence is assessed in this SFRA using JBA's 5m Groundwater Emergence Map. Figure 5-1 shows the map covering this site and the surrounding areas. Table 5-1 explains the risk classifications.

Almost the entire site is within an area where there is a risk of groundwater flooding to both surface and subsurface assets. In this area, groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.

Figure 5-1: JBA 5m Groundwater Emergence Map

Table 5-1: Groundwater Hazard Classification

Groundwater head difference (m)*	Class label
0 to 0.025	Groundwater levels are either at very near (within 0.025m of) the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.
0.025 to 0.5	Groundwater levels are between 0.025m and 0.5m below the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.
0.5 to 5	Groundwater levels are between 0.5m and 5m below the ground surface in the 100-year return period flood event There is a risk of flooding to subsurface assets, but surface manifestation of groundwater is unlikely.
>5	Groundwater levels are at least 5m below the ground surface in the 100-year return period flood event. Flooding from groundwater is not likely.
N/A	No risk. This zone is deemed as having a negligible risk from groundwater flooding due to the nature of the local geological deposits.
*Difference is defined as ground surface in mAOD minus modelled groundwater table in mAOD.	

The underlying bedrock within the site is sandstone, limestone and argillaceous rocks (Figure 5-2). Limestone is generally permeable. The permeability of sandstone varies. Infiltration SuDS at this site may not be an option, though the drainage strategy for the site should fully investigate water table levels through standpipe monitoring during the period of highest groundwater levels e.g. November to April.

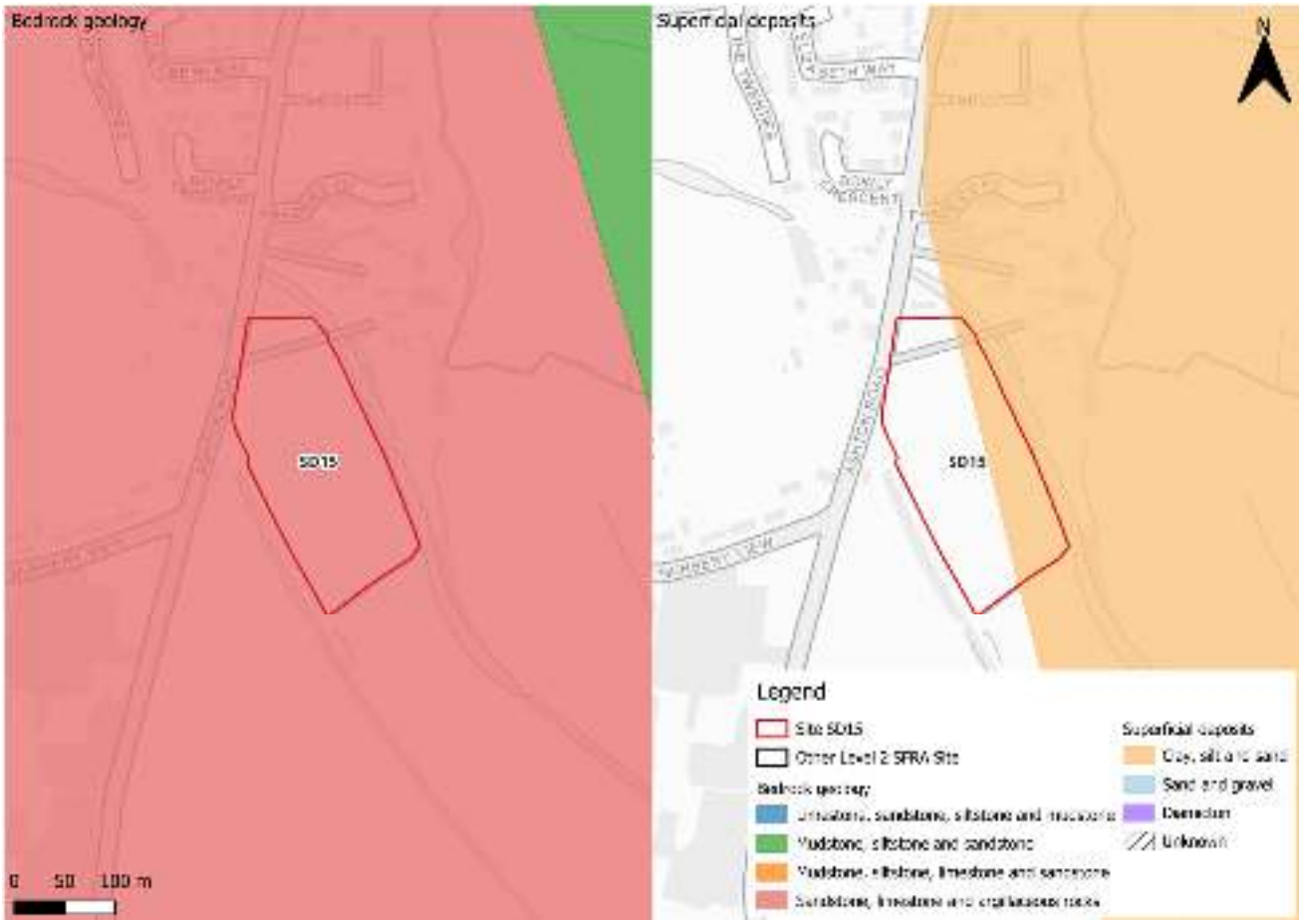

Figure 5-2: BGS Geology - Bedrock and superficial deposits

6 Residual risk

Although a site may be afforded some protection from defences and / or drainage infrastructure, there is always a residual risk of flooding from asset failure i.e. defence breaches, or blockages of culverts or drainage assets.

There does not appear to be any residual risk to the site from asset blockage or defence breach.

6.1 Flood risk from canals

The Thames and Severn Canal runs adjacent to the eastern boundary of the site. Canals are a potential source of residual risk, however the site is situated approximately 1.5m above the level of the canal. Therefore, it is unlikely that a canal breach would impact the site. However, the Cotswold Canals Trust should be consulted at the application stage.

6.2 Flood risk from reservoirs

The EA's Reservoir Flood Maps (RFM) (2021) show where water may go in the unlikely event of a reservoir or dam failure. Figure 6-1 shows the RFM in a 'dry day' and 'wet day' scenario.

The site is potentially at risk from one reservoir in the 'wet day' scenario, namely Cirencester Park - The Mansion Lake reservoir, owned and maintained by Bathurst Estate Farming Limited, located within the Gloucestershire LLFA.

The EA's SFRA guidance states that where a proposed development site is shown to be at potential risk from reservoir failure, then an assessment into whether the reservoir design or maintenance schedule needs improving should be carried out. Expert advice may be required from an all-reservoirs panel engineer. The Council should consult United Utilities to ascertain whether the proposed development could affect the reservoir’s risk designation, it’s design category or how it is operated. The Council, as category 1 responders, can access more detailed information about reservoir risk and reservoir owners using the Resilience Direct system.

Figure 6-1: EA Reservoir Flood Map

..

7 Overall site assessment

7.1 Can part b) of the Exception Test be passed?

This site is not required to pass part b) of the exception test as it is not located within Flood Zone 3a, however it must still be proven that the development can be safe for its lifetime, which is generally considered to be 100 years for residential development.

7.2 Main recommendations and site-specific FRA requirements

Based on the evidence presented in the Level 1 SFRA (2026) and this Level 2 SFRA:

- It should be possible to allocate this site based on its location largely within Flood Zone 1 and very low surface water flood risk.
- A drainage strategy should ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or betterment should apply with consideration of local and national SuDS guidance.
- Groundwater conditions must be investigated further through the site-specific FRA. This should be assessed through standpipe monitoring during the period of highest groundwater levels e.g. November to April.
- Consultation with the relevant reservoir undertaker may be required to assess if the design or maintenance of the reservoir would need improving as a result of new development.
- The site-specific FRA should be carried out in line with the latest versions of the NPPF; FRCC-PPG; EA online guidance; the CDC Local Plan, and national and local SuDS policy and guidelines.
- Throughout the FRA process, consultation should be carried out with, where applicable, the local planning authority; the lead local flood authority; emergency planning officers; the Environment Agency; the water companies; the highways authorities; and the emergency services.

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Cotswold Level 2 Strategic Flood Risk Assessment Site Summary

Site SD17 - Land east of Siddington Road and west of Bluebell Drive

Final Draft Report

Prepared for	Date
Cotswold District Council	August 2026

COTSWOLD
District Council

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Authorised by	Mike Williamson BSc MSc CGeog FRGS EADA Principal Analyst

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Contract

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JBA Project Code	2025s1921

This report describes work commissioned by Cotswold District Council by an instruction dated 28 May 2026. The Client's representative for the contract was Joanne Corbett of Cotswold District Council. Rosie Holmes of JBA Consulting carried out this work.

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The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate.

Acknowledgements

We would like to thank the Environment Agency for their assistance with this work.

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Contents

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1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site SD17. The content of this report assumes the reader has already consulted the 'Cotswold Level 1 SFRA' (2026) and the 'Cotswold Level 2 SFRA Main Report' (2026) and is therefore familiar with the terminology used in this report.

1.1 Site SD17

- Location: Land east of Siddington Road and west of Bluebell Drive (NGR 403439, 200448)
- Existing site use: farmland, open greenspace
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 0.64
- Watercourse: River Churn, unnamed ordinary watercourse
- Environment Agency (EA) flood model: River Churn (Churn (Baunton to Siddington) 2011 model
- Summary of requirements from Level 2 SFRA scoping stage:
    - Assessment of fluvial flood depths, velocities and hazards
    - Assessment of surface water flood extent, depths and hazards
    - Assessment of all other sources of flood risk
    - Assessment of flood risk management measures and natural flood management

Figure 1-1: Site location boundary

Figure 1-2: Topography

The topography of the site slopes from west to east towards the floodplain of the River Churn.

2 Flood risk from rivers

2.1 Existing risk

2.1.1 Flood Map for Planning and functional floodplain

Based on the EA's Flood Map for Planning (accessed May 2026) and Flood Zone 3b (functional floodplain), as updated through the Cotswold Level 1 SFRA, the percentage areas of the site within each flood zone are stated in Table 2-1 and can be viewed on Figure 2-1. The Flood Map for Planning does not consider flood defence infrastructure (Section 2.4).

Nearly half of the site is situated in Flood Zone 1 and therefore is at low risk from flooding from rivers and sea. An area of Flood Zone 2 (53%) extends from the middle to the southern boundary of the site, with a small area to the northern boundary. Part of the functional floodplain crosses the site boundary in the south-eastern corner of the site. There should be no development within the functional floodplain. The functional floodplain in this location is based on the 3.3% AEP defended event of the River Churn (Baunton to Siddington) 2011 model.

Table 2-1: Present day flood risk based on percentage area of site at risk

Flood Zone 1 (% area)	Flood Zone 2 (% area)	Flood Zone 3a (% area)	Flood Zone 3b (% area)
46	53	0	1

Figure 2-1: Present day risk

2.1.2 River Churn (Baunton to Siddington) 2011 model outputs, 1% AEP

Present day risk to the site comes from the River Churn to the east of the site. The 1% AEP undefended event from the River Churn (Baunton to Siddington) 2011 model shows the same extent of flooding to the site as Flood Zone 3a of the Flood Map for Planning (Figure 2-2). The detailed modelling shows that the south-eastern boundary of the site is at risk from the 1% AEP undefended event. Depths are mainly shallow, velocities low (Figure 2-3), and hazards are mainly very low (Figure 2-4).

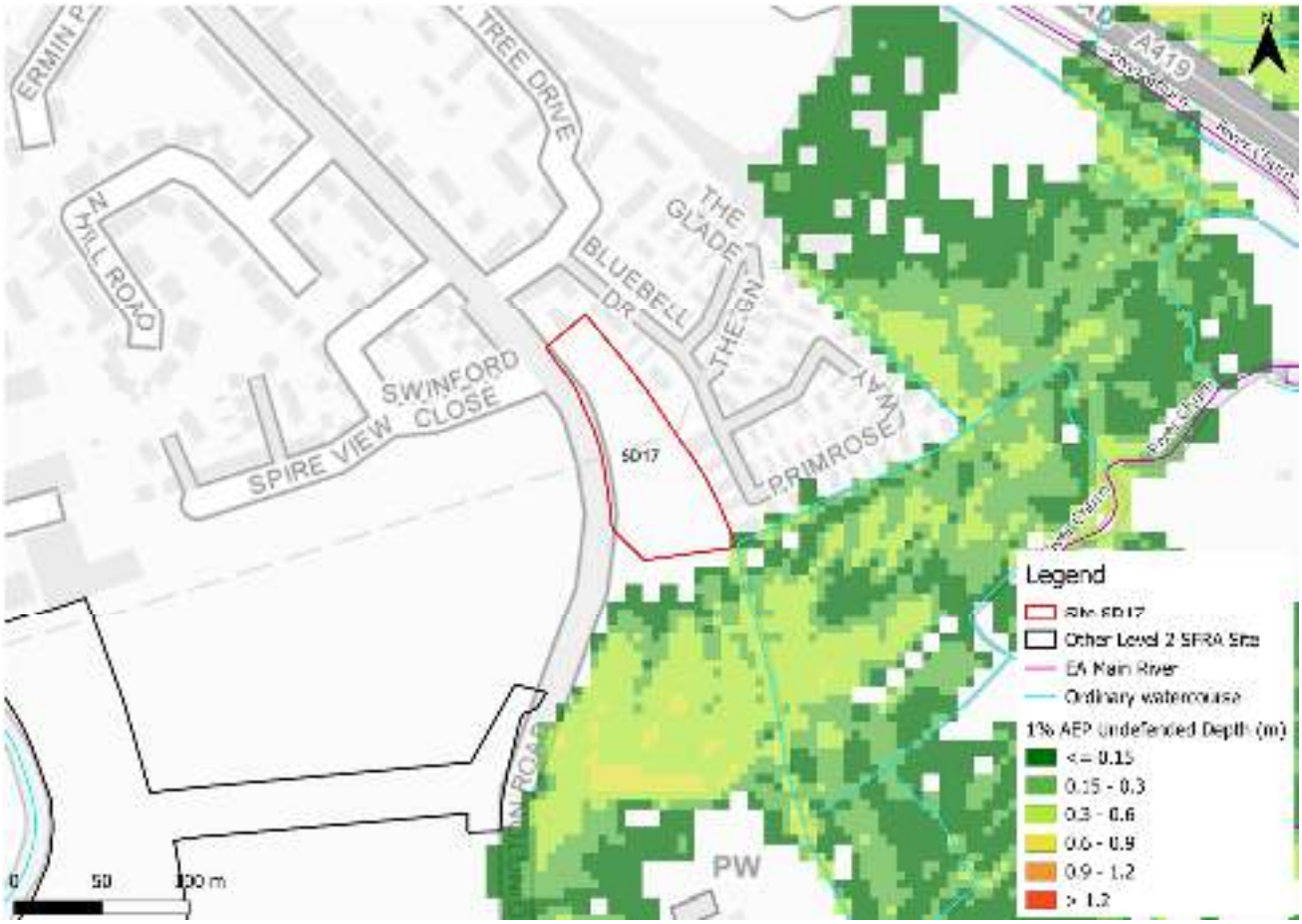

Figure 2-2: Flood depths for the 1% AEP undefended flood event

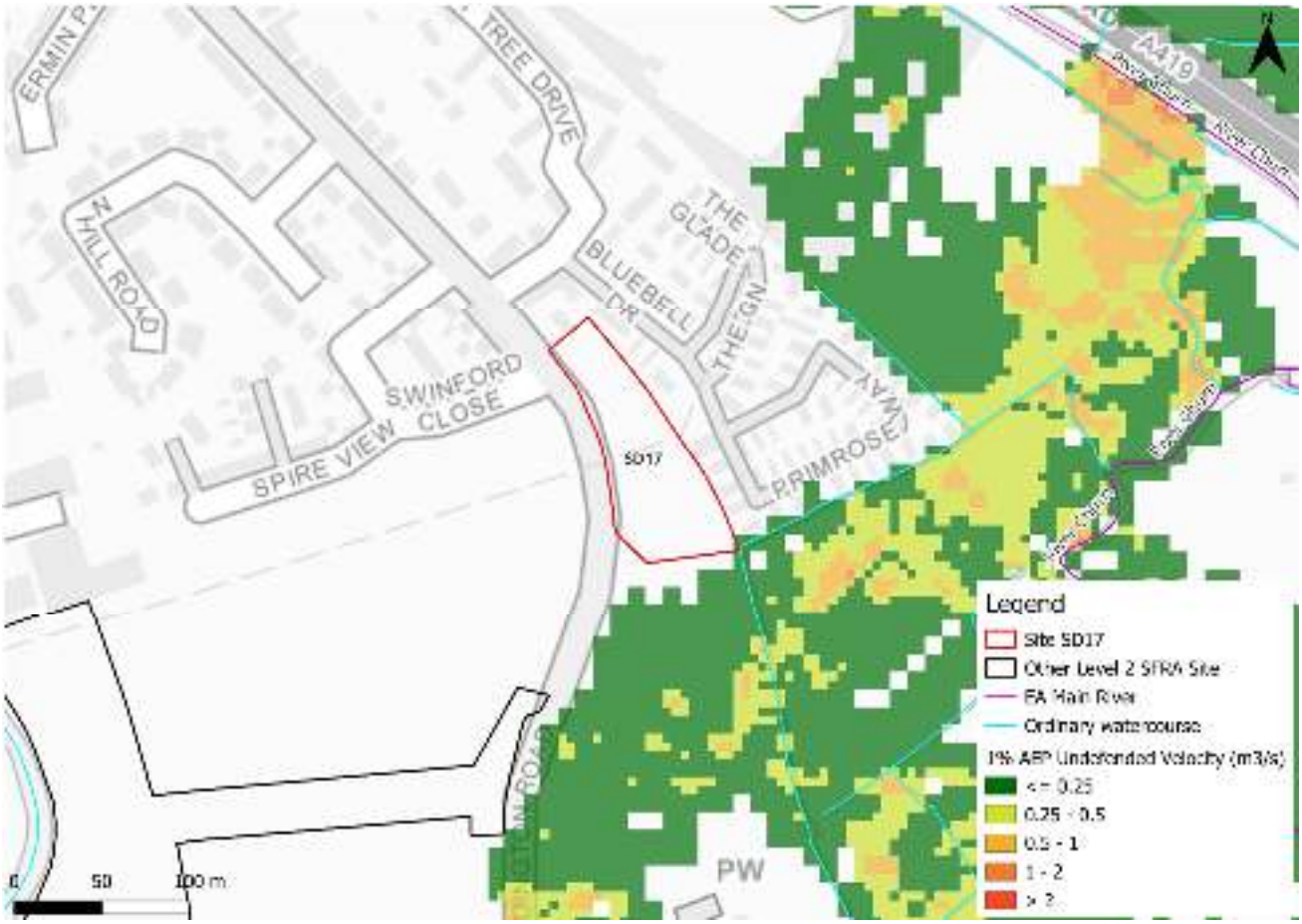

Figure 2-3: Flood velocities for the 1% AEP undefended flood event

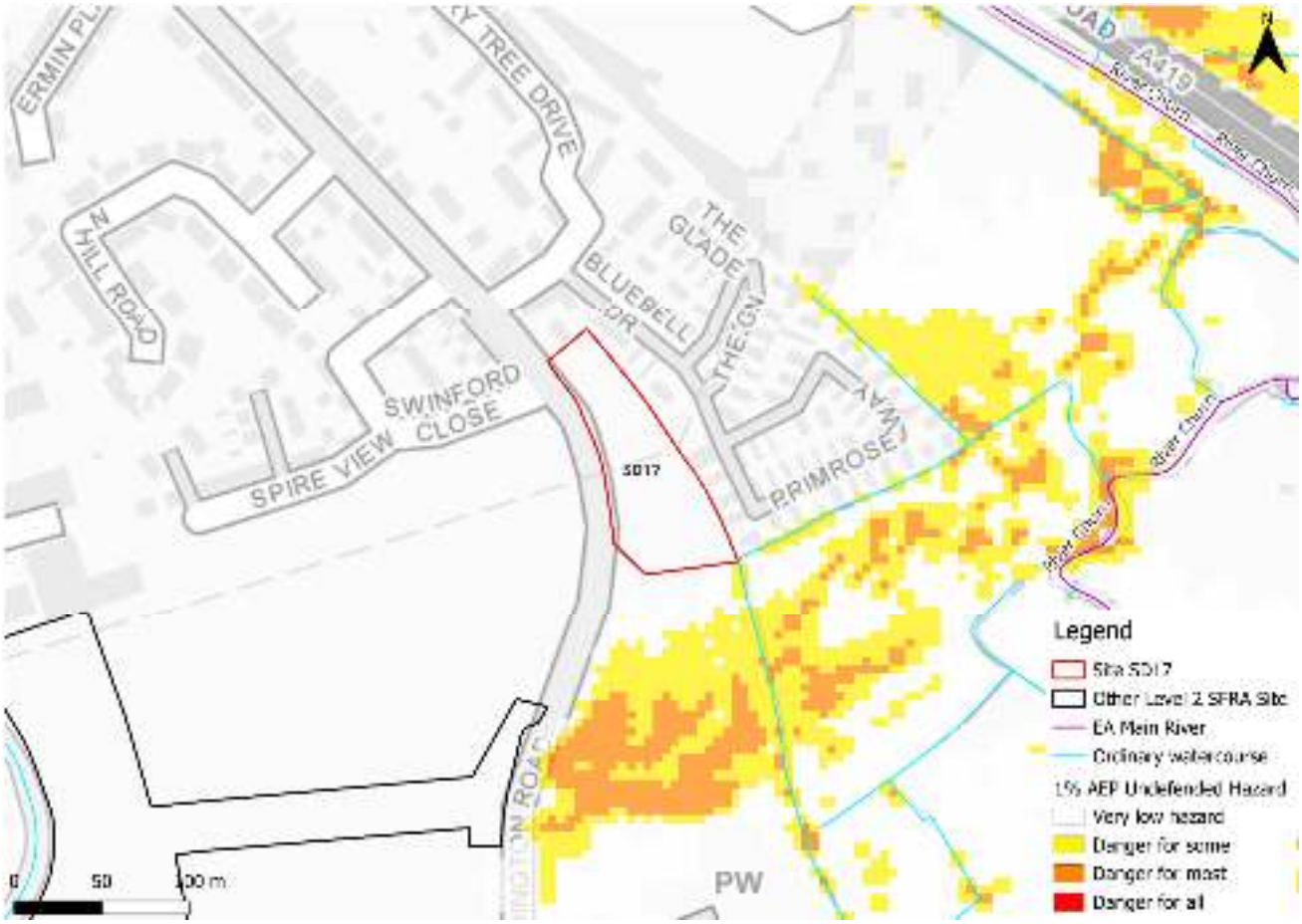

Figure 2-4: Flood hazards for the 1% AEP undefended flood event

2.1.3 River Churn (Baunton to Siddington) 2011 model outputs, 0.1% AEP

The 0.1% AEP undefended event from the River Churn (Baunton to Siddington) 2011 model exhibits a similar flood extent to Flood Zone 2 of the Flood Map for Planning (Figure 2-5). The detailed modelling shows that the southern half of the site is at risk from the 0.1% AEP undefended event. Depths remain mainly shallow, velocities low (Figure 2-6), and hazards are shown to be 'danger for some' (Figure 2-7).

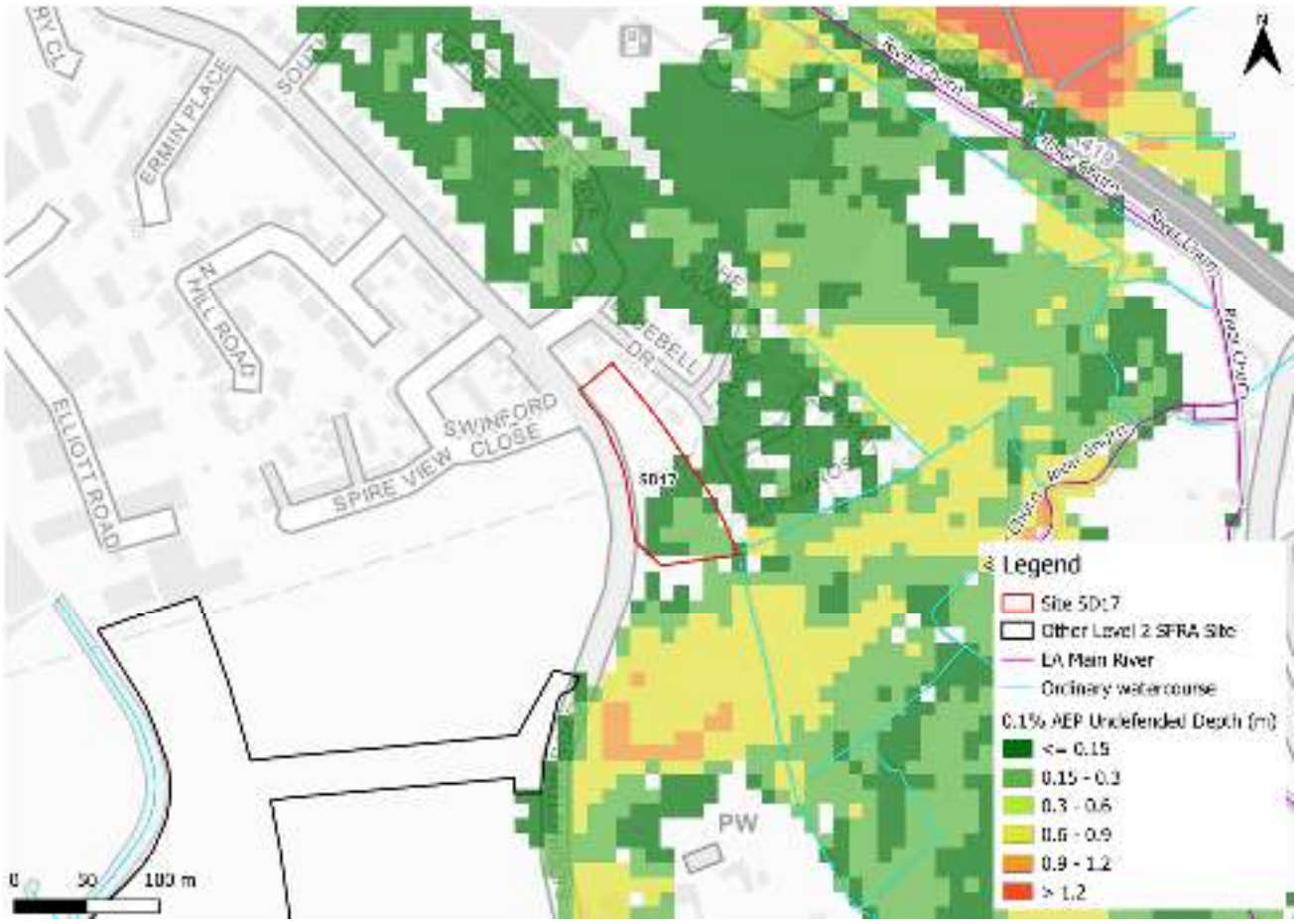

Figure 2-5: Flood depths for the 0.1% AEP undefended flood event

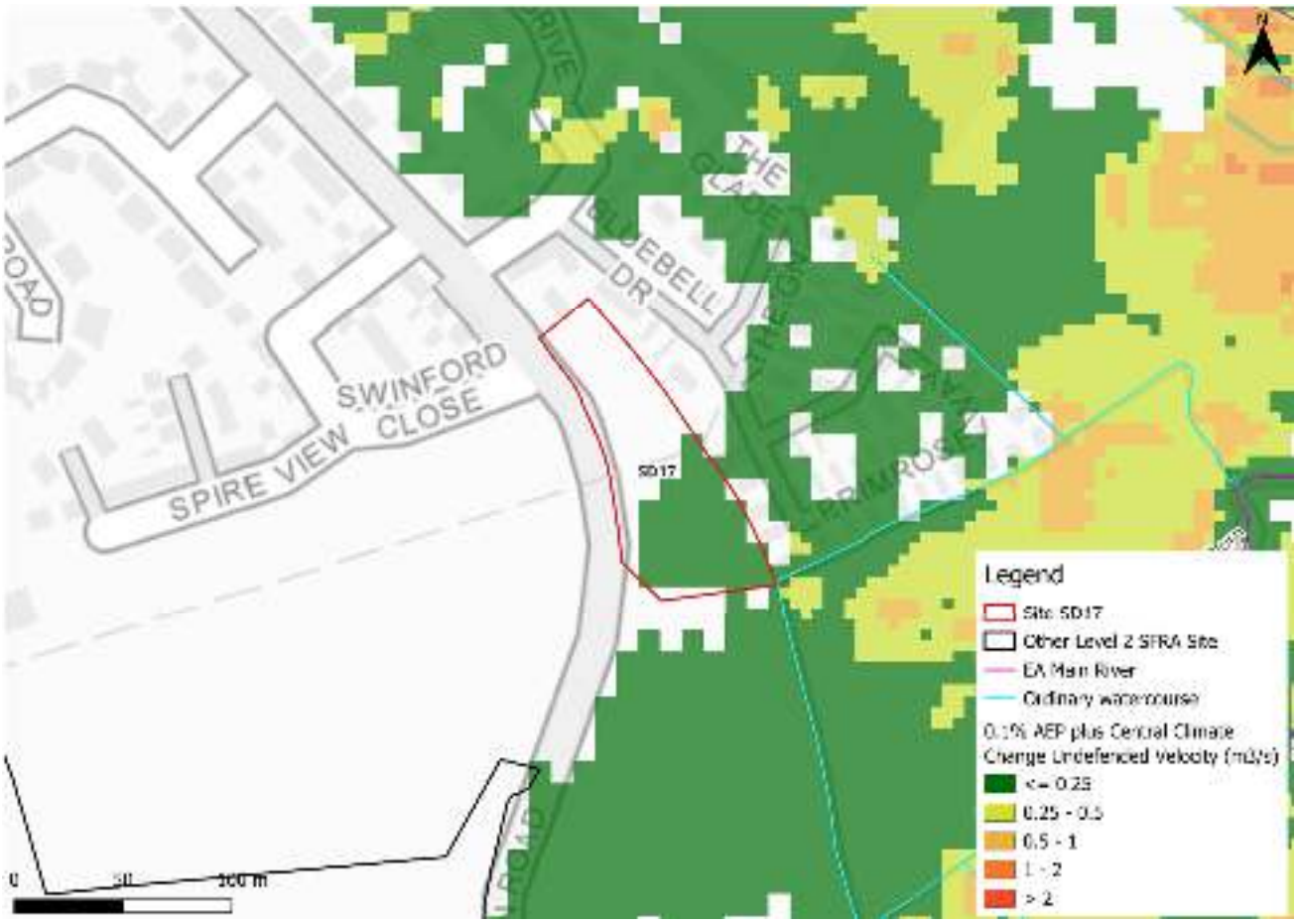

Figure 2-6: Flood velocities for the 0.1% AEP undefended flood event

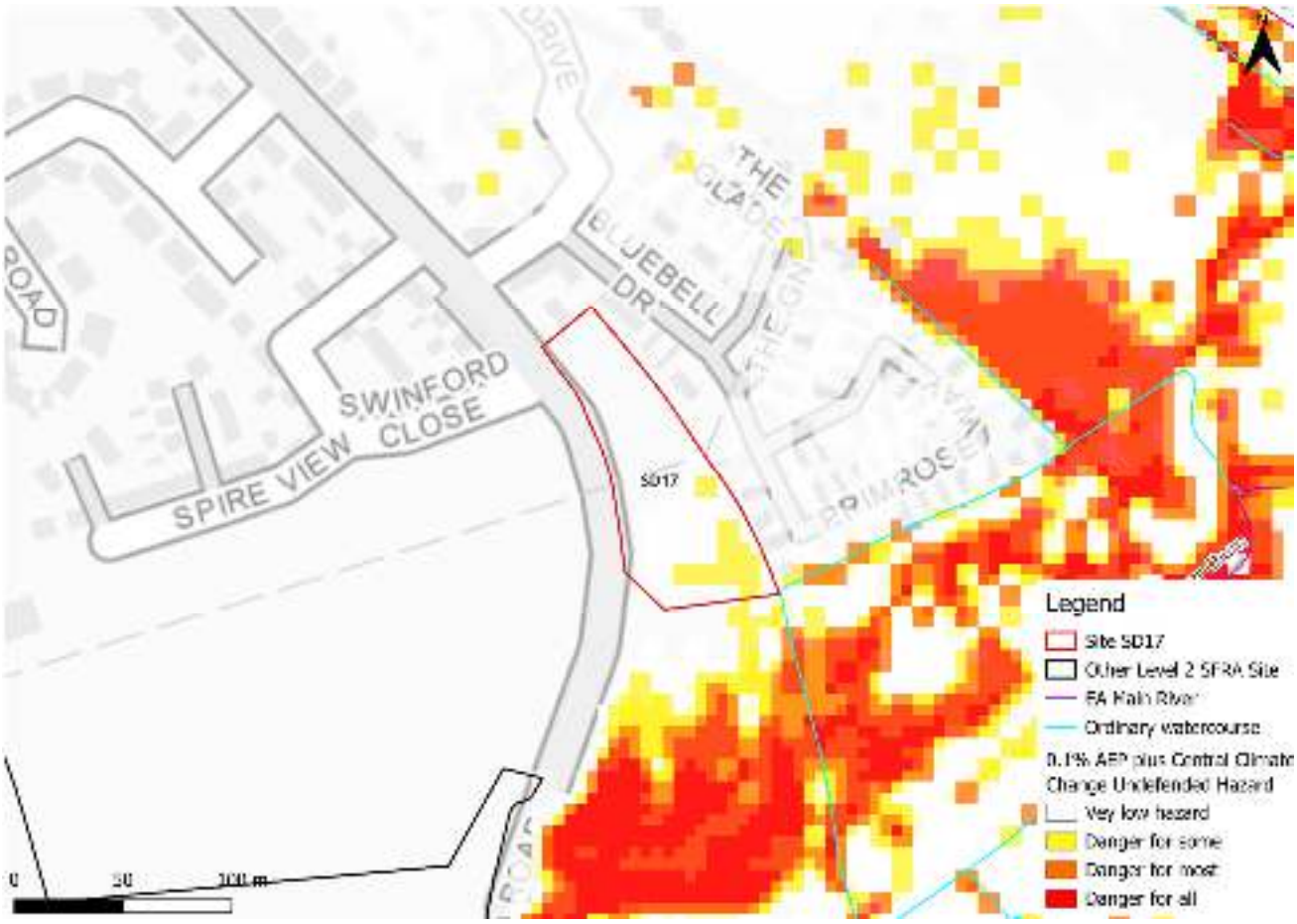

Figure 2-7: Flood hazards for the 0.1% AEP undefended flood event

2.2 Impacts from climate change

2.2.1 River Churn (Baunton to Siddington) 2011 model outputs

The EA's SFRA guidance states that SFRAs should assess the central allowance for the 2080s epoch for peak river flows. The site is located within the Gloucestershire and the Vale Management Catchment. The central allowance within this catchment is 26% on peak flows (Table 2-2). The impacts of climate change on flood risk are included in the model for the 1% AEP undefended event using 30% on peak flows rather than the current central allowance of 26%.

Table 2-2: Modelled climate change allowances for peak river flows within the Gloucestershire and the Vale Management Catchment

Epoch	Central (%)	Higher (%)	Upper (%)
2020s	11	17	33
2050s	11	19	43
2080s	26	41	84

Figure 2-8, Figure 2-9, and Figure 2-10 show the modelled flood depths, velocities, and hazards respectively for the 1% AEP undefended event plus the central allowance for peak river flows. The risk area increases in size, with flood depths increasing to between 0.3 and 0.6 m, with velocities remaining low. Flood hazards are shown to be 'danger for some'.

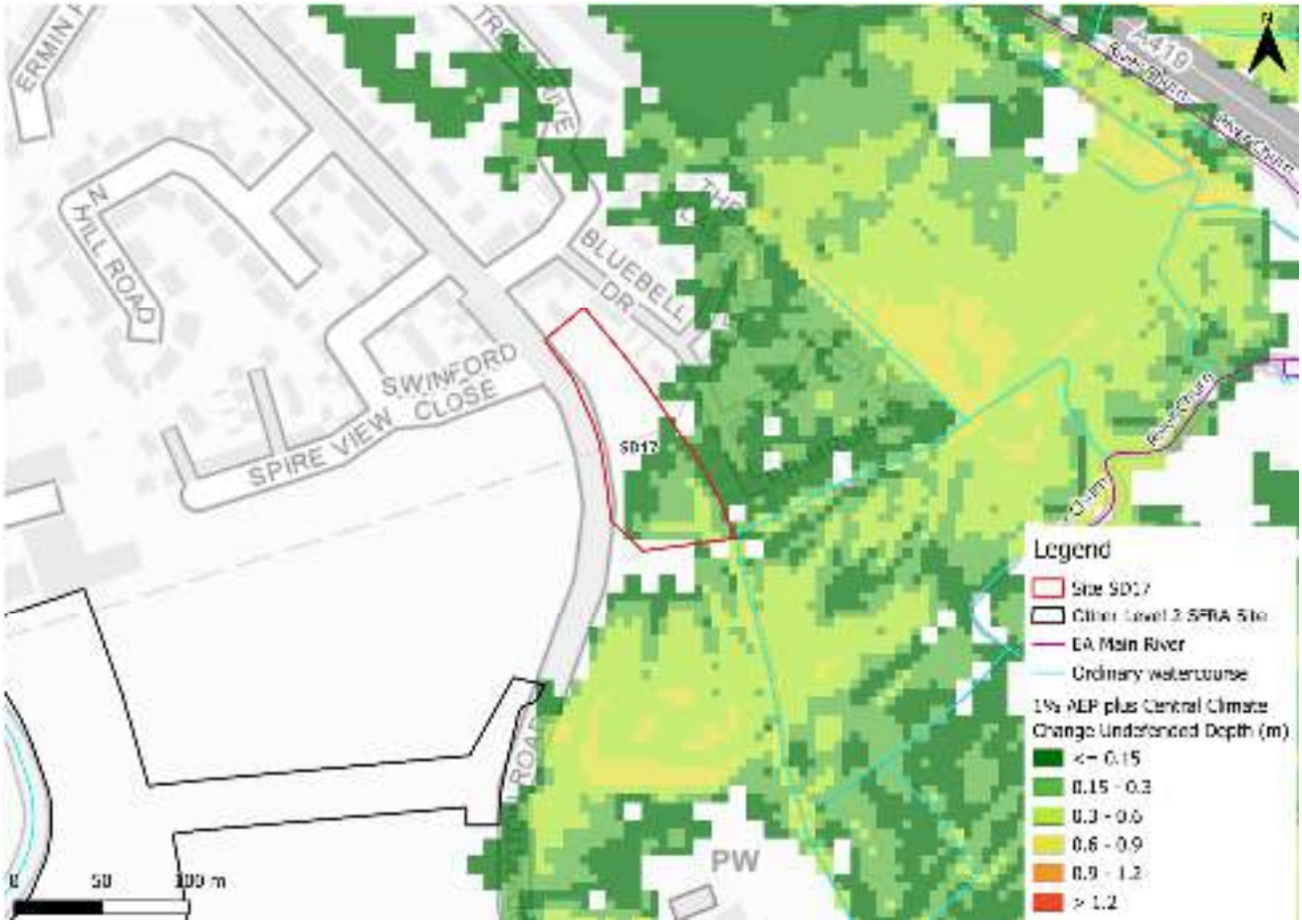

Figure 2-8: Flood depths for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

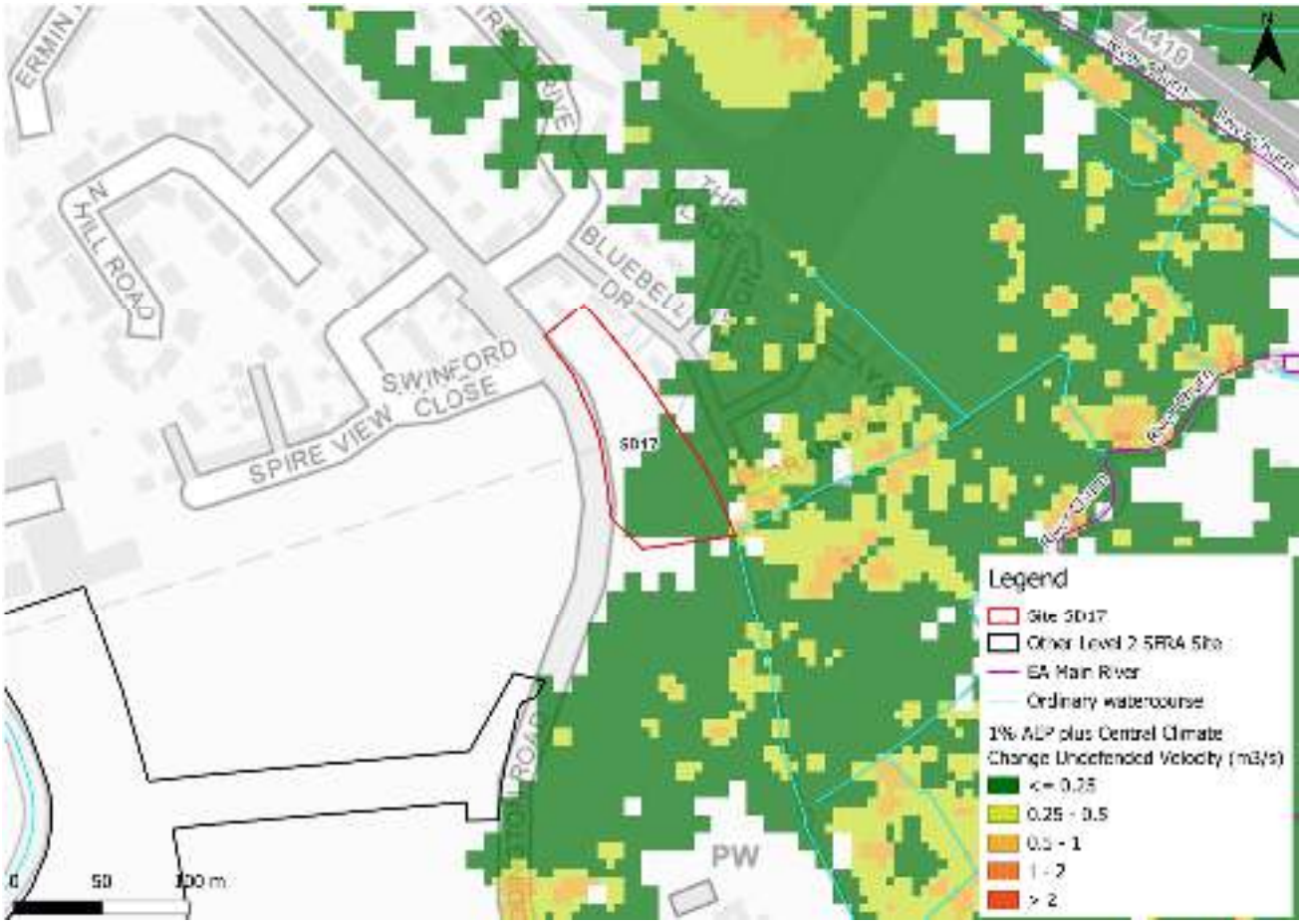

Figure 2-9: Flood velocities for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

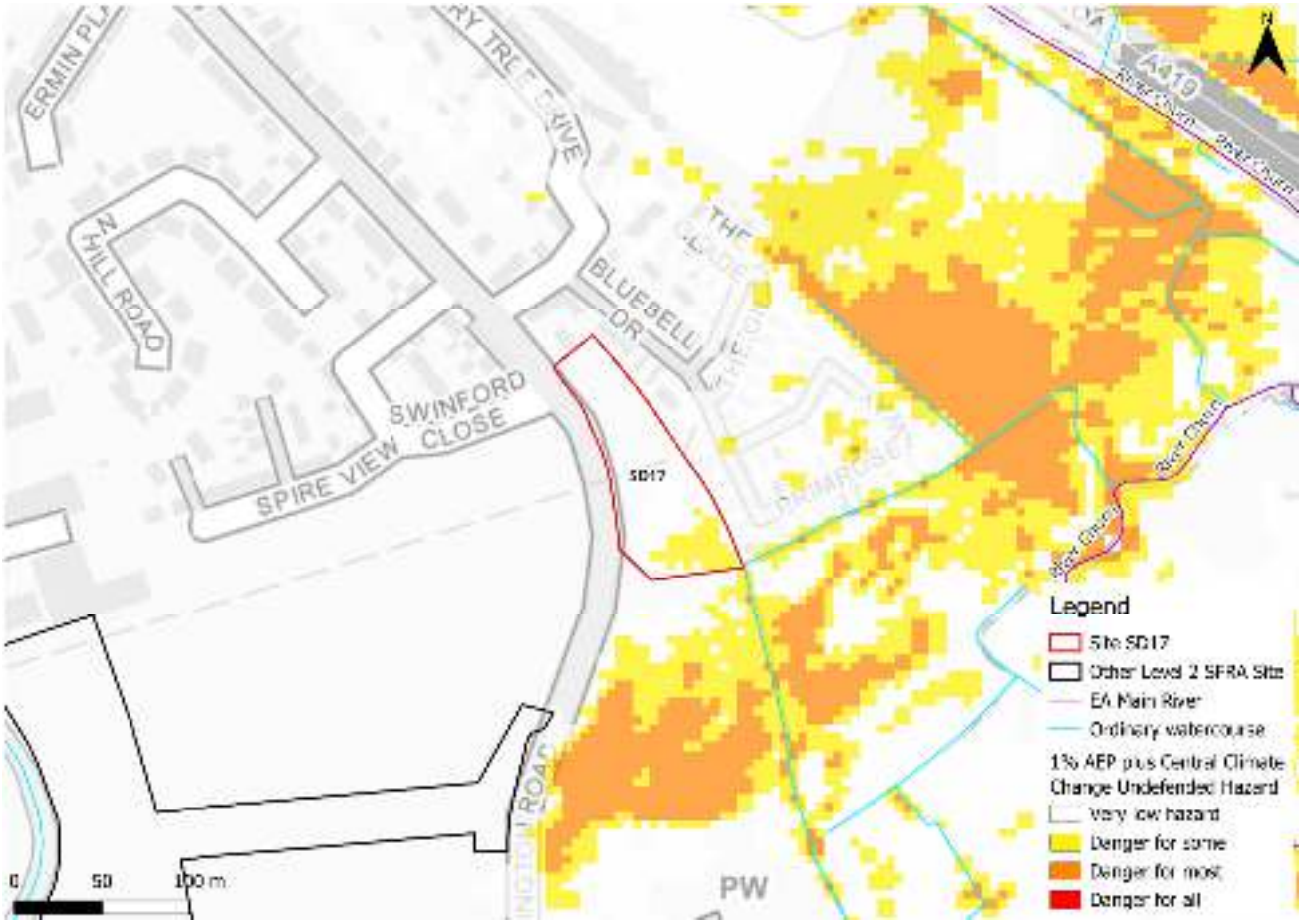

Figure 2-10: Flood hazards for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

2.2.2 Flood Map for Planning - Flood Zones plus Climate Change

Figure 2-11 shows the Flood Map for Planning - Flood Zones plus Climate Change dataset which includes the central allowance for the 2080s epoch. This represents the impact of climate change on Flood Zone 3a and Flood Zone 2 combined. This shows a greater extent of flooding than the modelled event. This is due to the Flood Zones plus Climate Change dataset also including the larger 0.1% AEP event. Therefore, the risk to the site does increase.

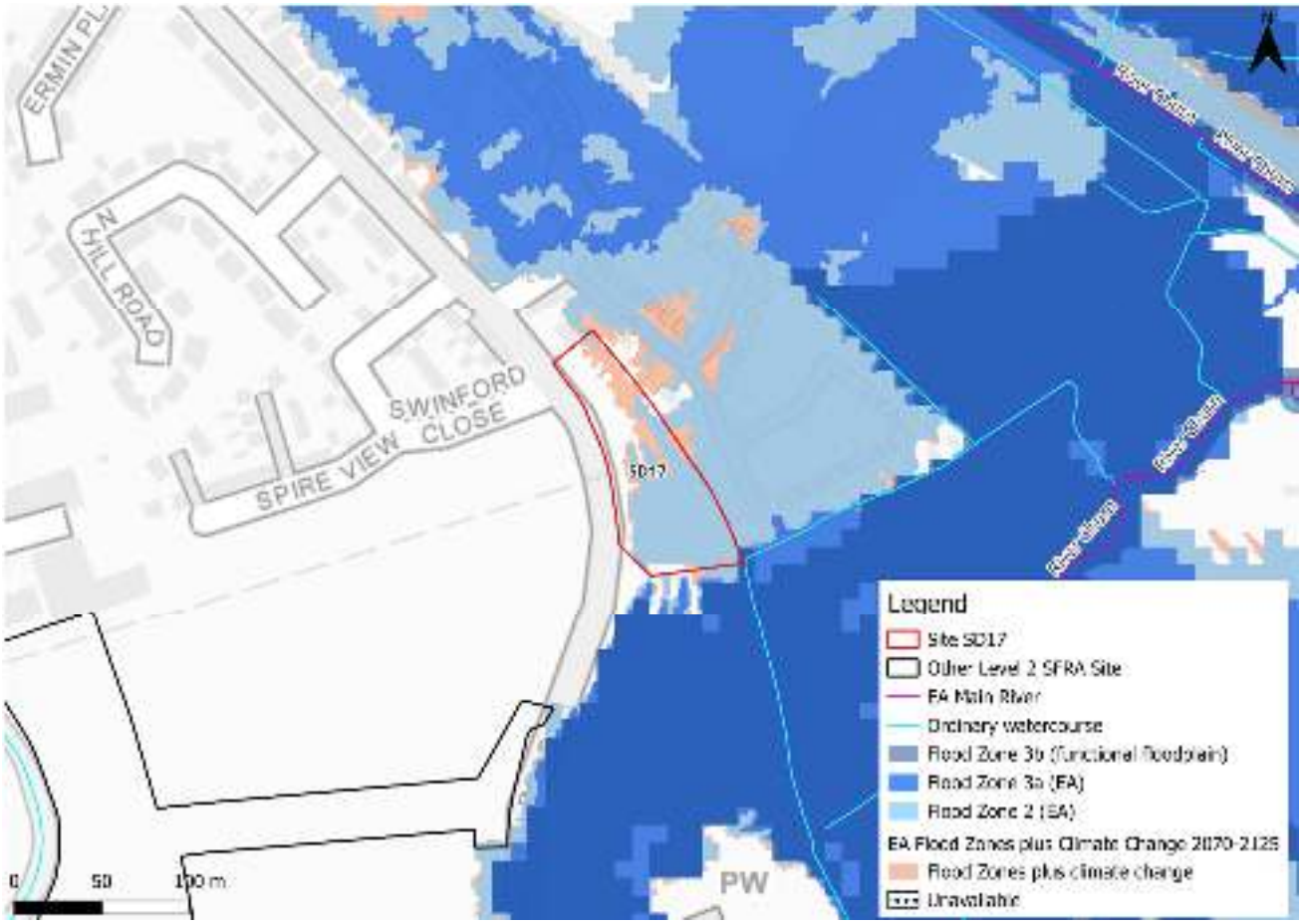

Figure 2-11: EA Flood Zones plus Climate Change

2.3 Historic flood incidents

The EA's Historic Flood Map (HFM) and Recorded Flood Outlines (RFO) datasets have been considered. There are no recorded historic flood events within the vicinity of the site, according to these datasets. The LLFA provided its historic floods register. There have been six recorded flooding incidents within the Siddington and Cerney Rural Ward within which the site is located.

2.4 Flood risk management

2.4.1 Flood defences

The site does not benefit from any formal engineered flood defences, according to the EA's spatial flood defences dataset.

2.4.2 Working with Natural Processes

The EA's Working with Natural Processes (WwNP) dataset has been interrogated to identify opportunities for Natural Flood Management (NFM) to reduce flood risk to the site and surrounding areas. Figure 2-12 shows that the site and wider area could benefit from riparian, floodplain, and wider catchment tree planting. Tree planting can help to slow the

flow to benefit areas downstream. There is also potential for runoff attenuation. The WwNP mapping is broadscale and indicative. Further investigation is required for any land shown to have potential for WwNP.

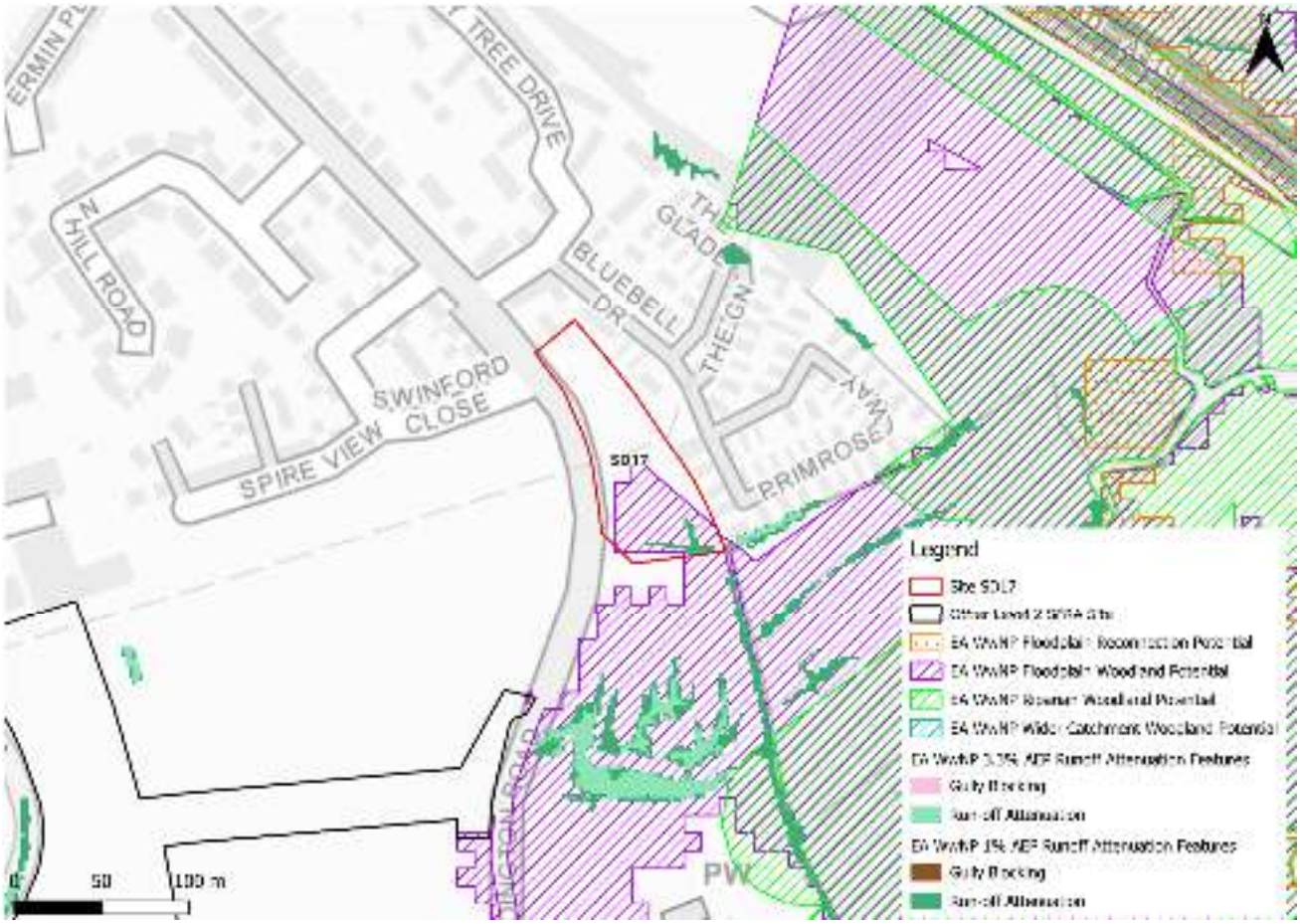

Figure 2-12: Working with Natural Processes

2.5 Emergency planning

2.5.1 Flood warning and alerts

The EA operates a Flood Warning Service for properties located within a Flood Warning Area (FWA) for when a flood event is expected to occur. The majority of the area at risk from fluvial climate change is included within a FWA, namely 061FWF02Cirncstr - River Churn from Baunton to Siddington including Cirencester, as shown in Figure 2-13.

Flood alerts may be issued before a flood warning for properties located within a Flood Alert Area (FAA) to provide advance notice of the possibility of flooding. A flood alert may be issued when there is less confidence that flooding will occur in a FWA. The majority of the area at risk from fluvial climate change is included within a FAA, namely 061WAF02Churn - River Churn and its tributaries, as shown in Figure 2-13.

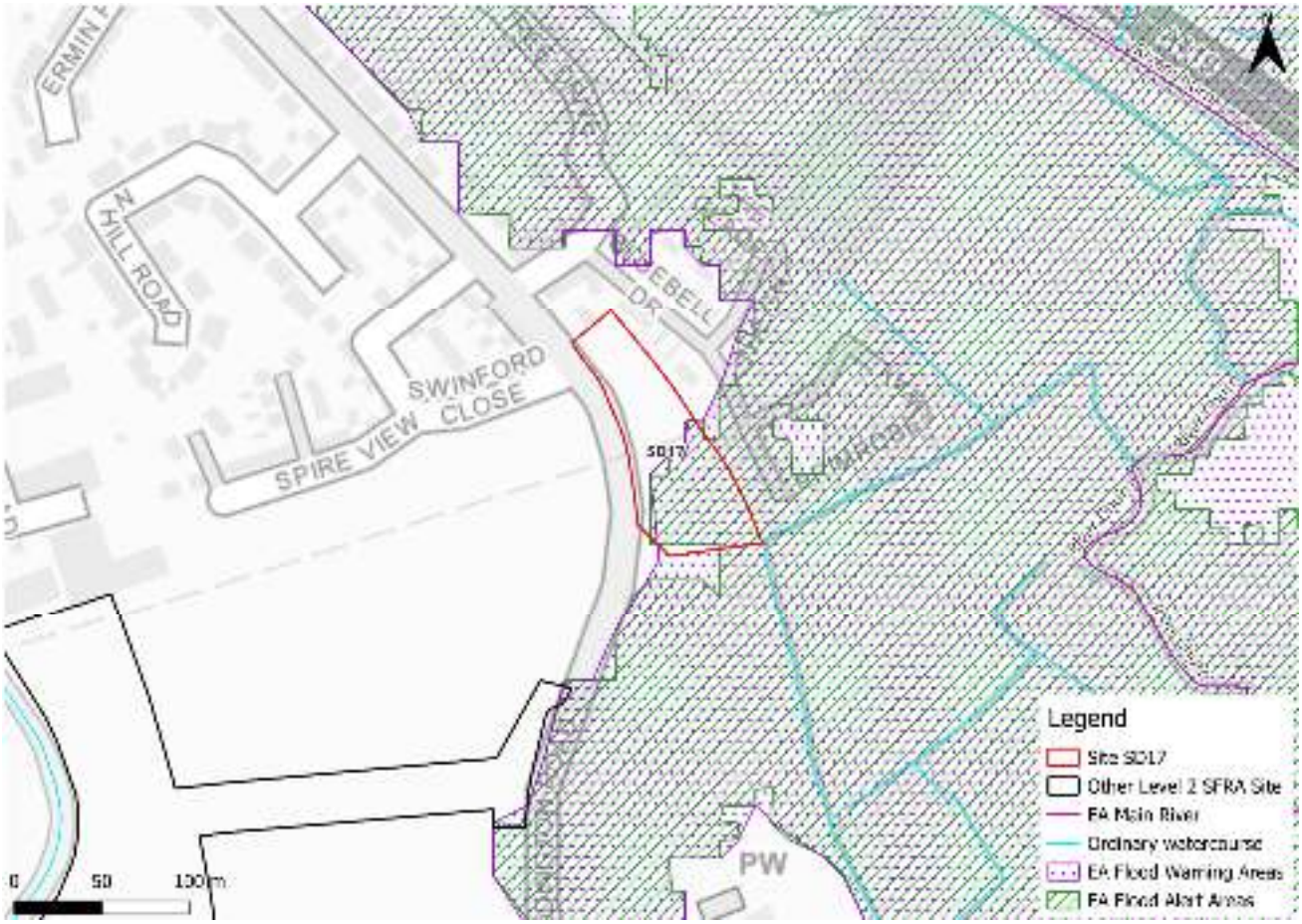

Figure 2-13: Flood warnings and alerts

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes could likely be achieved during a flood event via the west of the site via Siddington Road (Figure 2-14).

Figure 2-14: Potential access and escape routes

2.6 Observations, mitigation options, site suitability, sequential approach to development management - fluvial

- Observations:
  - Just under half of the site is located within Flood Zone 1 and therefore at low risk from rivers. However, 53% of the site is within Flood Zone 2. Modelled depths are however shallow and hazards mainly very low with some danger for some.
  - Local modelling shows the site is at additional risk from climate change.
  - Risk from the ordinary watercourse is currently unknown though may be included in the risk from the River Churn.
- Mitigation:
  - The area of the site within the functional floodplain should not be developed and should remain as open greenspace. More vulnerable development should be directed to Flood Zone 1 whilst also accounting for the impacts of climate change. Ideally, the areas at modelled risk from climate change would remain as open green space, providing a flood storage function as well as providing Biodiversity Net Gain (BNG), ecological, amenity, social, and wellbeing benefits.

- Were development in the risk area to be considered, land raising may be an option. However, compensatory storage would be required onsite or nearby, whilst ensuring there is no detriment to existing development or infrastructure.
- Risk from the ordinary watercourse must be assessed and quantified at the FRA stage.
- EA flood warnings and alerts should continue to be in place to ensure early evacuation of site users before an extreme flood event occurs.

- Access and escape:
  - Based on current information, safe access and escape routes appear achievable via Siddington Road to the west of the site.

3 Flood risk from surface water

3.1 Existing risk

3.1.1 Flood Map for Planning - Surface Water Spatial Planning Extents and Depths Present Day

Based on the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Extents Present Day maps (May 2026), the site is predominantly at low risk of surface water flooding as shown in Table 3-1 and Figure 3-1 and the depth map in Figure 3-2. There is a flow path in the south of the site of shallow flood depths <0.3m.

Safe access and escape routes are achievable via Siddington Road to the west of the site in all events.

Table 3-1: Existing surface water flood risk based on percentage area at risk based on the Flood Map for Planning - Surface Water Spatial Planning dataset

Less than 0.1% AEP event (% area)	0.1% AEP event (% area)	1% AEP event (% area)	3.3% AEP event (% area)
92	6	2	0

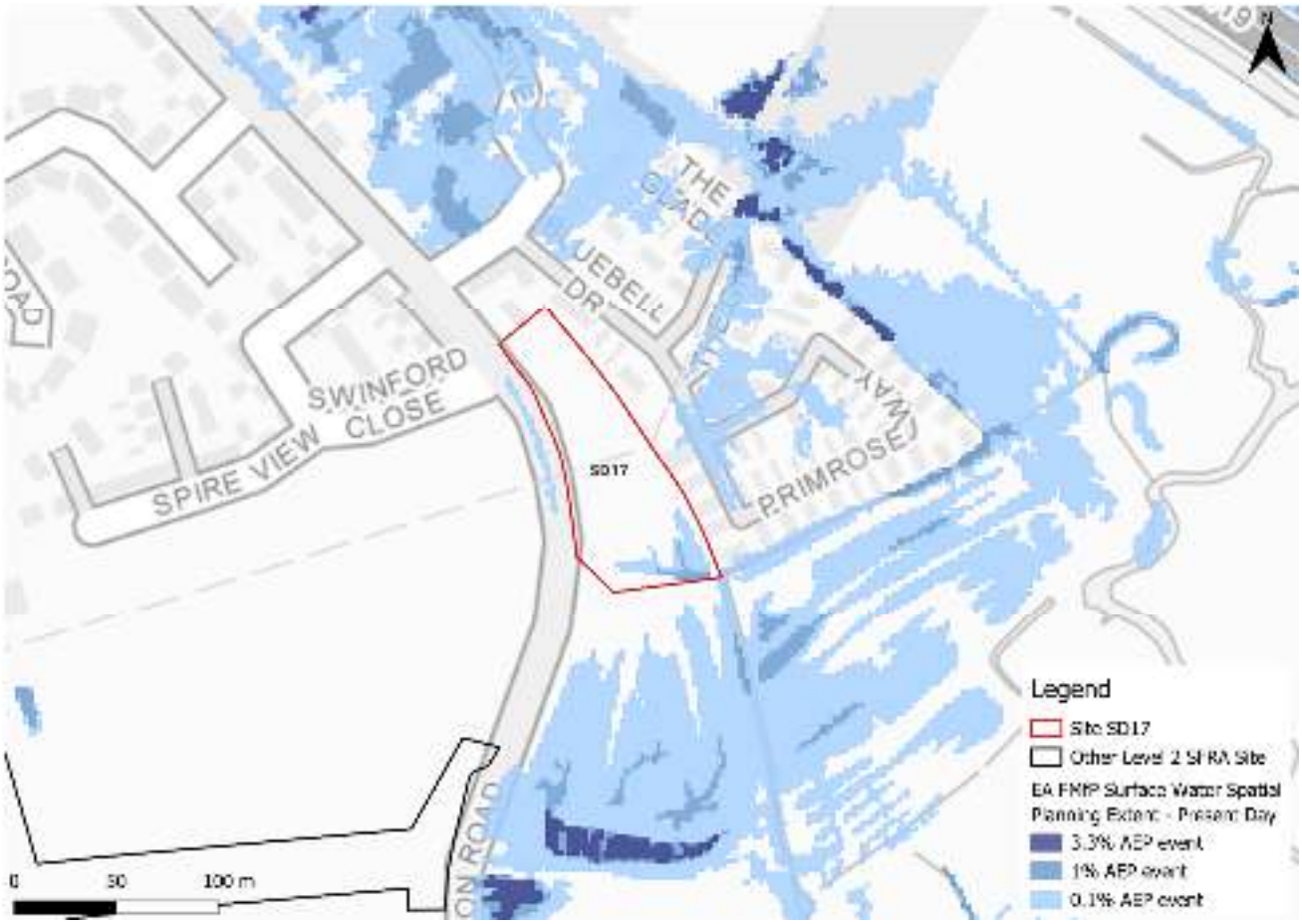

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

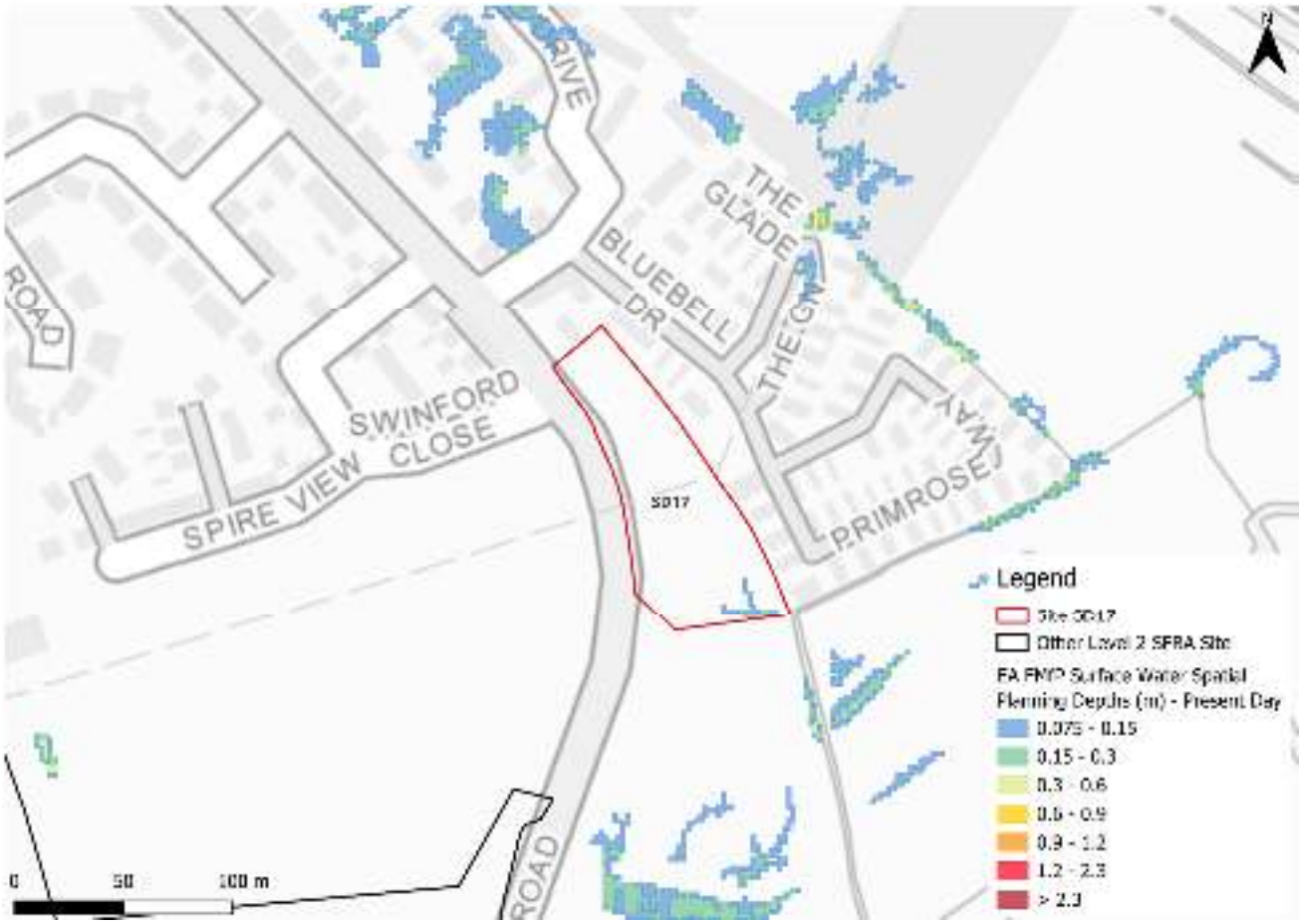

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 1% AEP event flood depths (m)

3.1.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning data does not include hazard information suitable for planning purposes. Therefore, this Level 2 SFRA considers the third generation Risk of Flooding from Surface Water (RoFSW) hazard mapping in addition to the Flood Map for Planning - Surface Water Spatial Planning extents and depths, as the best available information.

The RoFSW map shows there to be areas of low to moderate flood hazard in the south of the site and along the southern site boundary (Figure 3-3).

Note: the Flood Map for Planning - Surface Water Spatial Planning data does not map flooding less than 0.075m (7.5cm) in depth. Therefore, where the map may show no flooding, there may be shallow flooding up to a depth of 0.075m. In contrast, the third generation RoFSW does not map flooding with a hazard rating of less than 0.575.

Figure 3-3: Third generation - Risk of Flooding from Surface Water map present day medium risk surface water flood hazard[1]

3.2 Impacts from climate change

3.2.1 Flood Map for Planning - Surface Water Spatial Planning extents and depths

The EA's climate change allowance guidance states that SFRA's should assess the upper end peak rainfall allowance for the 2070s epoch. This dataset is now included in the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Climate Change dataset (May 2026). The peak rainfall intensity allowances for the Gloucestershire and the Vale management catchment are shown in

1 Based on Section 7.5 Hazard rating. What is the Risk of Flooding from Surface Water map? Report version 2.0. April 2019. Environment Agency.

Table 3-2. The allowance for the 0.1% AEP event is not stated in the EA guidance.

Table 3-2: Peak rainfall intensity allowances for the Gloucestershire and the Vale Management Catchment

Return period	Central allowance 2070s (% increase)	Upper end allowance 2070s (% increase)
3.3%	25	35
1%	25	40

Figure 3-4 shows the surface water flood extents for the 2070s upper end climate change scenario. The site is shown to be at additional risk from surface water climate change, mainly in the low risk event. There are additional areas of ponding in the low-risk event, and the flow path in the south of the site increases in size and risk.

Flood depths are mainly shallow, with only a small area between 0.15m - 0.3m deep (Figure 3-5). Safe access and escape routes would likely remain achievable via Siddington Road to the west of the site.

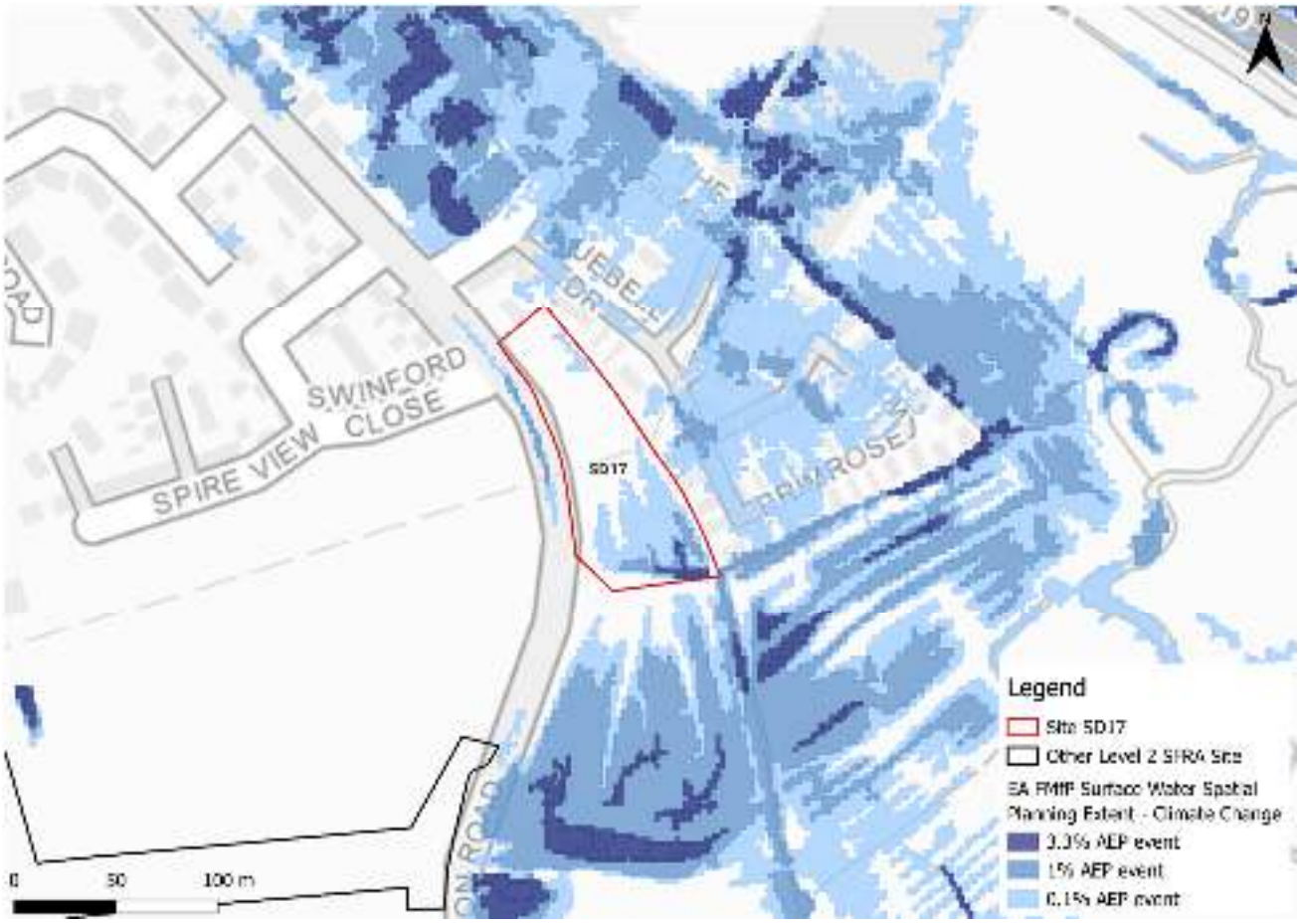

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

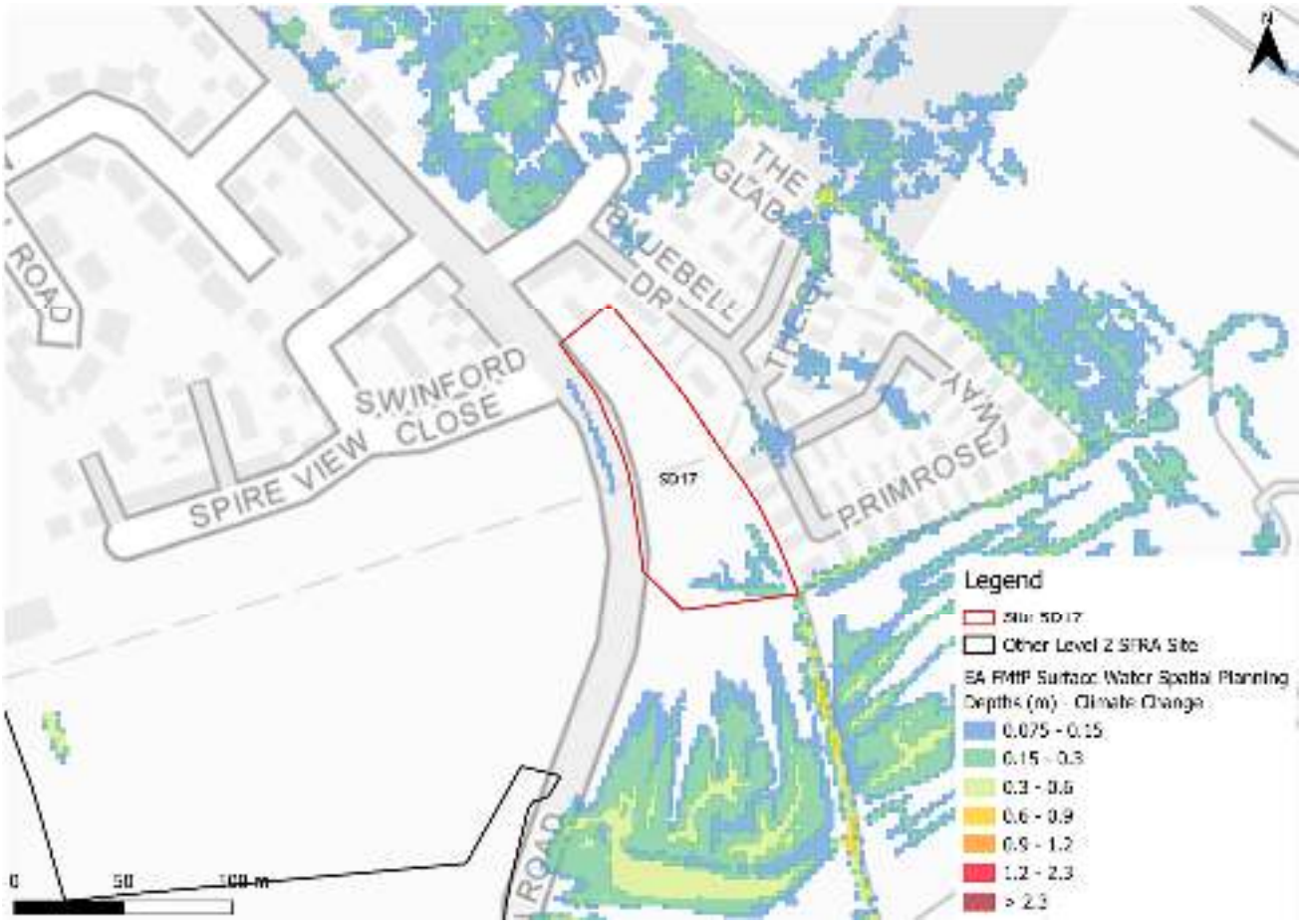

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 1% AEP event flood depths (m)

3.2.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning climate change data does not include hazard information suitable for planning purposes. This Level 2 SFRA therefore considers the RoFSW low-risk surface water event as a conservative proxy for the RoFSW medium risk event plus climate change, as the best available information to assess surface water flood hazards (Figure 3-6).

The impact of climate change on surface water flood hazards should be considered at the site-specific FRA stage.

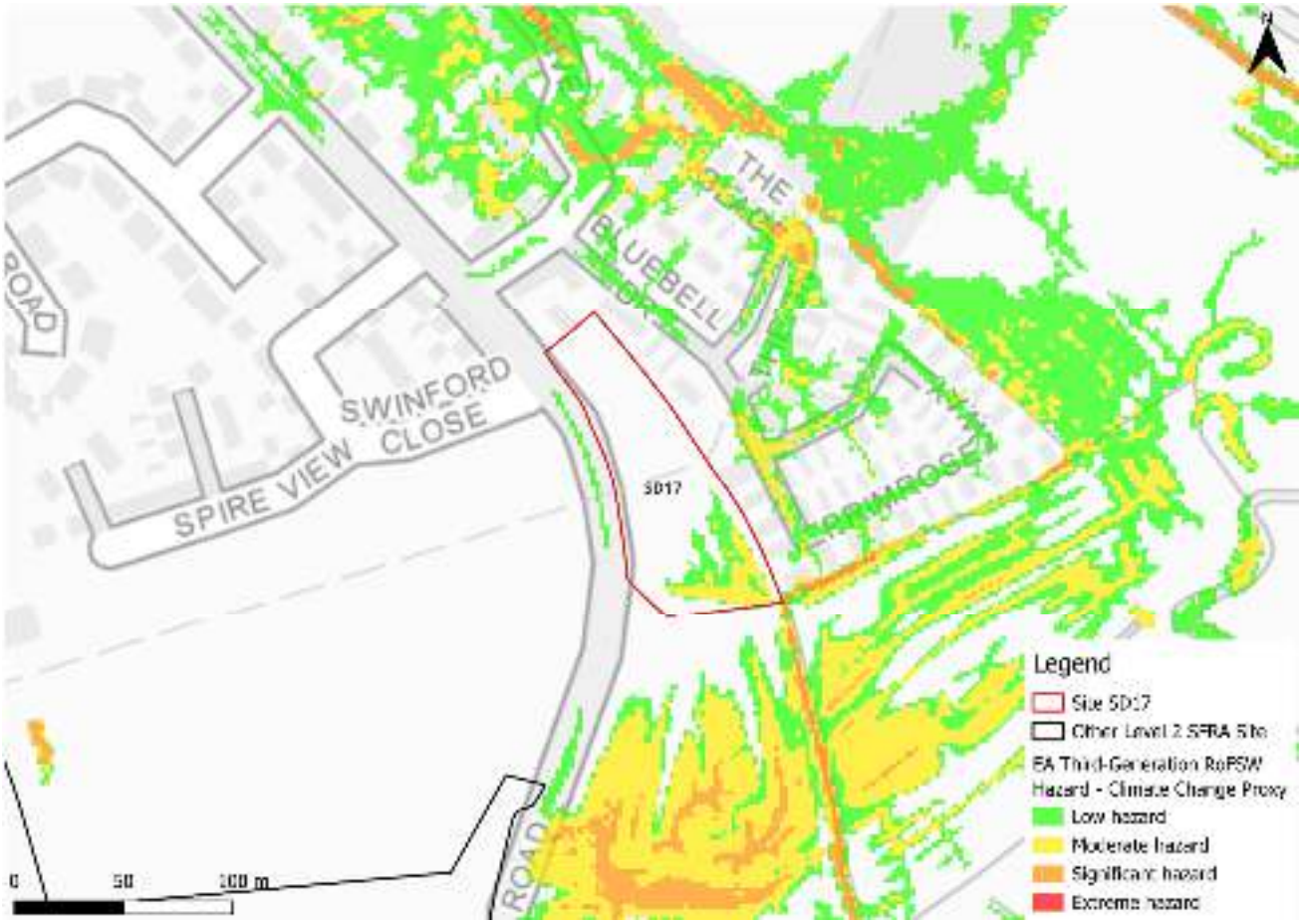

Figure 3-6: Third generation - Risk of Flooding from Surface Water map present day low risk surface water flood hazard as a climate change proxy

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There are no recorded sewer flooding incidents nearby the site nor within the Siddington & Cerney Rural Ward.

3.4 Observations, mitigation options, site suitability, sequential approach to development management - surface water

- Current risk to the site is predominantly very low, with 92% of the site being at very low surface water flood risk.
- Risk to the site is shown to slightly increase in extent within the site when considering the impact of climate change. The surface water risk area is generally within the fluvial risk area and should be managed through any mitigation measures used to manage the fluvial risk.
- Topographic low spots and flow paths should be considered and included in site design and ideally left in place to flood naturally when required.
- The drainage strategy must ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or

betterment should apply. The developer should consult the LLFA and follow local and National SuDS guidance.

- Safe access and escape routes would likely be achievable via Siddington Road to the west of the site.

4 Cumulative impacts assessment and high risk catchments

4.1 Level 1 cumulative impacts assessment

A cumulative impact assessment was completed through the Cotswold Level 1 SFRA (2026), which aimed to identify catchments sensitive to the cumulative impact of new development. This site is located within one catchment, namely, the Churn (Baunton to Cricklade) catchment. This catchment is ranked as a high sensitivity catchment. Planning considerations for all sites can be found in Appendix F of the Level 1 SFRA. Cumulative impacts of development should also be considered as part of a site-specific FRA.

5 Groundwater, geology and SuDS suitability

Risk of groundwater emergence is assessed in this SFRA using JBA's 5m Groundwater Emergence Map. Figure 5-1 shows the map covering this site and the surrounding areas. Table 5-1 explains the risk classifications. The map shows there is a risk of groundwater emergence to both surface and subsurface assets in the southwestern half of the site. Groundwater may emerge at significant rates in this area and has the capacity to flow overland and/or pond within any topographic low spots. The northeastern half of the site is not at risk.

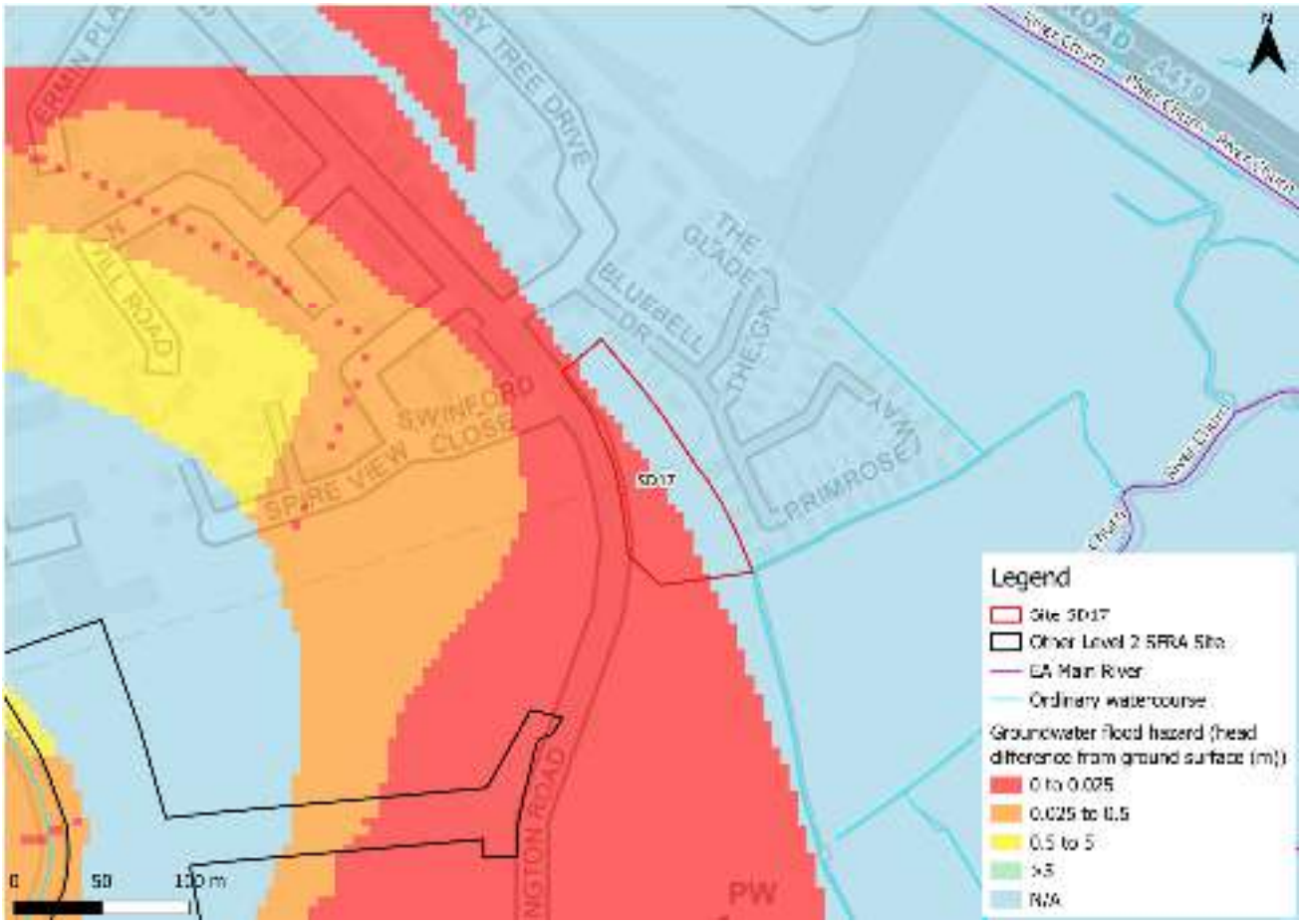

Figure 5-1: JBA 5m Groundwater Emergence Map

Table 5-1: Groundwater Hazard Classification

Groundwater head difference (m)*	Class label
0 to 0.025	Groundwater levels are either at very near (within 0.025m of) the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.
0.025 to 0.5	Groundwater levels are between 0.025m and 0.5m below the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.
0.5 to 5	Groundwater levels are between 0.5m and 5m below the ground surface in the 100-year return period flood event There is a risk of flooding to subsurface assets, but surface manifestation of groundwater is unlikely.
>5	Groundwater levels are at least 5m below the ground surface in the 100-year return period flood event. Flooding from groundwater is not likely.
N/A	No risk. This zone is deemed as having a negligible risk from groundwater flooding due to the nature of the local geological deposits.
*Difference is defined as ground surface in mAOD minus modelled groundwater table in mAOD.	

The underlying bedrock within the site is sandstone, limestone and argillaceous rocks (Figure 5-2). Sandstone and limestone generally have a high permeability and high level of porosity, increasing infiltration rates. Superficial deposits include clay and silt which have low permeability. Infiltration SuDS at this site may not be an option, though the drainage strategy for the site should fully investigate water table levels through standpipe monitoring during the period of highest groundwater levels e.g. November to April.

Figure 5-2: BGS Geology - Bedrock and superficial deposits

6 Residual risk

Although a site may be afforded some protection from defences and / or drainage infrastructure, there is always a residual risk of flooding from asset failure i.e. defence breaches, or blockages of culverts or drainage assets.

There does not appear to be any residual risk to the site from asset blockage or defence breach.

6.1 Flood risk from reservoirs

The EA's Reservoir Flood Maps (RFM) (2021) show where water may go in the unlikely event of a reservoir or dam failure. The site is not modelled to be at risk from reservoir flooding.

7 Overall site assessment

7.1 Can part b) of the Exception Test be passed?

This site is not required to pass part b) of the exception test as it is not located within Flood Zone 3a, however it must still be proven that the development can be safe for its lifetime, which is generally considered to be 100 years for residential development.

7.2 Main recommendations and site-specific FRA requirements

Based on the evidence presented in the Level 1 SFRA (2026) and this Level 2 SFRA:

- Based on current information, it is recommended that all development is directed to the area within the north of the site located in Flood Zone 1. Development should also avoid the area shown to be at additional risk from climate change in the 1% AEP undefended event plus central climate change allowance.
- The risk area would ideally be utilised as open green space, providing a flood storage function as well as providing Biodiversity Net Gain (BNG), ecological, amenity, social, and wellbeing benefits. However, this will limit plot numbers onsite.
- Risk from the ordinary watercourse must be assessed and quantified at the FRA stage.
- A drainage strategy should ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or betterment should apply with consideration of local and national SuDS guidance.
- Groundwater conditions must be investigated further through the site-specific FRA. This should be assessed through standpipe monitoring during the period of highest groundwater levels e.g. November to April.
- The site-specific FRA should be carried out in line with the latest versions of the NPPF; FRCC-PPG; EA online guidance; the CDC Local Plan, and national and local SuDS policy and guidelines.
- Throughout the FRA process, consultation should be carried out with, where applicable, the local planning authority; the lead local flood authority; emergency planning officers; the Environment Agency; the water companies; the highways authorities; and the emergency services.

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Cotswold Level 2 Strategic Flood Risk Assessment Site Summary

Strategic extension to the north, east and south of Down Ampney

Final Draft Report

Prepared for	Date
Cotswold District Council	August 2026

COTSWOLD
District Council

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Contract

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JBA Project Code	2025s1921

This report describes work commissioned by Cotswold District Council by an instruction dated 28 May 2026. The Client's representative for the contract was Jo Corbett of Cotswold District Council. Laura Thompson-Jones of JBA Consulting carried out this work.

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The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate.

Acknowledgements

We would like to thank the Environment Agency for their assistance with this work.

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Contents

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1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for the strategic extension site to the north, east and south of Down Ampney. The content of this report assumes the reader has already consulted the 'Cotswold Level 1 SFRA' (2026) and the 'Cotswold Level 2 SFRA Main Report' (2026) and is therefore familiar with the terminology used in this report.

1.1 Strategic extension to the north, east and south of Down Ampney

- Location: Down Ampney (NGR 409952, 197904)
- Existing site use: Open greenspace
- Existing site use vulnerability: Water compatible
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 135.4
- Watercourse: Ampney Brook, ordinary watercourses
- Environment Agency (EA) flood model: Ampney Brook Thames (MRL to St Johns) 2014 model
- Summary of requirements from Level 2 SFRA scoping stage:
    - Assessment of fluvial flood depths, velocities and hazards
    - Assessment of surface water flood extents, depths and hazards
    - Assessment of all other sources of flood risk
    - Assessment of flood risk management measures and natural flood management

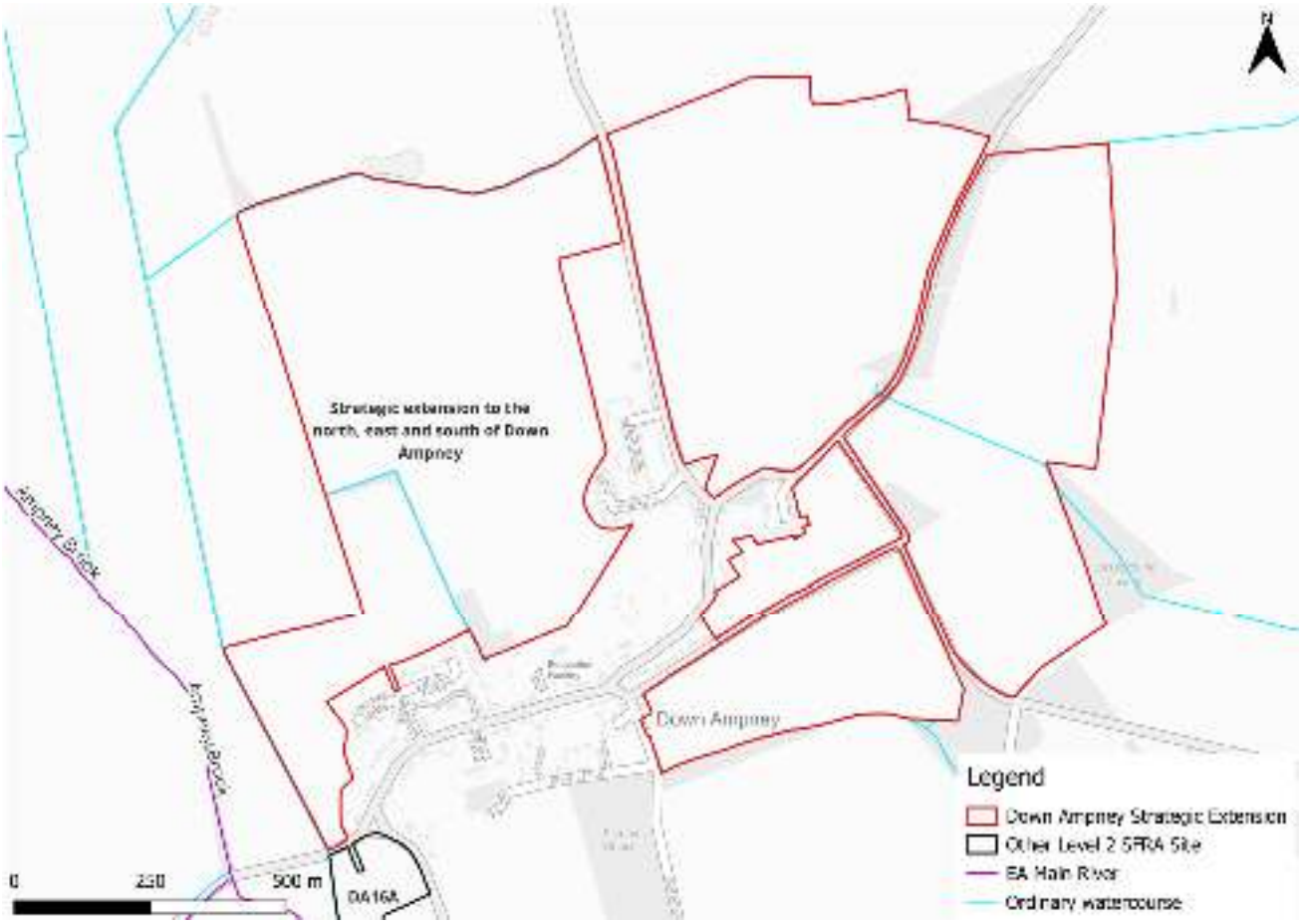

Figure 1-1: Site location boundary

There are areas of higher elevation within the central and northern areas of the site, which slope towards the southeast and southwest (Figure 1-2).

Figure 1-2: Topography

2 Flood risk from rivers

2.1 Existing risk

2.1.1 Flood Map for Planning and functional floodplain

Based on the EA's Flood Map for Planning (accessed May 2026) and Flood Zone 3b (functional floodplain), as updated through the Cotswold Level 1 SFRA, the percentage areas of the site within each flood zone are stated in Table 2-1 and can be viewed on Figure 2-1. The Flood Map for Planning does not consider flood defence infrastructure (Section 2.4).

An area within the southwest of the western site parcel is situated within the functional floodplain, adjacent to Ampney Brook. The functional floodplain in this location is based on a combination of the modelled 2% AEP defended flood event from the Ampney Brook Thames (MRL to St Johns) 2014 model, and the EA's New National Model (NNM) dataset 'Rivers and Sea 3.3% defended flood risk extents - present day', where the Thames model domain ends. There should be no development within the functional floodplain.

The other site parcels are located wholly within Flood Zone 1 and therefore at low risk of flooding from rivers. However, there are a number of unnamed, unmodelled ordinary watercourses which run through several of the site parcels.

CDC are aware of an unmapped ordinary watercourse within the southernmost site parcel (DA17A). Future development proposals should preserve and maintain this route and provide appropriate maintenance access and stand-offs. Opportunities for restoration / de-culverting should be explored where possible. The presence of this watercourse may influence the developable area and site layout.

Table 2-1: Present day flood risk based on percentage area of site at risk

Flood Zone 1 (% area)	Flood Zone 2 (% area)	Flood Zone 3a (% area)	Flood Zone 3b (% area)
95	1	1	3

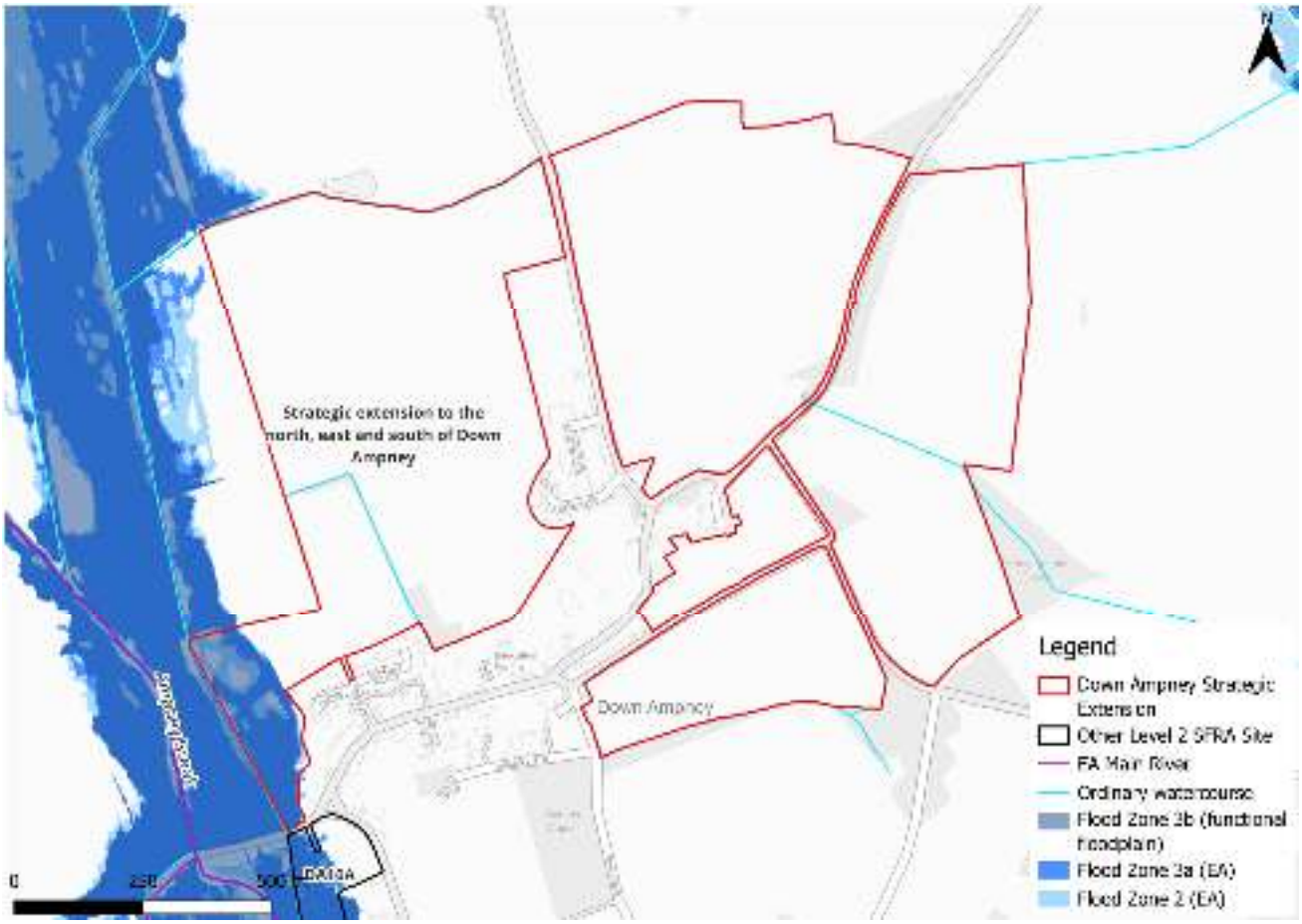

Figure 2-1: Present day risk

2.1.2 Ampney Brook Thames (MRL to St Johns) 2014 model outputs

Present day risk to the site comes from Ampney Brook to the west of the site. However, the Flood Map for Planning is not based on the outputs from this model but on the NNM. The NNM does not contain depth or hazard data. The Ampney Brook Thames (MRL to St Johns) 2014 model will therefore require updating to robustly inform on risk to the site.

However, Figure 2-2, Figure 2-3, Figure 2-4 present the modelled flood depths, velocities, and hazards respectively for the 1% AEP undefended event, this being the event Flood Zone 3 of the Flood Map for Planning would normally represent. Maximum flood depths within the western site parcel are between 0.3 and 0.6 m, with low velocities and areas of hazard categorised as 'danger for some'.

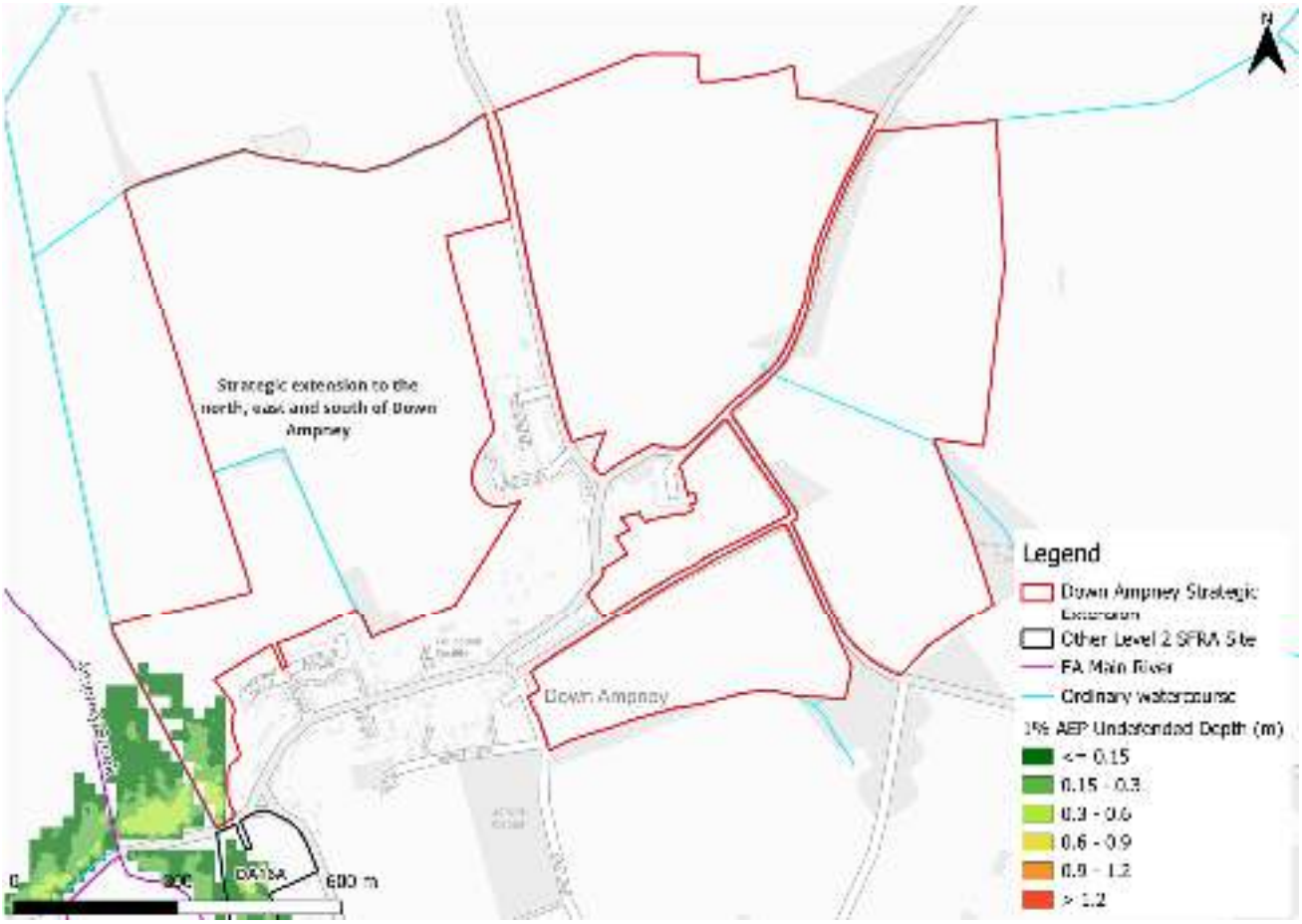

Figure 2-2: Flood depths for the 1% AEP undefended flood event

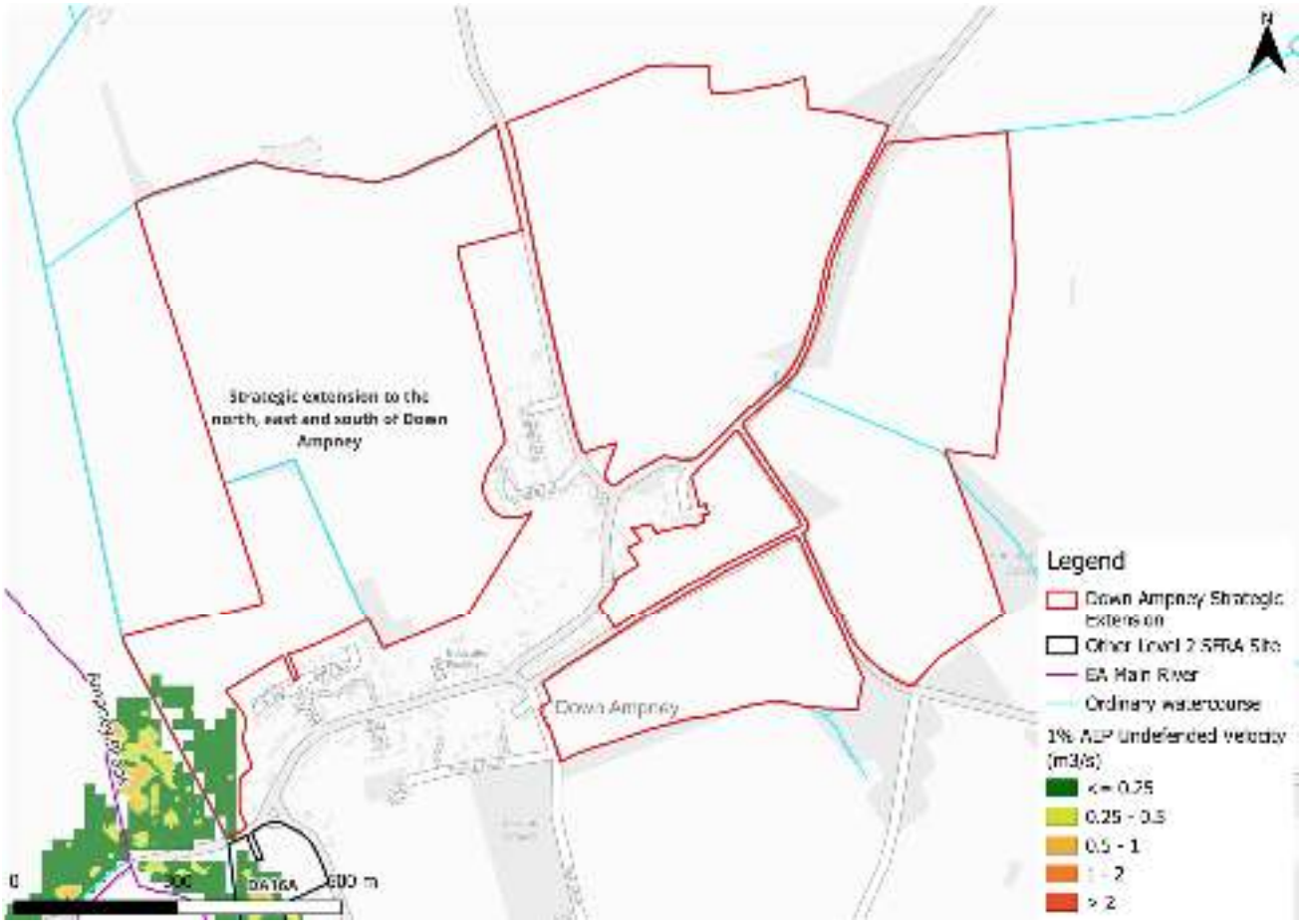

Figure 2-3: Flood velocities for the 1% AEP undefended flood event

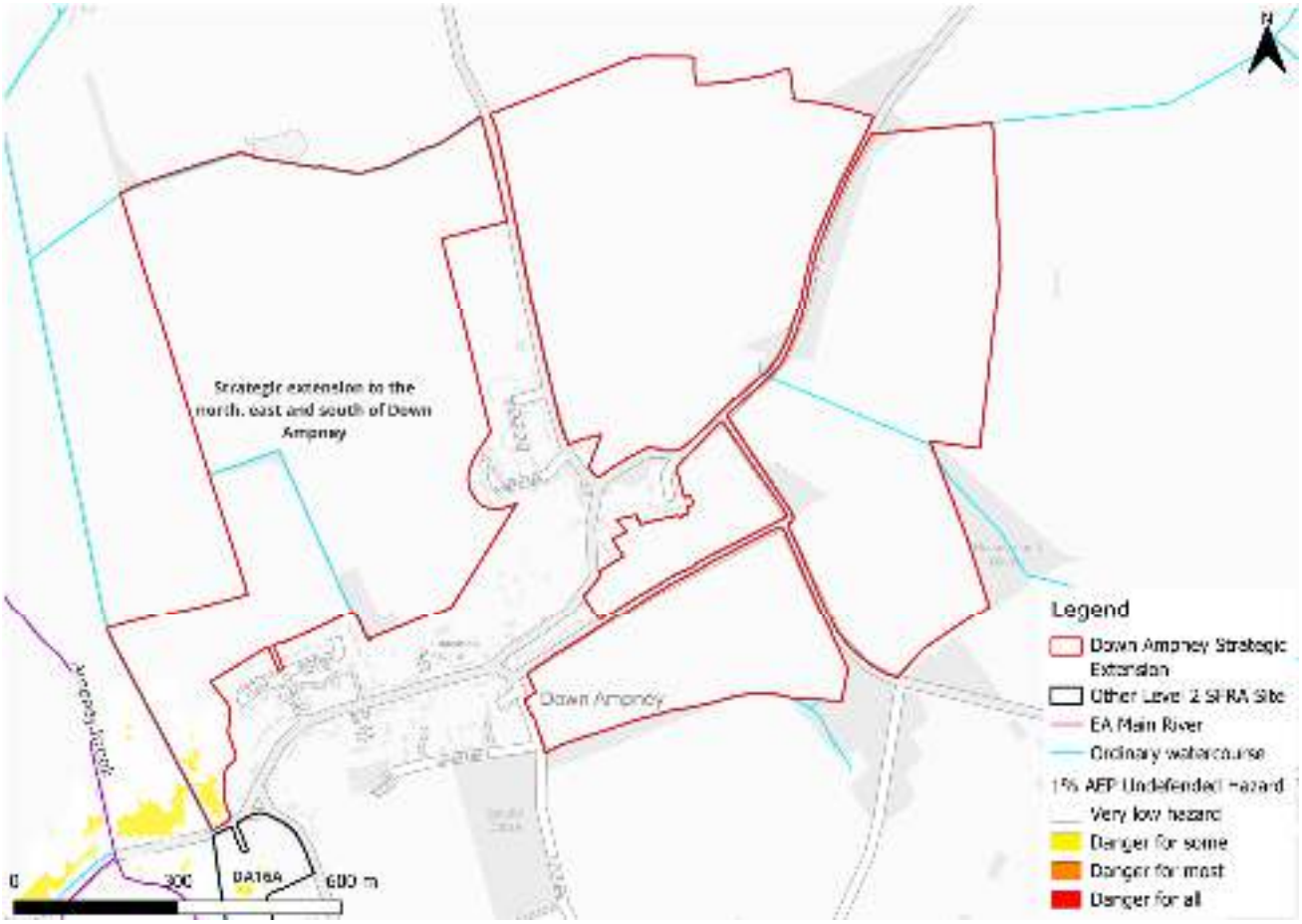

Figure 2-4: Flood hazards for the 1% AEP undefended flood event

2.2 Impacts from climate change

2.2.1 Ampney Brook Thames (MRL to St Johns) 2014 model outputs

The EA's SFRA guidance states that SFRAs should assess the central allowance for the 2080s epoch for peak river flows. The site is located within the Gloucestershire and the Vale Management Catchment. The central allowance within this catchment is 26% on peak flows (Table 2-2). The impacts of climate change on flood risk are included in the model for the 1% AEP undefended event using 30% on peak flows rather than the current central allowance of 26%.

Table 2-2: Modelled climate change allowances for peak river flows within the Gloucestershire and the Vale Management Catchment

Epoch	Central (%)	Higher (%)	Upper (%)
2020s	11	17	33
2050s	11	19	43
2080s	26	41	84

Figure 2-5, Figure 2-6, and Figure 2-7 show the modelled flood depths, velocities, and hazards respectively for the 1% AEP undefended event plus the central allowance for peak river flows. The risk area does not significantly increase in size though depths and velocities do increase across the risk area. Hazards remain the same.

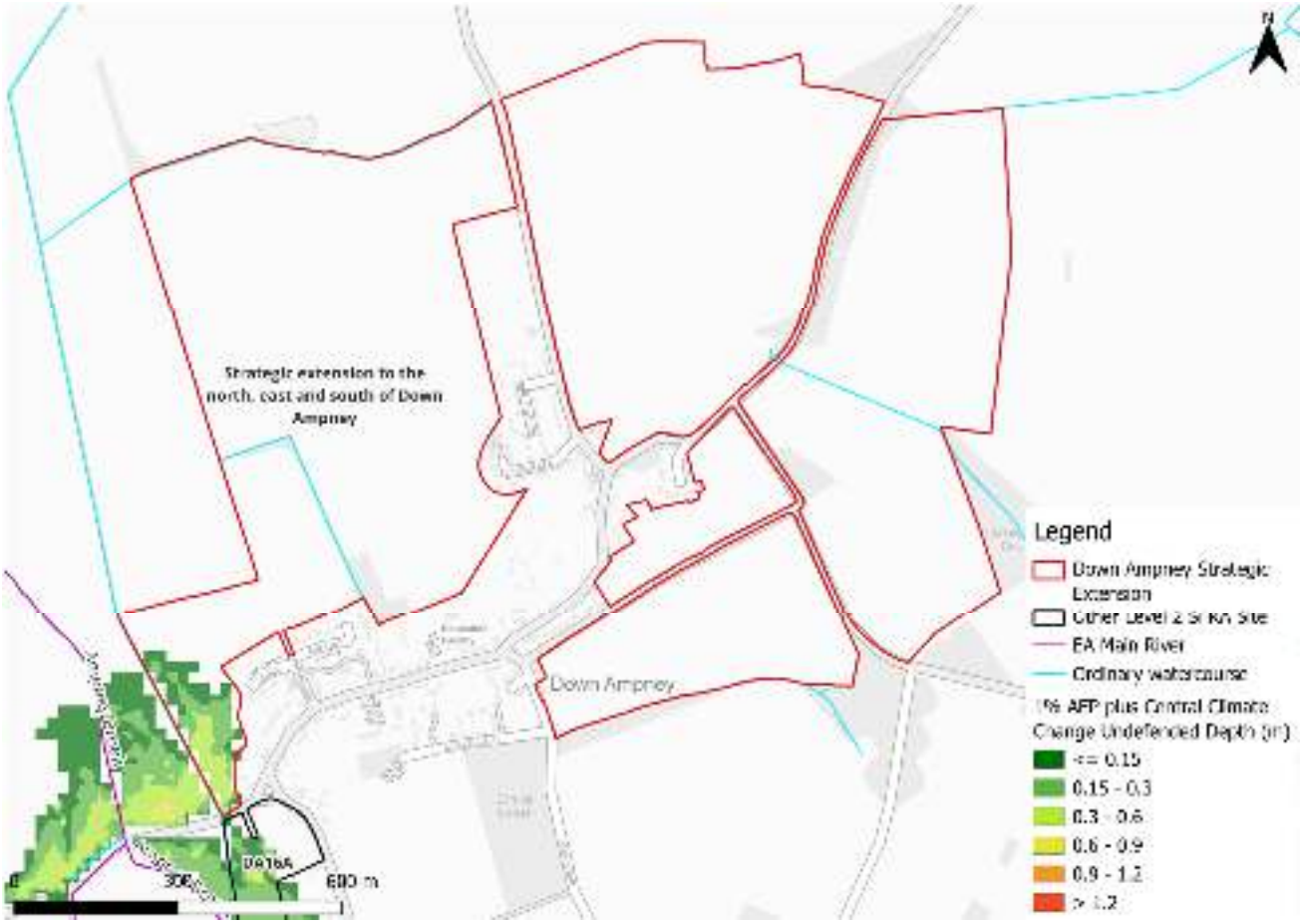

Figure 2-5: Flood depths for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

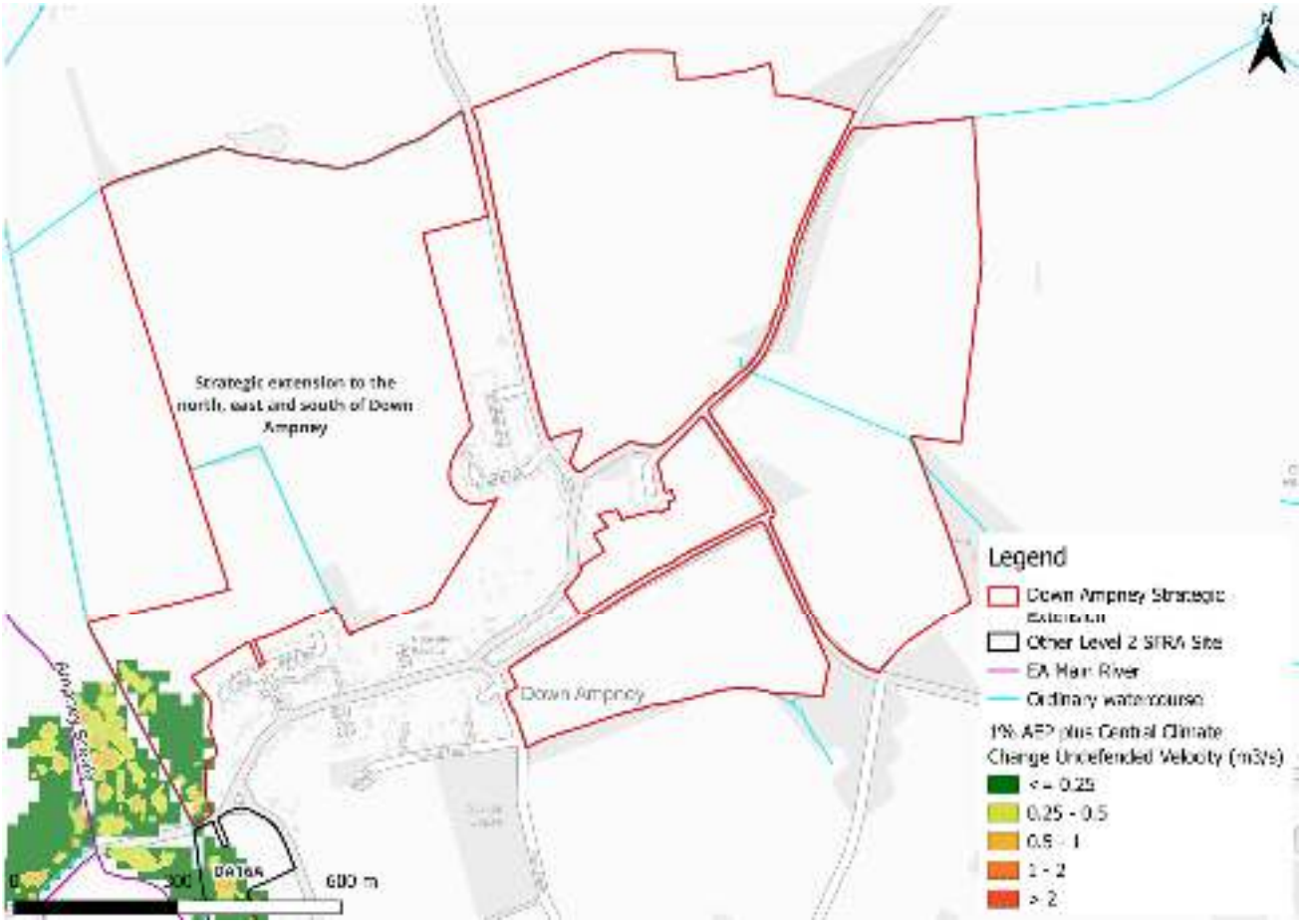

Figure 2-6: Flood velocities for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

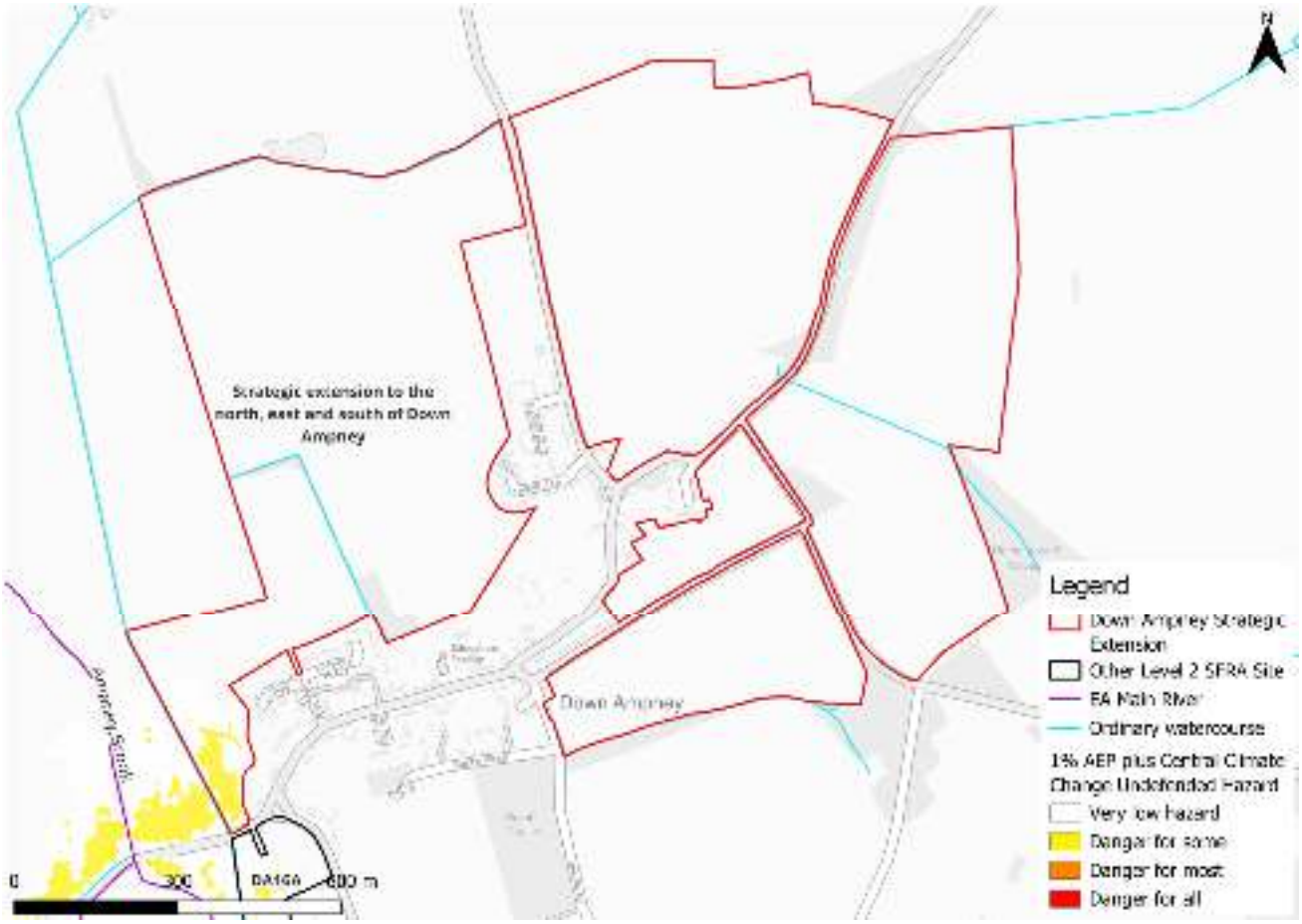

Figure 2-7: Flood hazards for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

2.2.2 Flood Map for Planning - Flood Zones plus Climate Change

Figure 2-8 shows the Flood Map for Planning - Flood Zones plus Climate Change dataset which includes the central allowance for the 2080s epoch. This represents the impact of climate change on Flood Zone 3a and Flood Zone 2 combined. This shows a slightly greater extent of flooding than the modelled event, impacting an additional area within the northwest of the site. This is due to the Flood Map for Planning outputs being based on the NNM and not the outputs from the Ampney Brook Thames (MRL to St Johns) 2014 model, and also the fact that the Flood Zones plus Climate Change dataset also includes the larger 0.1% AEP event.

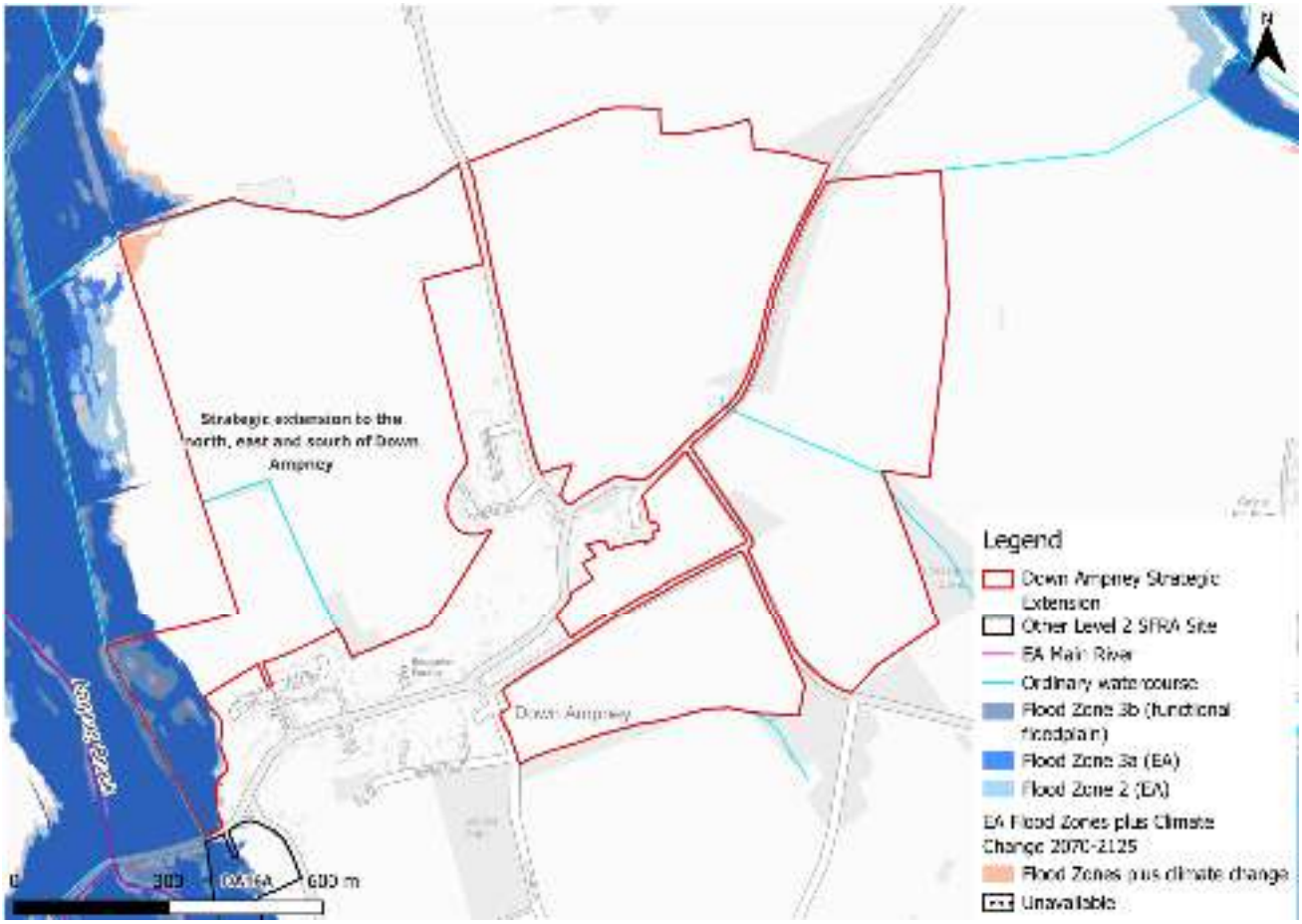

Figure 2-8: EA Flood Zones plus Climate Change

2.3 Historic flood incidents

The EA's Historic Flood Map (HFM) and Recorded Flood Outlines (RFO) datasets have been considered. There are no recorded historic flood events within the vicinity of the site, according to these datasets. The LLFA provided its historic floods register. There have been 11 recorded flooding incidents within the Ampneys & Hampton Ward within which the site is located.

2.4 Flood risk management

2.4.1 Flood defences

The site does not benefit from any formal engineered flood defences, according to the EA's spatial flood defences dataset.

2.4.2 Working with Natural Processes

The EA's Working with Natural Processes (WwNP) dataset has been interrogated to identify opportunities for Natural Flood Management (NFM) to reduce flood risk to the site and surrounding areas. Figure 2-9 shows that the site and wider area could benefit from riparian, floodplain, and wider catchment tree planting. Tree planting can help to slow the

flow to benefit areas downstream. There is also potential for runoff attenuation features where it may be possible to temporarily store water and attenuate flooding during high flows. The WwNP mapping is broadscale and indicative. Further investigation is required for any land shown to have potential for WwNP.

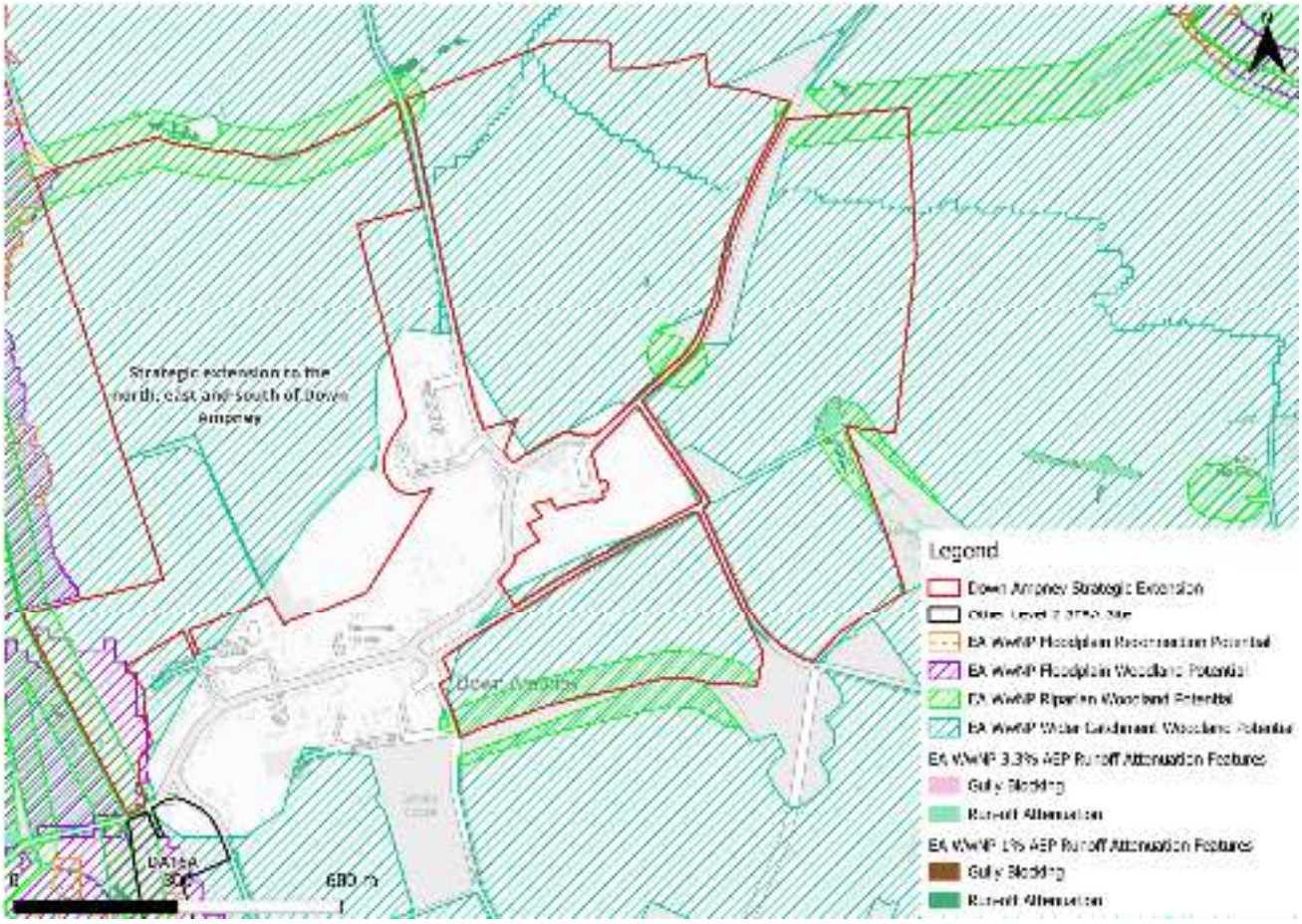

Figure 2-9: Working with Natural Processes

2.5 Emergency planning

2.5.1 Flood warning and alerts

The EA operates a Flood Warning Service for properties located within a Flood Warning Area (FWA) for when a flood event is expected to occur. The majority of the risk area is included within a FWA, namely the 'Ampney Brook from Ampney Crucis to Sheeppen Bridge' FWA, as shown in Figure 2-10.

Flood alerts may be issued before a flood warning for properties located within a Flood Alert Area (FAA) to provide advance notice of the possibility of flooding. A flood alert may be issued when there is less confidence that flooding will occur in a FWA. The majority of the risk area is located within a FAA, namely the 'Ampney Brook from Barnsley Wood to Sheeppen Bridge' FAA, as shown in Figure 2-10.

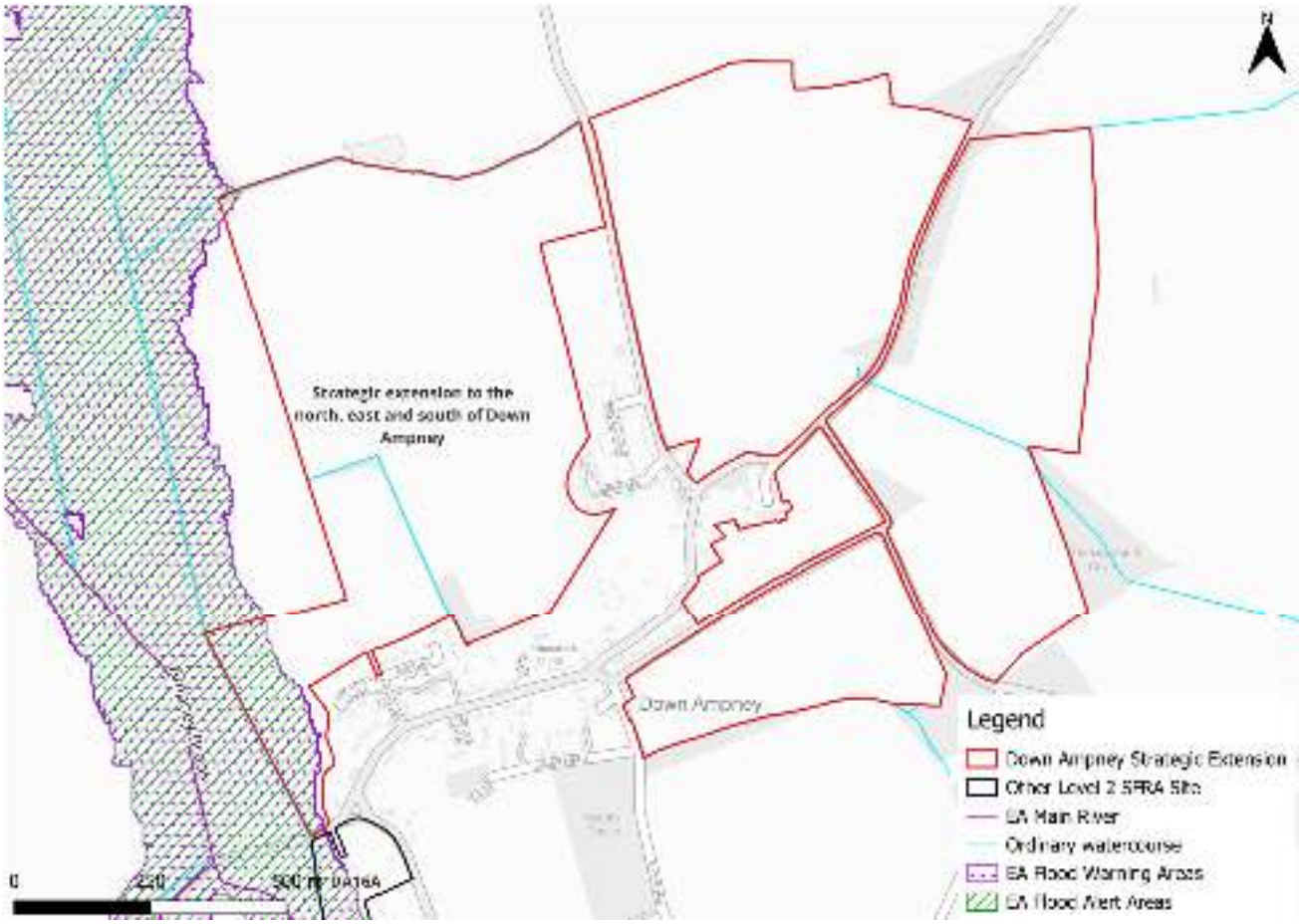

Figure 2-10: Flood warnings and alerts

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes could likely be achieved during a flood event via multiple locations surrounding the site (Figure 2-11).

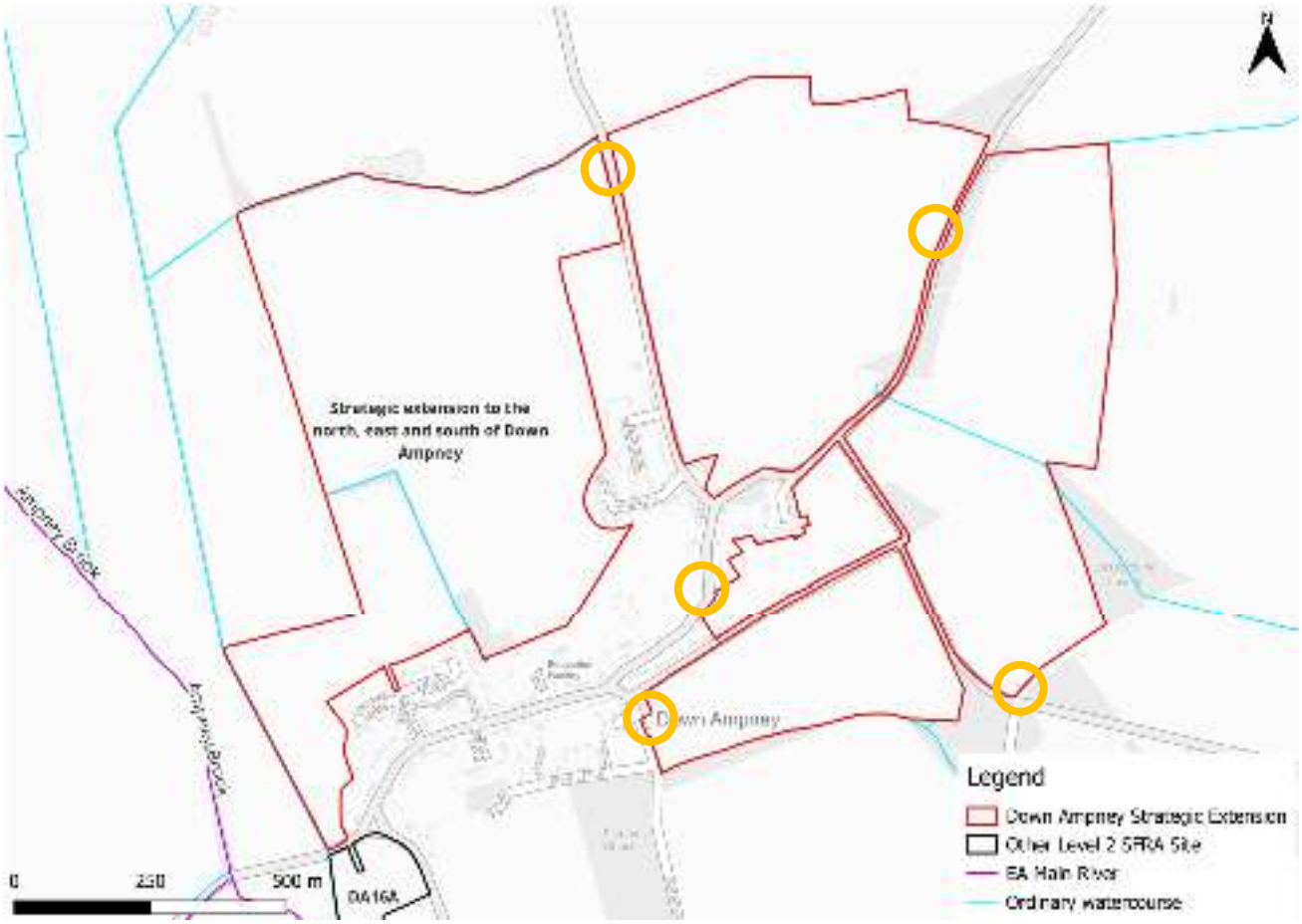

Figure 2-11: Potential access and escape routes

2.6 Observations, mitigation options, site suitability, sequential approach to development management - fluvial

- Observations:
  - The area of the site within the functional floodplain should not be developed and should remain as open greenspace. Ideally, all built development would be directed to Flood Zone 1 whilst also accounting for the impacts of climate change.
  - More vulnerable development should not be permitted within the climate change risk area. All risk areas would ideally be utilised as open green space, providing a flood storage function as well as providing Biodiversity Net Gain (BNG), ecological, amenity, social, and wellbeing benefits.
  - The Ampney Brook Thames (MRL to St Johns) 2014 model is out of date and the EA's NNM is considered to be the most up to date information on fluvial risk to the site and surrounding area. The NNM does not contain depth or hazard information, therefore risk cannot be robustly defined at this stage.
  - There are several unmodelled ordinary watercourses. Risk from these watercourses must be quantified at the FRA stage.

- Mitigation:
  - It is not appropriate at this stage to advise on potential mitigations, given the absence of sufficiently robust and up to date flood risk information. An updated model for Ampney Brook must be developed to robustly define risk to the site and the surrounding areas.
  - EA flood warnings and alerts should continue to be in place to ensure early evacuation of site users before an extreme flood event occurs.
- Access and escape:
  - Based on current information, safe access and escape routes appear achievable via multiple locations surrounding the site.

3 Flood risk from surface water

3.1 Existing risk

3.1.1 Flood Map for Planning - Surface Water Spatial Planning Extents and Depths Present Day

Based on the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Extents map (May 2026), the site is predominantly at low risk of surface water flooding as shown in Table 3-1 and Figure 3-1. There is a flow path present through the eastern site parcels, along the ordinary watercourse. There is another flow path adjacent to the northern boundary of the western site parcel. Surface water risk is also present as areas of scattered ponding across the site. Greatest surface water flood depths in the 1% AEP event are between 0.3 and 0.6 m outside of the ordinary watercourse present onsite (Figure 3-2).

Safe access and escape routes are achievable via multiple locations surrounding the site.

Table 3-1: Existing surface water flood risk based on percentage area at risk based on the Flood Map for Planning - Surface Water Spatial Planning dataset

Less than 0.1% AEP event (% area)	0.1% AEP event (% area)	1% AEP event (% area)	3.3% AEP event (% area)
91	4	2	3

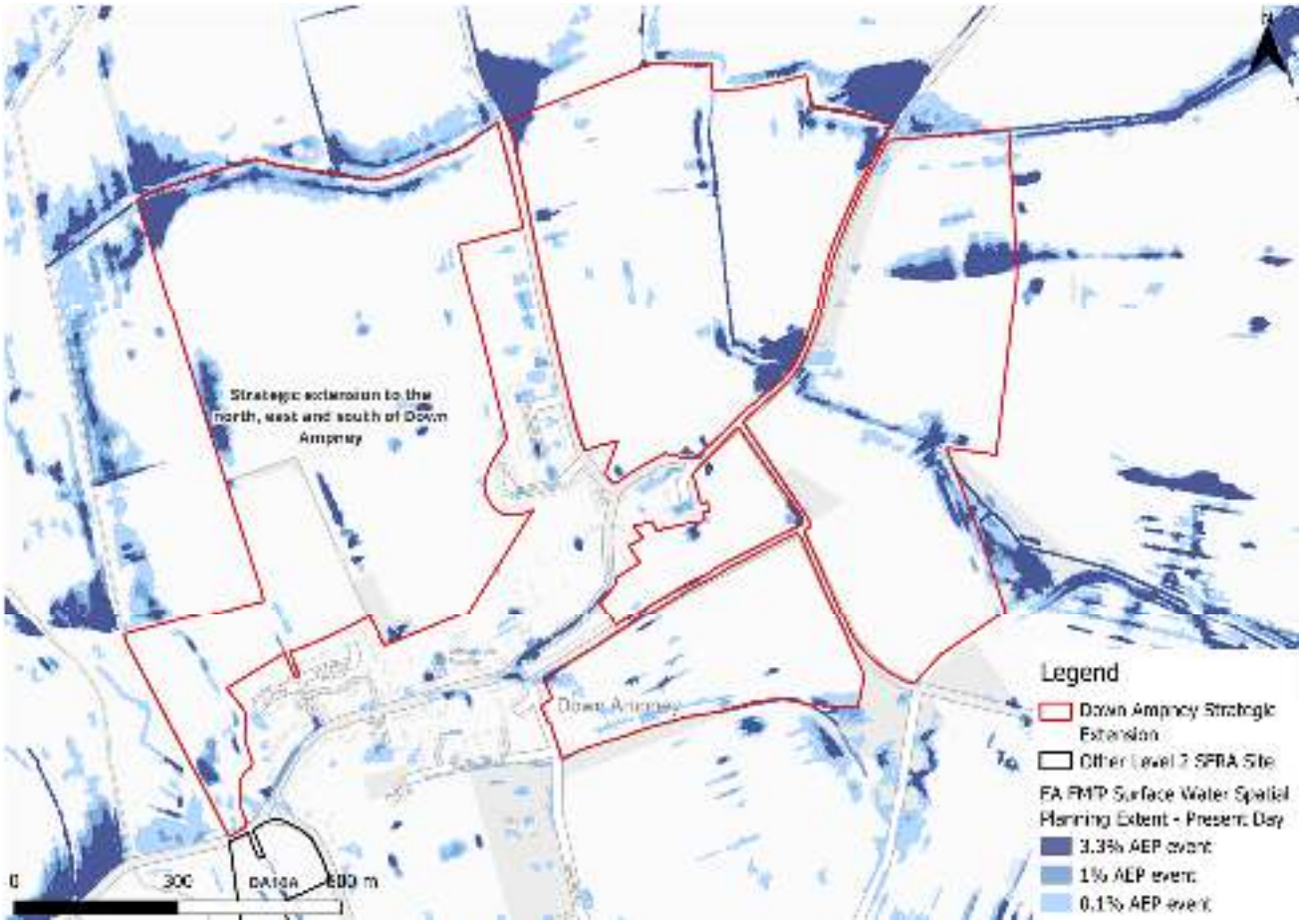

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

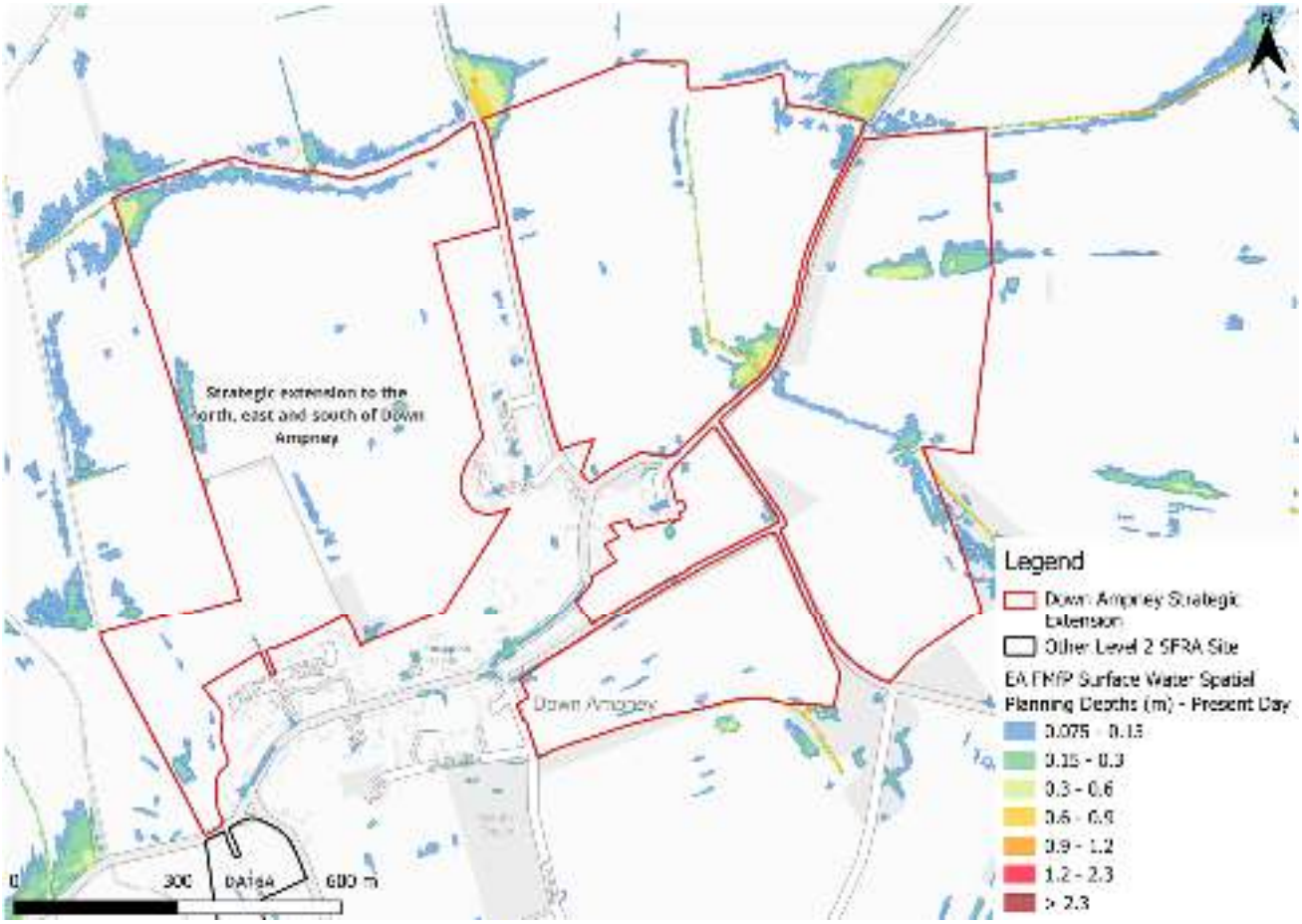

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 1% AEP event surface water flood depths (m)

3.1.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning data does not include hazard information suitable for planning purposes. Therefore, this Level 2 SFRA considers the third generation Risk of Flooding from Surface Water (RoFSW) hazard mapping in addition to the Flood Map for Planning - Surface Water Spatial Planning extents and depths, as the best available information.

The RoFSW map shows there to be areas of 'moderate' flood hazard (Figure 3-3). There are clearly differences between the Flood Map for Planning - Surface Water Spatial Planning map and the third generation RoFSW hazard mapping whereby the RoFSW shows a much larger area to be at risk. Given the differences between the two datasets, the hazard information should be discounted and assessed further at the FRA stage.

Note: the Flood Map for Planning - Surface Water Spatial Planning data does not map flooding less than 0.075m (7.5cm) in depth. Therefore, where the map may show no flooding, there may be shallow flooding up to a depth of 0.075m. In contrast, the third generation RoFSW does not map flooding with a hazard rating of less than 0.575.

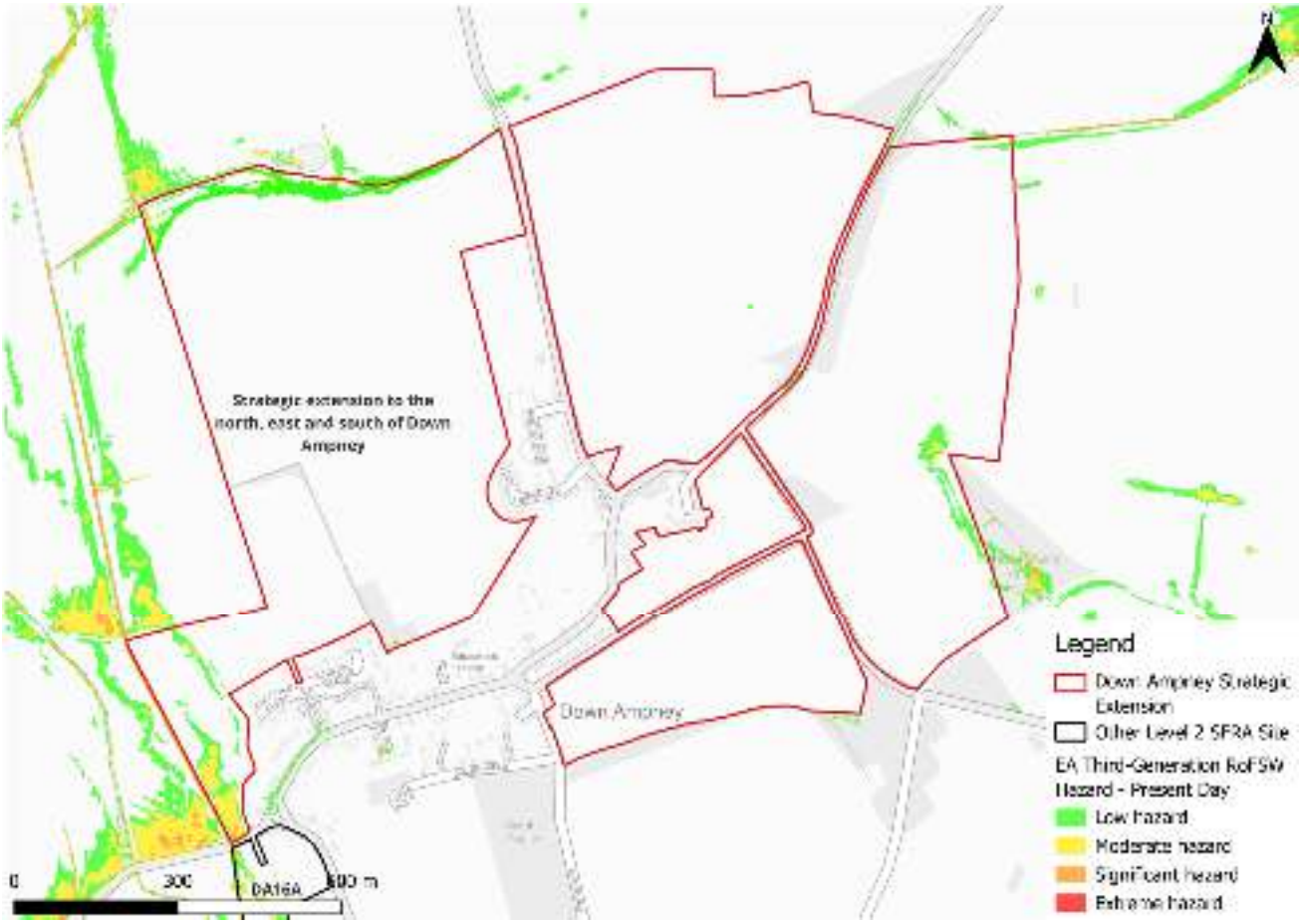

Figure 3-3: Third generation - Risk of Flooding from Surface Water map present day 1% AEP event surface water flood hazard[1]

3.2 Impacts from climate change

3.2.1 Flood Map for Planning - Surface Water Spatial Planning extents and depths

The EA's climate change allowance guidance states that SFRA's should assess the upper end peak rainfall allowance for the 2070s epoch. This dataset is included in the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Climate Change dataset (May 2026). The peak rainfall intensity allowances for the Gloucestershire and the Vale management catchment are shown in Table 3-2. The allowance for the 0.1% AEP event is not stated in the EA guidance.

1 Based on Section 7.5 Hazard rating. What is the Risk of Flooding from Surface Water map? Report version 2.0. April 2019. Environment Agency.

Table 3-2: Peak rainfall intensity allowances for the Gloucestershire and the Vale Management Catchment

Return period	Central allowance 2070s (% increase)	Upper end allowance 2070s (% increase)
3.3%	25	35
1%	25	40

Figure 3-4 shows the surface water flood extents for the 2070s upper end climate change scenario. The site is not shown to be at significant additional risk from surface water climate change. There is a greater extent of flooding along the flow paths through the site in the 0.1% AEP plus climate change event. Flood depths are shown to increase to between 0.6 and 0.9 m within a small area in the east of the site (Figure 3-5).

Safe access and escape routes would likely remain achievable via several locations surrounding the site.

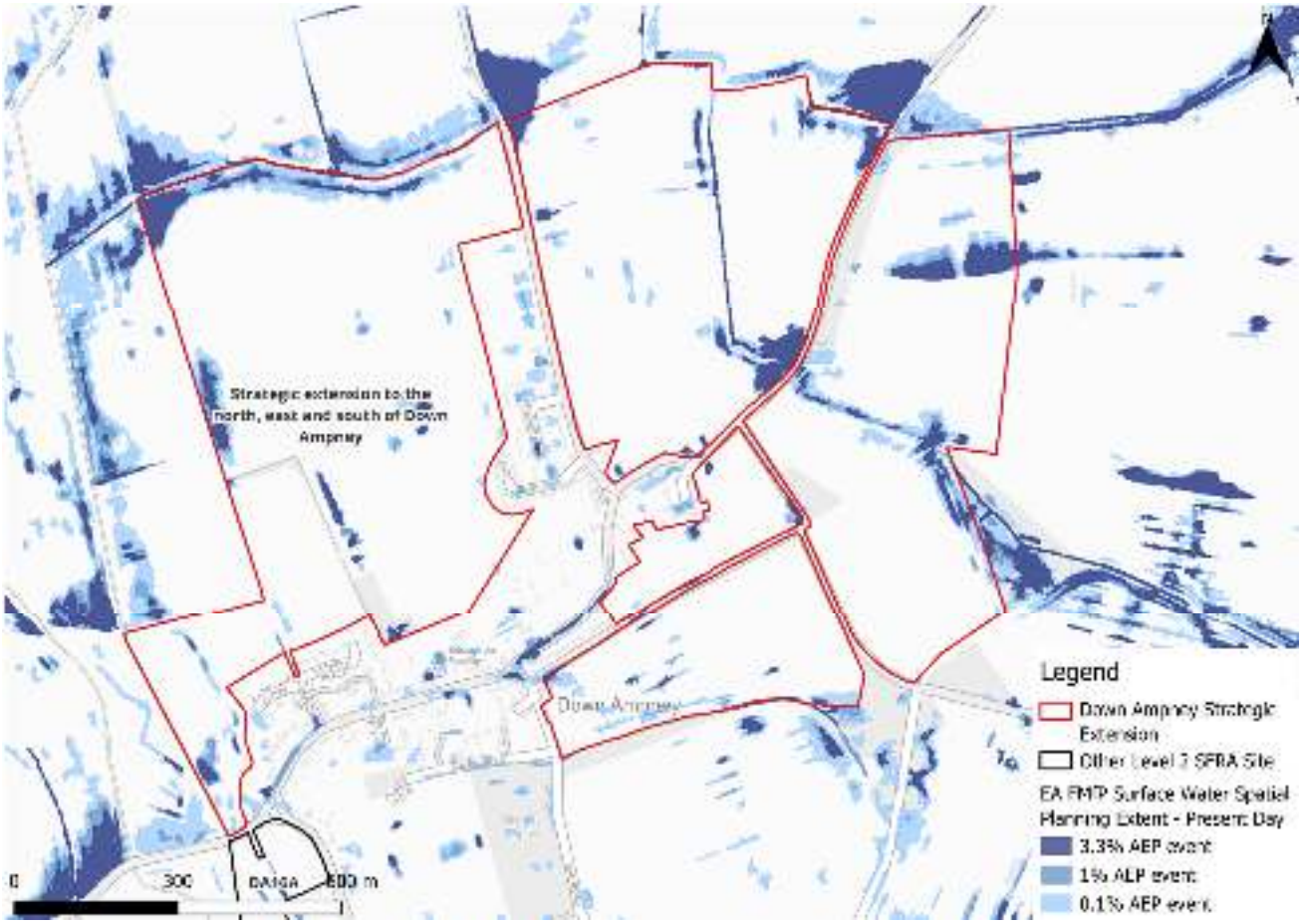

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

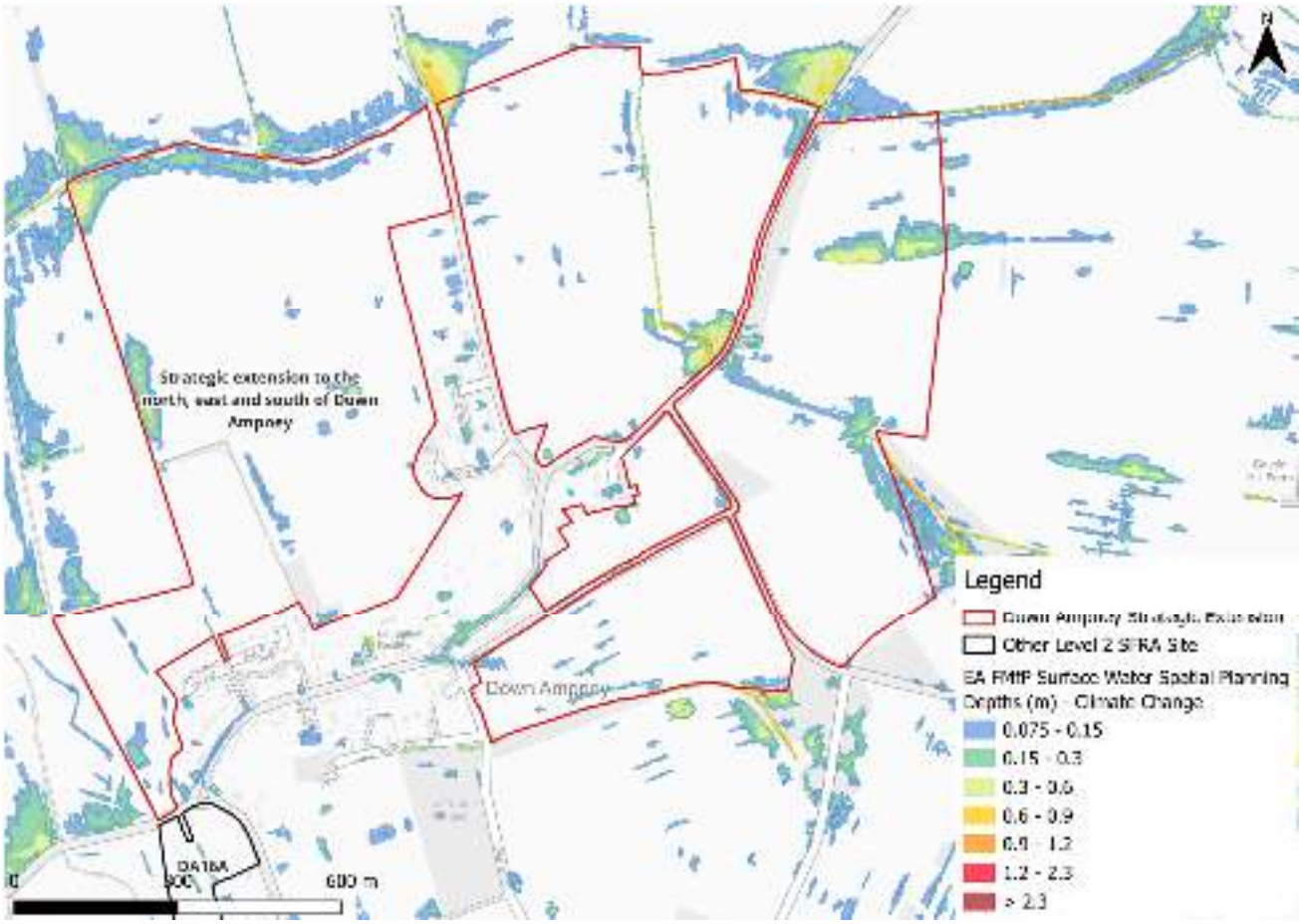

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 1% AEP event surface water flood depths (m)

3.2.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning climate change data does not include hazard information suitable for planning purposes. This Level 2 SFRA therefore considers the RoFSW 0.1% AEP surface water event as a conservative proxy for the RoFSW 1% AEP event plus climate change, as the best available information to assess surface water flood hazards (Figure 3-6). However, given the differences between the two datasets, the hazard information should be discounted and assessed further at the FRA stage.

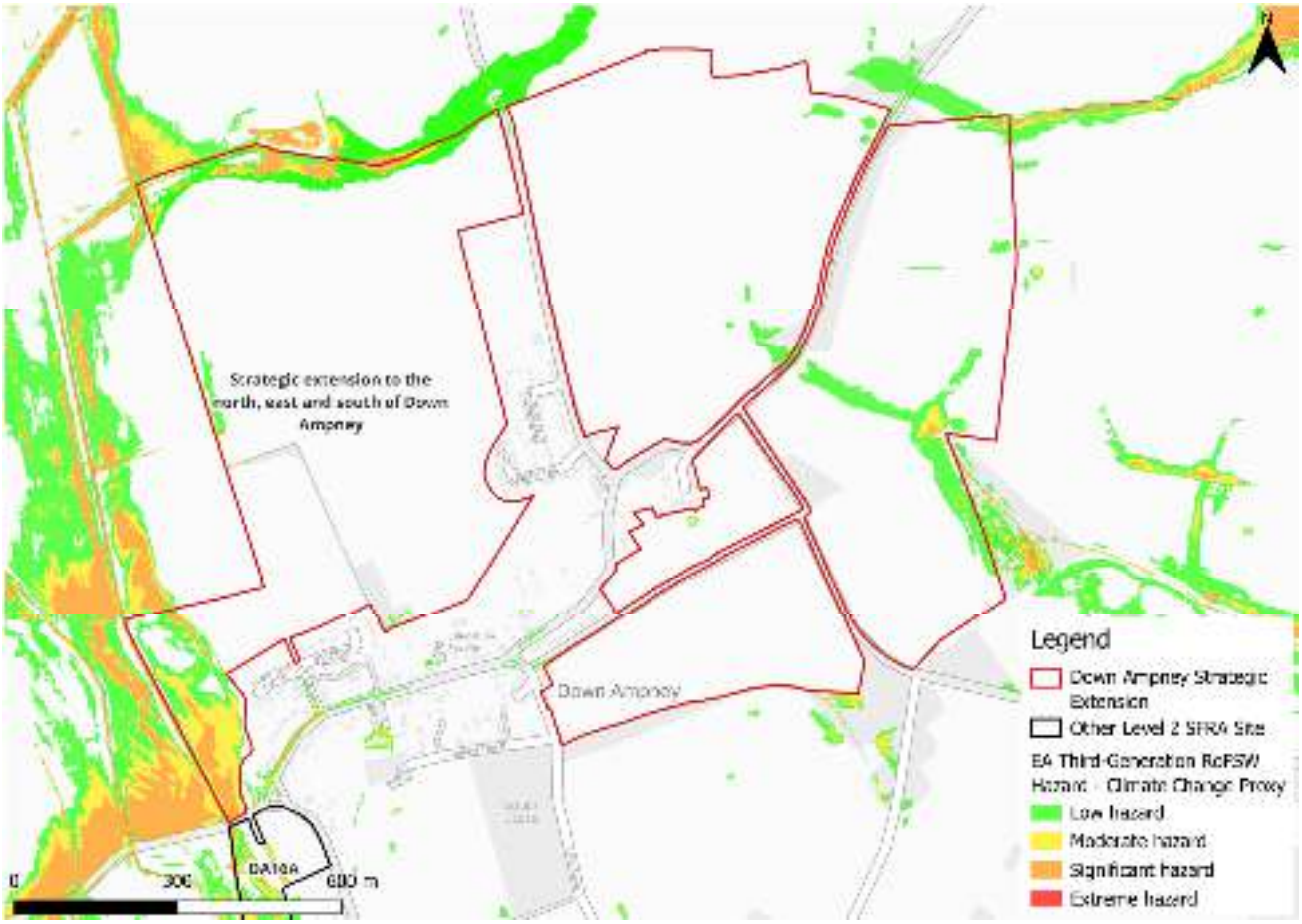

Figure 3-6: Third generation - Risk of Flooding from Surface Water map present day 0.1% AEP event surface water flood hazard as a climate change proxy

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There are no recorded sewer flooding incidents nearby the site nor within the The Ampneys & Hampton Ward.

3.4 Observations, mitigation options, site suitability, sequential approach to development management - surface water

- Current risk to the site is predominantly low, with 91% of the site being outside of the 0.1% AEP surface water flood extent.
- Risk to the site is shown to slightly increase in extent within the site when considering the impact of climate change.
- Topographic low spots and flow paths should be considered and included in site design and ideally left in place to flood naturally when required.
- The drainage strategy must ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or betterment should apply. The developer should consult the LLFA and follow local and National SuDS guidance.

- Safe access and escape routes would likely be achievable via multiple locations when considering surface water risk.

4 Cumulative impacts assessment and high risk catchments

4.1 Level 1 cumulative impacts assessment

A cumulative impact assessment was completed through the Cotswold Level 1 SFRA (2026), which aimed to identify catchments sensitive to the cumulative impact of new development. This site is located within three catchments, namely, the Ampney and Poulton Brooks (Source to Thames), Marston Meysey Brook and Thames (Churn to Coln) and catchments. The first two catchments are ranked as low sensitivity catchments, and the latter as high sensitivity. Planning considerations for sites at high sensitivity to the cumulative impacts of development can be found in Appendix F of the Level 1 SFRA. Cumulative impacts of development should also be considered as part of a site-specific FRA.

5 Groundwater, geology and SuDS suitability

Risk of groundwater emergence is assessed in this SFRA using JBA's 5m Groundwater Emergence Map. Figure 5-1 shows the map covering this site and the surrounding areas. Table 5-1 explains the risk classifications.

The risk of groundwater emergence varies across the site parcels. Across the majority, there is a risk of groundwater emergence to both surface and subsurface assets. In some areas, groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots. There are also large areas of no risk.

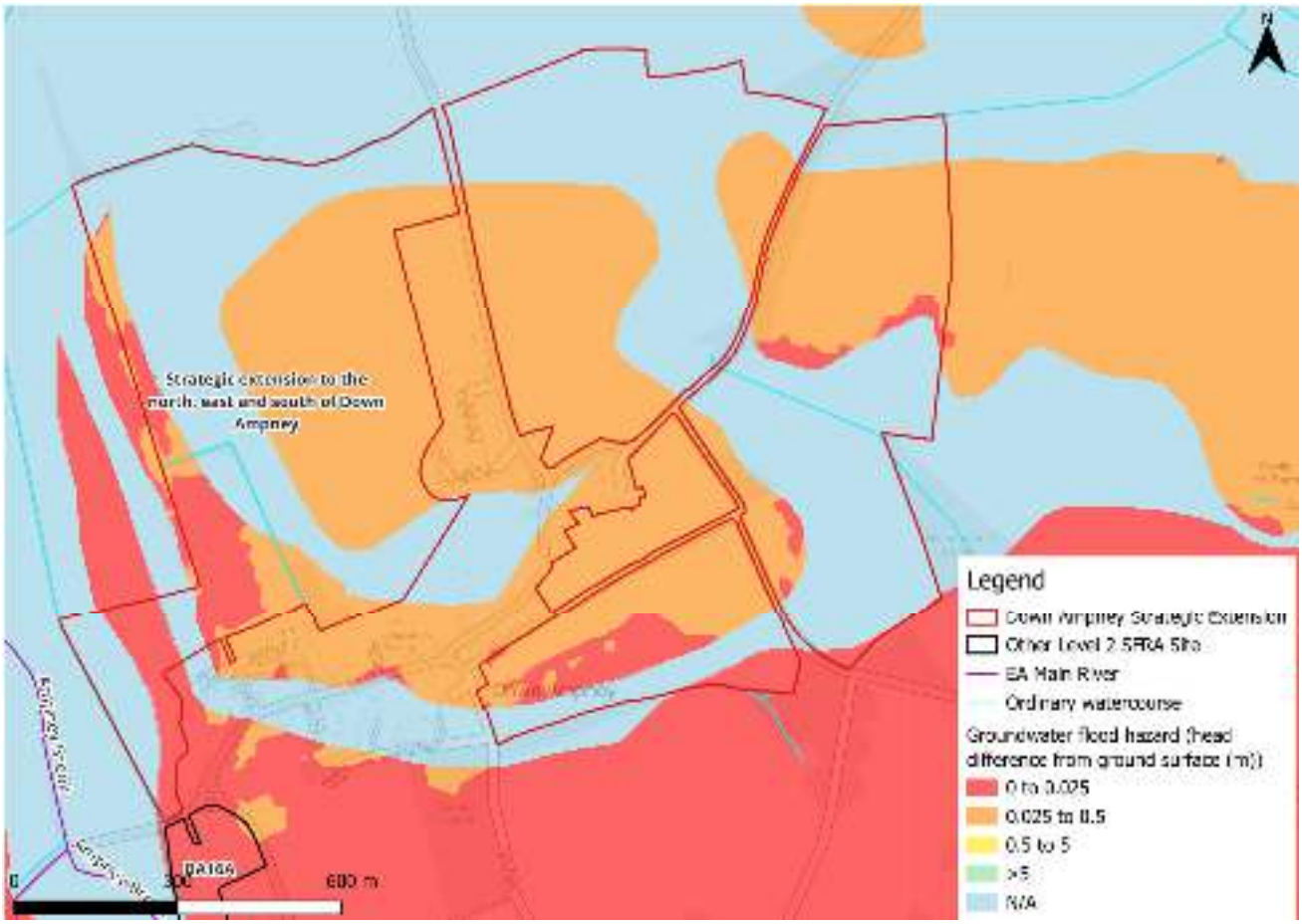

Figure 5-1: JBA 5m Groundwater Emergence Map

Table 5-1: Groundwater Hazard Classification

Groundwater head difference (m)*	Class label
0 to 0.025	Groundwater levels are either at very near (within 0.025m of) the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.
0.025 to 0.5	Groundwater levels are between 0.025m and 0.5m below the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.
0.5 to 5	Groundwater levels are between 0.5m and 5m below the ground surface in the 100-year return period flood event There is a risk of flooding to subsurface assets, but surface manifestation of groundwater is unlikely.
>5	Groundwater levels are at least 5m below the ground surface in the 100-year return period flood event. Flooding from groundwater is not likely.
N/A	No risk. This zone is deemed as having a negligible risk from groundwater flooding due to the nature of the local geological deposits.
*Difference is defined as ground surface in mAOD minus modelled groundwater table in mAOD.	

The underlying bedrock within the site is mudstone, siltstone, and sandstone (Figure 5-2). Mudstone and siltstone generally have a low permeability and low level of porosity, reducing infiltration rates. Superficial deposits include clay and silt which also have low permeability. Infiltration SuDS at this site may not be an option, though the drainage strategy for the site should fully investigate water table levels through standpipe monitoring during the period of highest groundwater levels e.g. November to April.

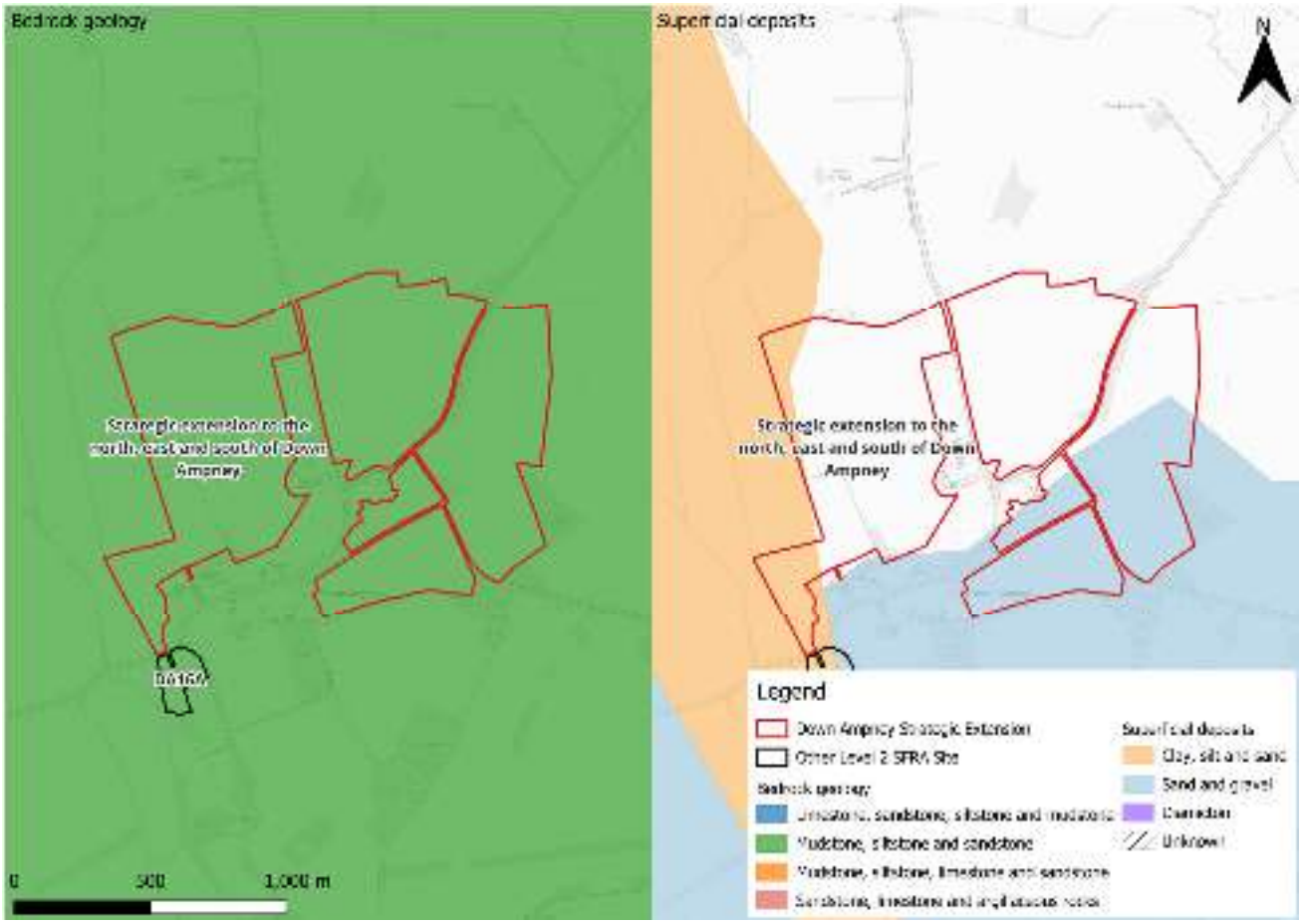

Figure 5-2: BGS Geology - Bedrock and superficial deposits

6 Residual risk

Although a site may be afforded some protection from defences and / or drainage infrastructure, there is always a residual risk of flooding from asset failure i.e. defence breaches, or blockages of culverts or drainage assets.

There are no defences in place along Ampney Brook. However, the watercourse is culverted under Down Ampney Road to the southwest of the site, as indicated by the green circle on Figure 6-1. The ordinary watercourse adjacent to Ampney Brook is also culverted beneath Down Ampney Road. There is a potential residual risk of a blockage of these culverts. This risk should be investigated at the site-specific FRA stage.

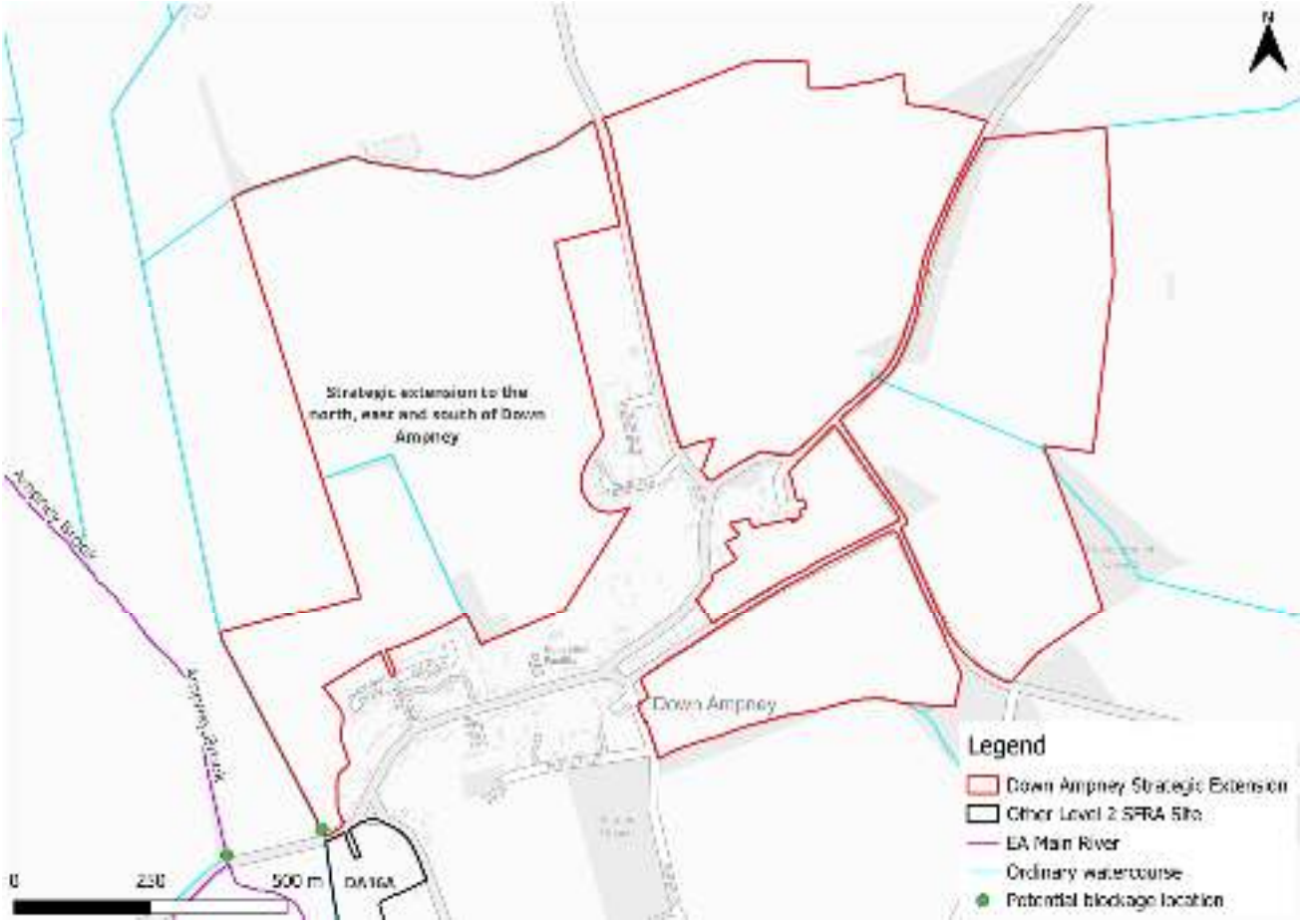

Figure 6-1: Potential blockage location

6.1 Flood risk from reservoirs

The EA's Reservoir Flood Maps (RFM) (2021) show where water may go in the unlikely event of a reservoir or dam failure. The site is not modelled to be at risk from reservoir flooding.

7 Overall site assessment

7.1 Can part b) of the Exception Test be passed?

This site is required to pass part b) of the exception test as it is proposed for more vulnerable residential development and is partially located within Flood Zone 3a. The site would likely pass the Exception Test given fluvial risk is confined to the boundary of the larger site parcel to the west. However, updated modelling of Ampney Brook is required to inform the Exception Test.

7.2 Main recommendations and site-specific FRA requirements

Based on the evidence presented in the Level 1 SFRA (2026) and this Level 2 SFRA:

- It should be possible to develop this site for residential uses given its location largely within Flood Zone 1 and very low surface water flood risk.
- There should be no development within the area of functional floodplain present onsite. Ideally, this area would be converted to open space offering multifunctional benefits alongside flood risk mitigation including BNG contributions, and social and amenity benefits.
- Updated modelling of Ampney Brook must be carried out to robustly define the risk to the site for both present day and with climate change.
- A drainage strategy should ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or betterment should apply with consideration of local and national SuDS guidance.
- Safe access and escape routes should be achievable via multiple locations surrounding the site. Suitable connections through the site to the access and escape routes must be considered within site design.
- Groundwater conditions must be investigated further through the site-specific FRA. This should be assessed through standpipe monitoring during the period of highest groundwater levels e.g. November to April.
- The site-specific FRA should undertake a condition assessment of the culverts beneath Down Ampney Road.
- The site-specific FRA should be carried out in line with the latest versions of the NPPF; FRCC-PPG; EA online guidance; the CDC Local Plan, and national and local SuDS policy and guidelines.
- Throughout the FRA process, consultation should be carried out with, where applicable, the local planning authority; the lead local flood authority; emergency planning officers; the Environment Agency; the water companies; the highways authorities; and the emergency services.

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Cotswold Level 2 Strategic Flood Risk Assessment Site Summary

Site SD23 - Land between disused canal and disused railway line, north of Park Way

Final Draft Report

Prepared for	Date
Cotswold District Council	August 2026

COTSWOLD
District Council

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Authorised by	Mike Williamson BSc MSc CGeog FRGS EADA Principal Analyst

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Contract

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JBA Project Code	2025s1921

This report describes work commissioned by Cotswold District Council by an instruction dated 28 May 2026. The Client's representative for the contract was Joanne Corbett of Cotswold District Council. Rosie Holmes of JBA Consulting carried out this work.

Purpose and Disclaimer

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The methodology adopted and the sources of information used by JBA in providing its services are outlined in this Report. The work described in this Report was undertaken in August 2026 and is based on the conditions encountered and the information available during the said period. The scope of this Report and the services are accordingly factually limited by these circumstances.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate.

Acknowledgements

We would like to thank the Environment Agency for their assistance with this work.

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Contents

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1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site SD23. The content of this report assumes the reader has already consulted the 'Cotswold Level 1 SFRA' (2026) and the 'Cotswold Level 2 SFRA Main Report' (2026) and is therefore familiar with the terminology used in this report.

1.1 Site SD23

- Location: Land between disused canal and disused railway line, north of Park Way (NGR 403142, 200093)
- Existing site use: Farmland, open greenspace
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 5.69
- Watercourse: River Churn, unnamed ordinary watercourse
- Environment Agency (EA) flood model: River Churn (Churn (Baunton to Siddington) 2011 model
- Summary of requirements from Level 2 SFRA scoping stage:
    - Assessment of fluvial flood depths, velocities and hazards
    - Assessment of surface water flood extent, depths and hazards
    - Assessment of all other sources of flood risk
    - Assessment of flood risk management measures and natural flood management

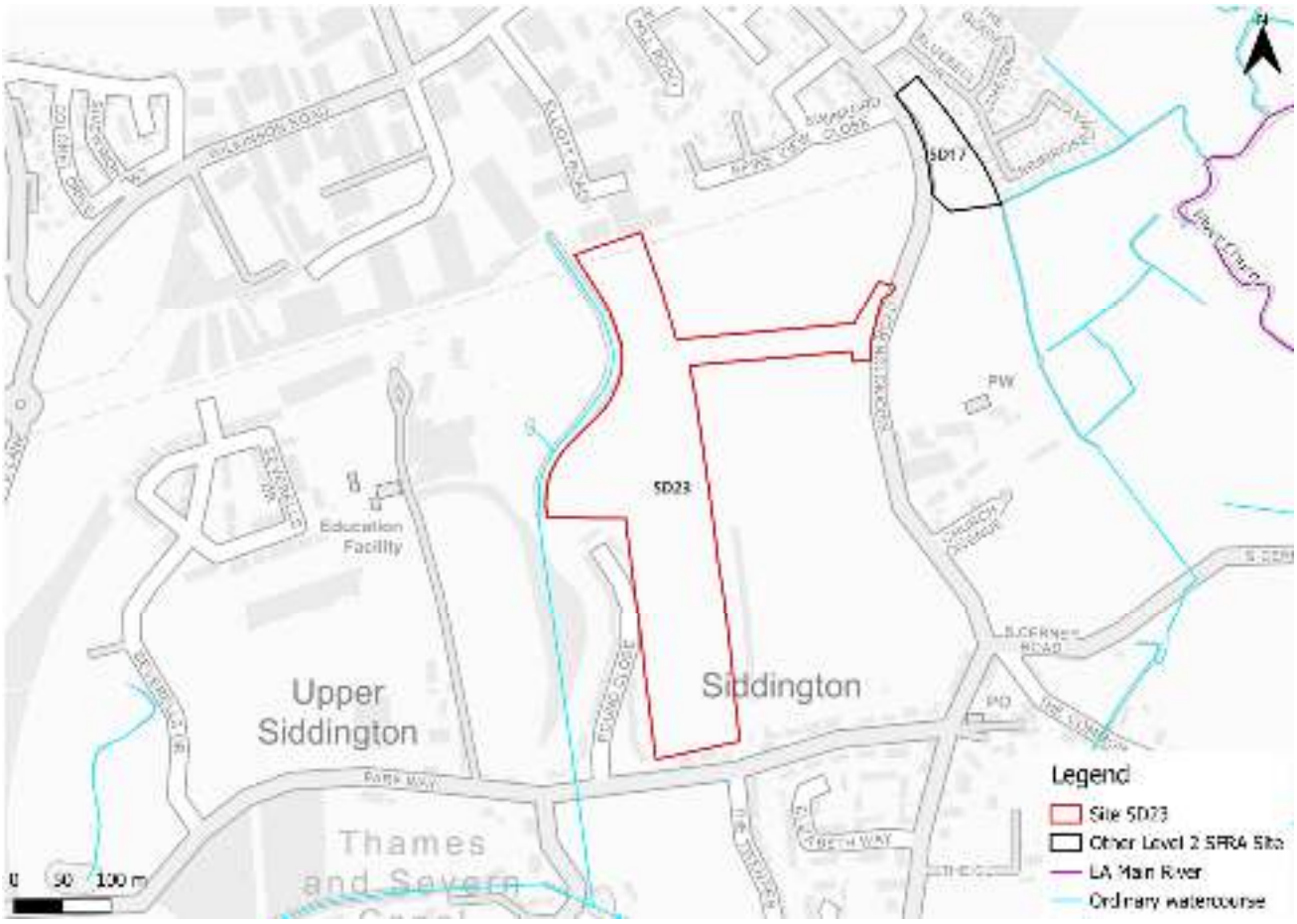

Figure 1-1: Site location boundary

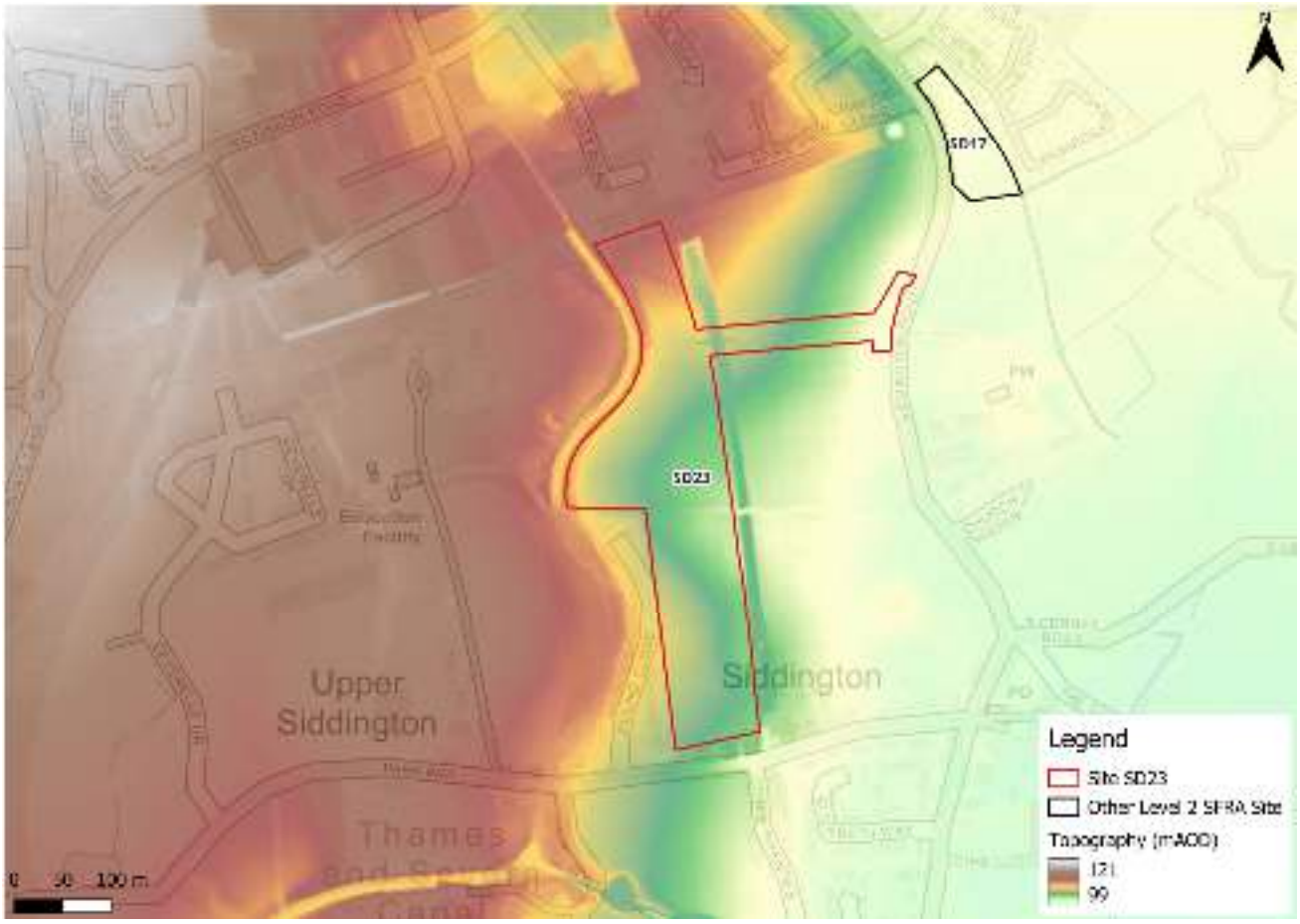

Figure 1-2: Topography

The topography of the site slopes from west to east towards the floodplain of the River Churn.

2 Flood risk from rivers

2.1 Existing risk

2.1.1 Flood Map for Planning and functional floodplain

Based on the EA's Flood Map for Planning (accessed May 2026) and Flood Zone 3b (functional floodplain), as updated through the Cotswold Level 1 SFRA, the percentage areas of the site within each flood zone are stated in Table 2-1 and can be viewed on Figure 2-1. The Flood Map for Planning does not consider flood defence infrastructure (Section 2.4).

The majority of the site is situated in Flood Zone 1 and therefore is at low risk from flooding from rivers and sea. There is a small area of Flood Zone 2 (1%) at the proposed access road of the site, associated with risk from the River Churn.

Table 2-1: Present day flood risk based on percentage area of site at risk

Flood Zone 1 (% area)	Flood Zone 2 (% area)	Flood Zone 3a (% area)	Flood Zone 3b (% area)
99	1	0	0

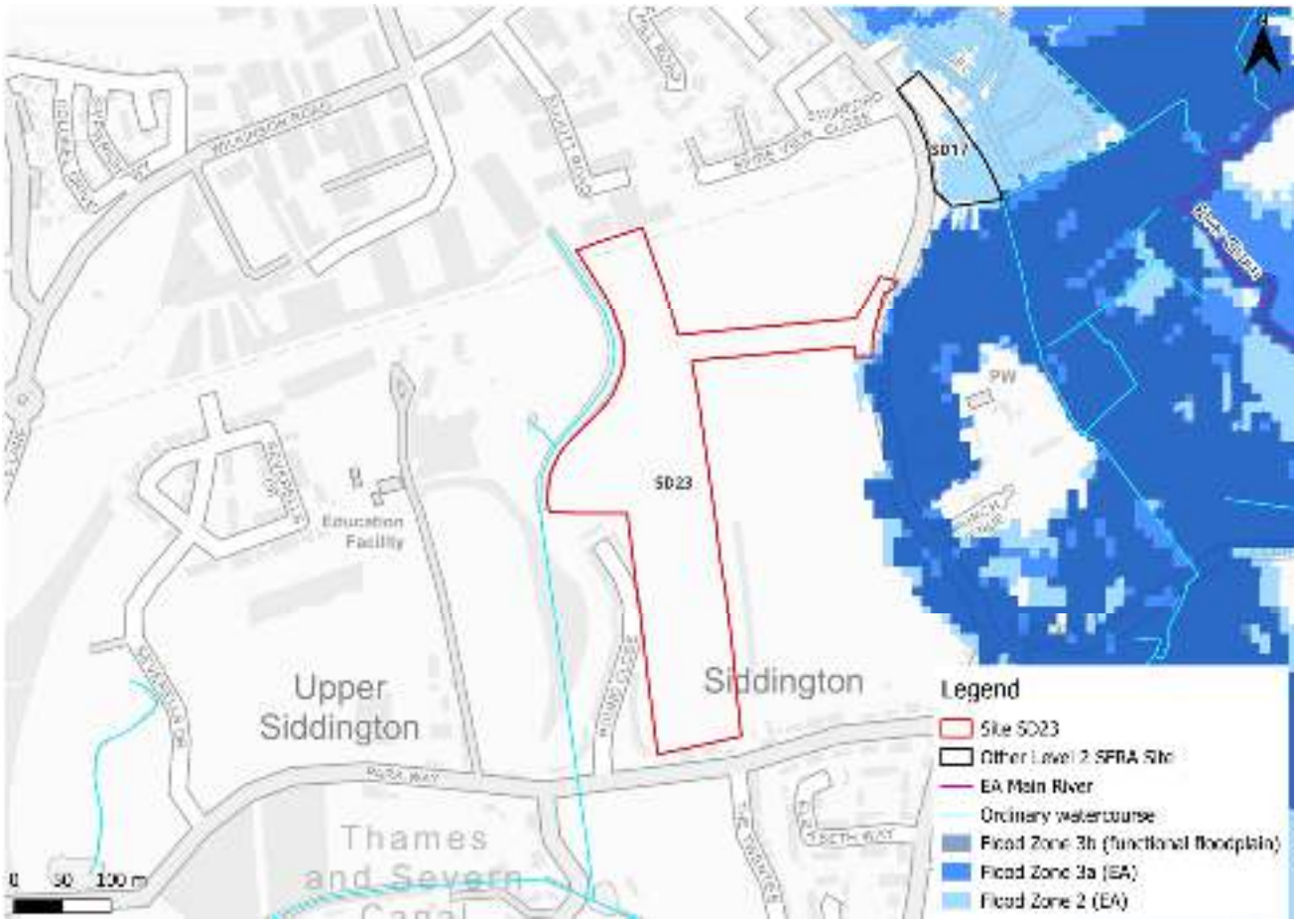

Figure 2-1: Present day risk

2.1.2 River Churn (Baunton to Siddington) 2011 model outputs

Present day risk to the site comes from the River Churn to the east of the site. The 1% AEP undefended event from the River Churn (Baunton to Siddington) 2011 model shows the same extent of flooding to the site as Flood Zone 2 of the Flood Map for Planning (Figure 2-2). Risk is modelled to be confined to the proposed access point on the eastern site boundary, with depths of less than 0.15 m and velocity less than 0.25 m3/s.

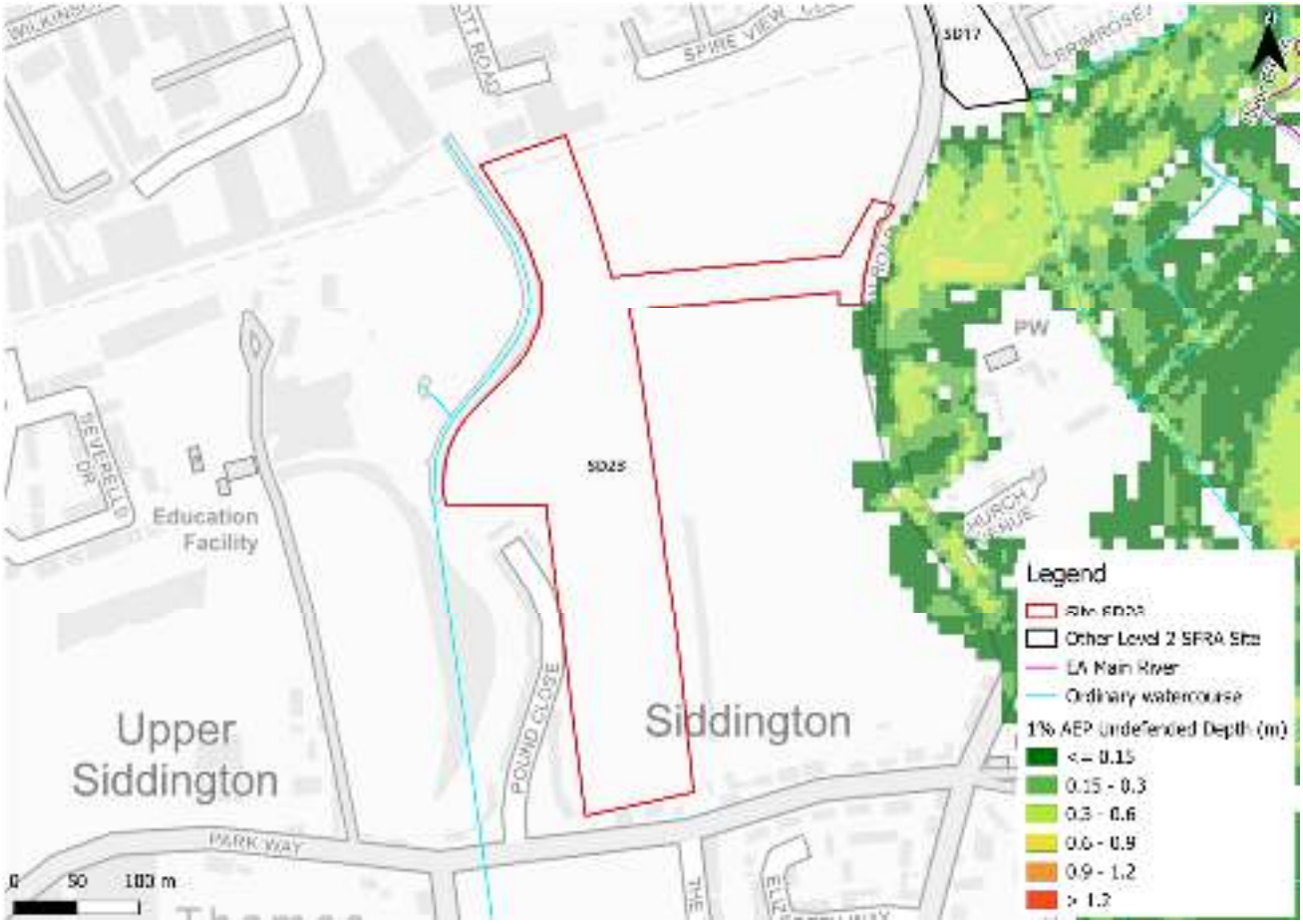

Figure 2-2: Flood depths for the 1% AEP undefended flood event

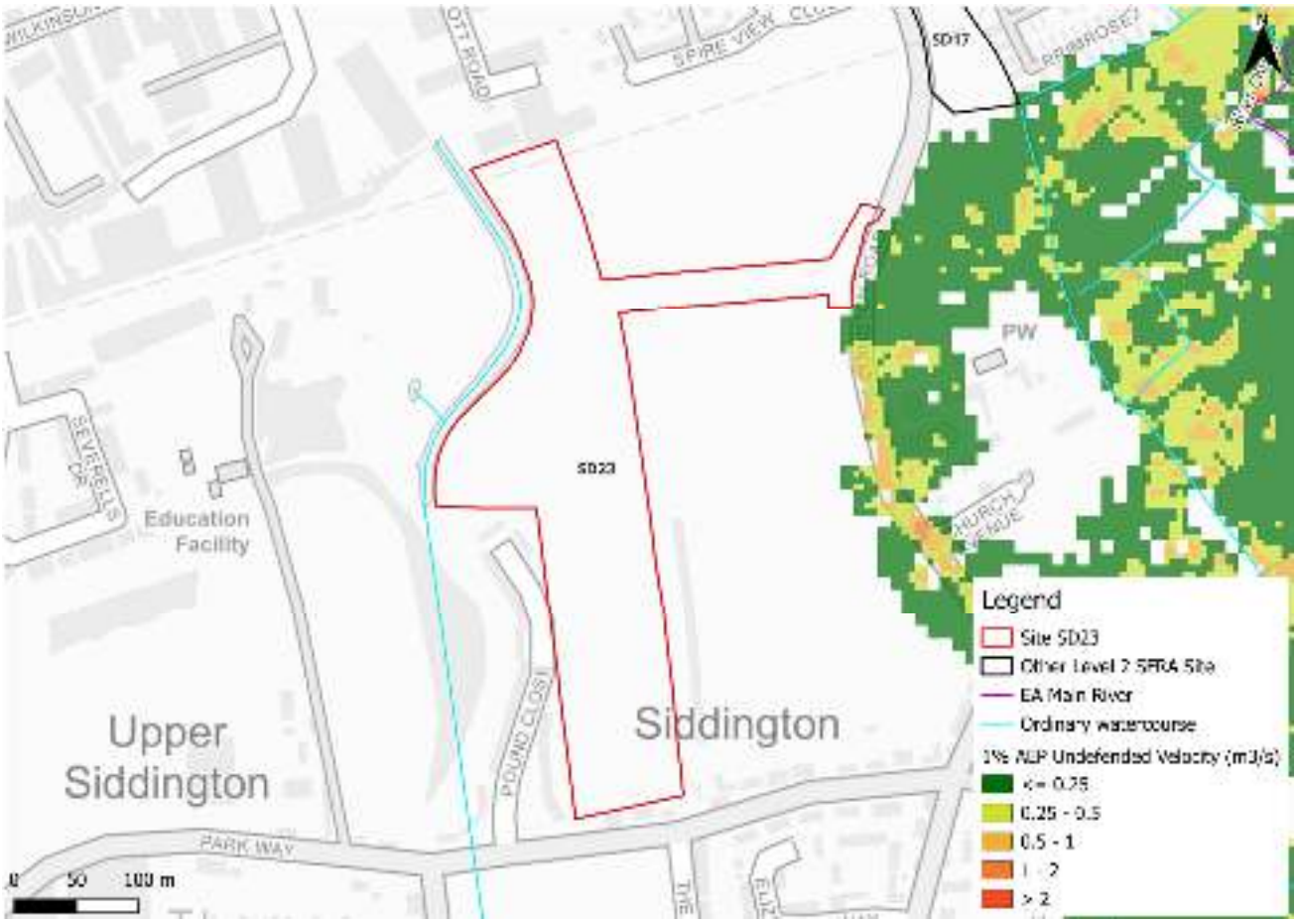

Figure 2-3: Flood velocities for the 1% AEP undefended flood event

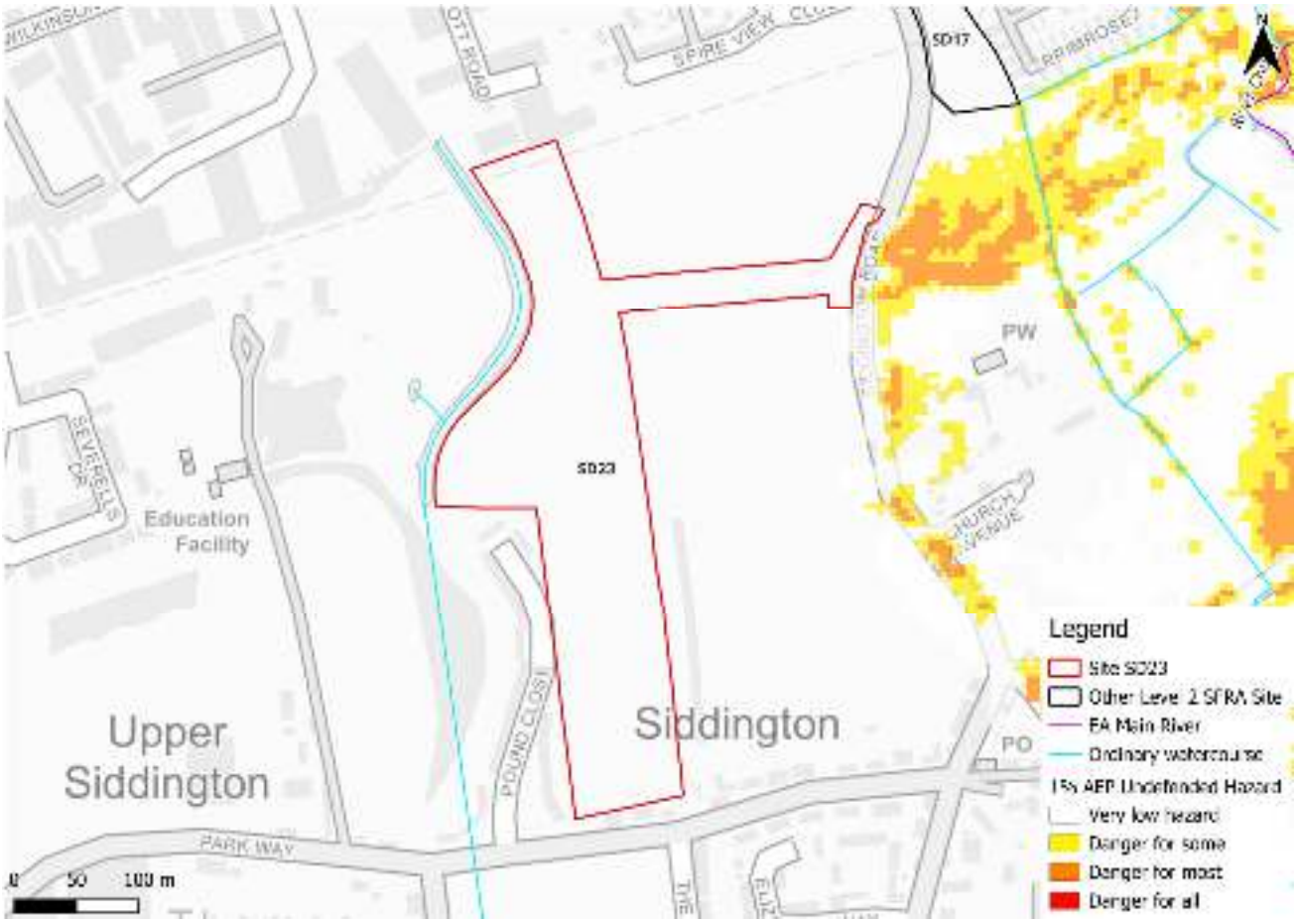

Figure 2-4: Flood hazards for the 1% AEP undefended flood event

2.2 Impacts from climate change

2.2.1 River Churn (Baunton to Siddington) 2011 model outputs

The EA's SFRA guidance states that SFRAs should assess the central allowance for the 2080s epoch for peak river flows. The site is located within the Gloucestershire and the Vale Management Catchment. The central allowance within this catchment is 26% on peak flows (Table 2-2). The impacts of climate change on flood risk are included in the model for the 1% AEP undefended event using 30% on peak flows rather than the current central allowance of 26%.

Table 2-2: Modelled climate change allowances for peak river flows within the Gloucestershire and the Vale Management Catchment

Epoch	Central (%)	Higher (%)	Upper (%)
2020s	11	17	33
2050s	11	19	43
2080s	26	41	84

Figure 2-5, Figure 2-6, and Figure 2-7 show the modelled flood depths, velocities, and hazards respectively for the 1% AEP undefended event plus the central allowance for peak river flows. The risk area increases in size, but flood depths velocities remain low. Flood hazards are shown to be 'very low hazard'.

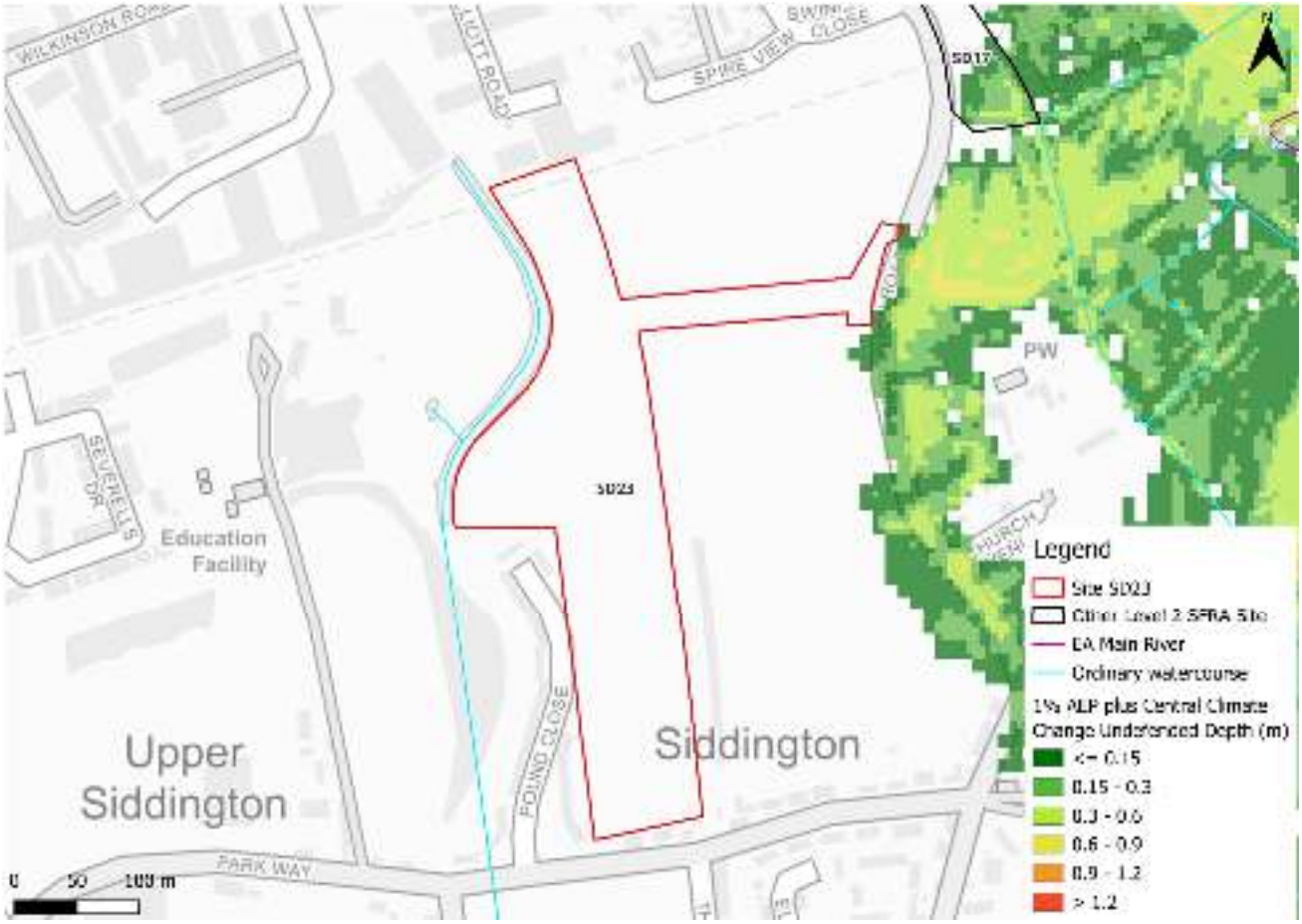

Figure 2-5: Flood depths for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

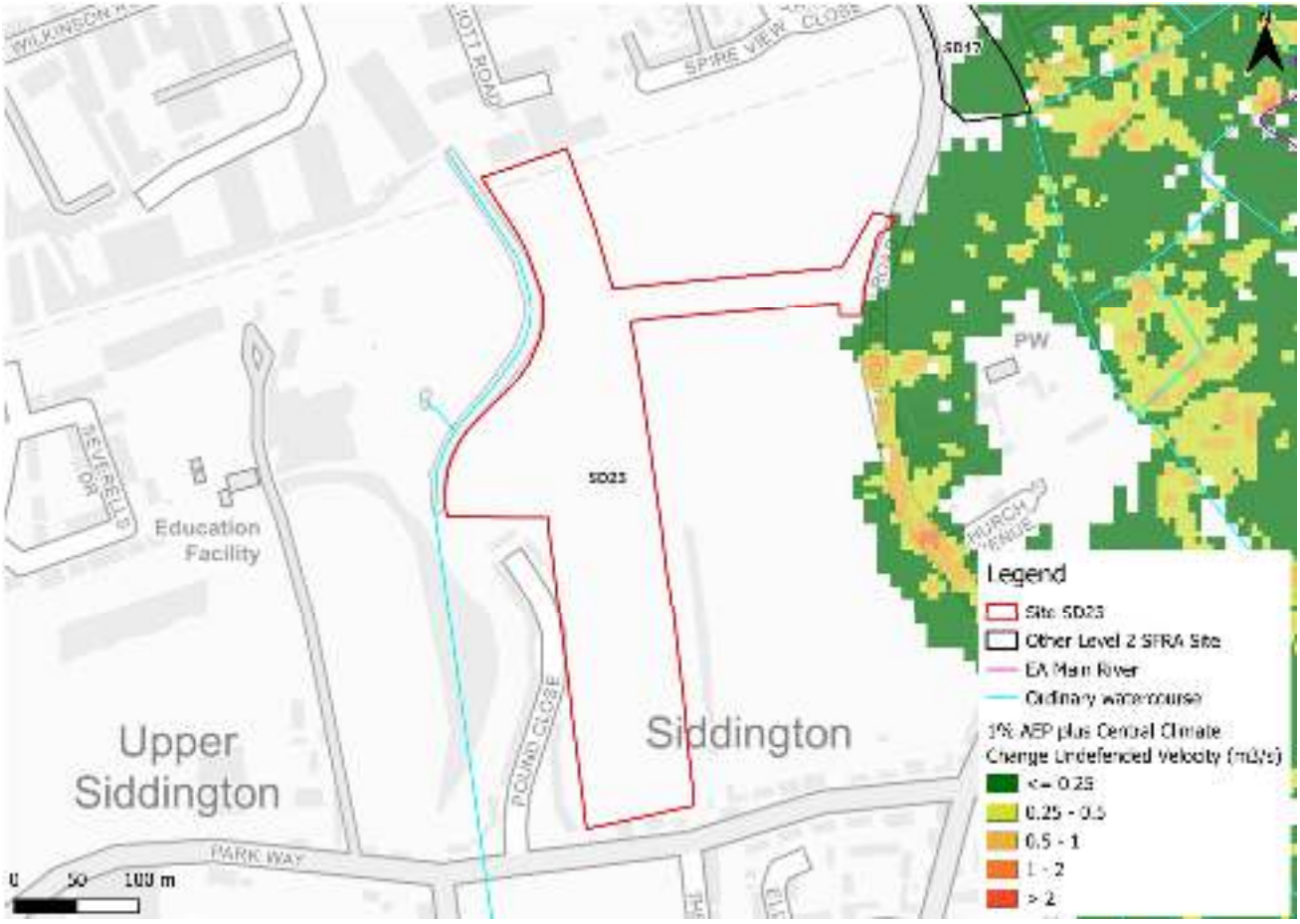

Figure 2-6: Flood velocities for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

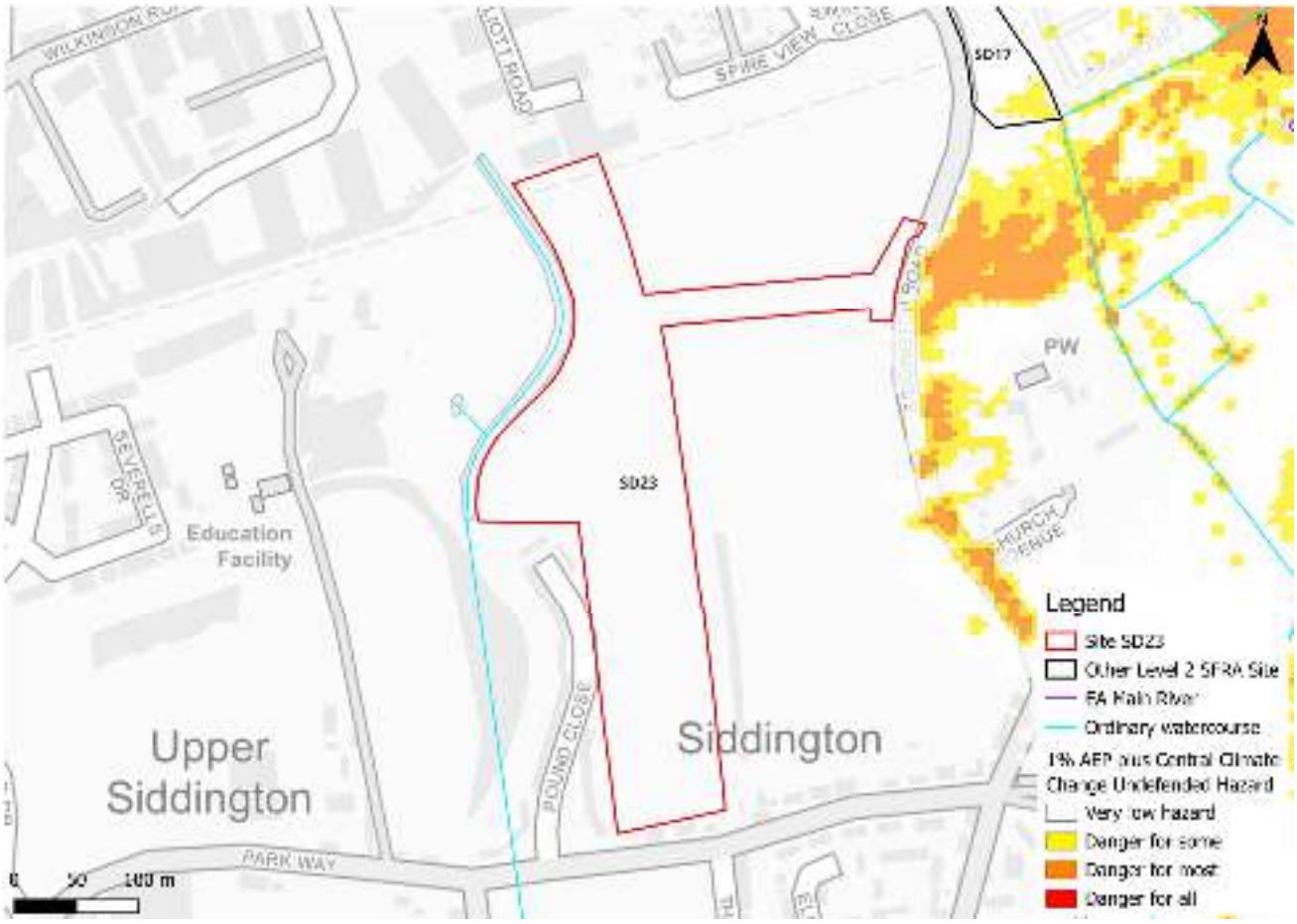

Figure 2-7: Flood hazards for the 1% AEP undefended flood event plus central climate change allowance for the 2080s epoch

2.2.2 Flood Map for Planning - Flood Zones plus Climate Change

Figure 2-8 shows the Flood Map for Planning - Flood Zones plus Climate Change dataset which includes the central allowance for the 2080s epoch. This represents the impact of climate change on Flood Zone 3a and Flood Zone 2 combined. This shows a greater extent of flooding than the modelled event. This is due to the Flood Zones plus Climate Change dataset also including the larger 0.1% AEP event. However, the risk to the site only increases slightly.

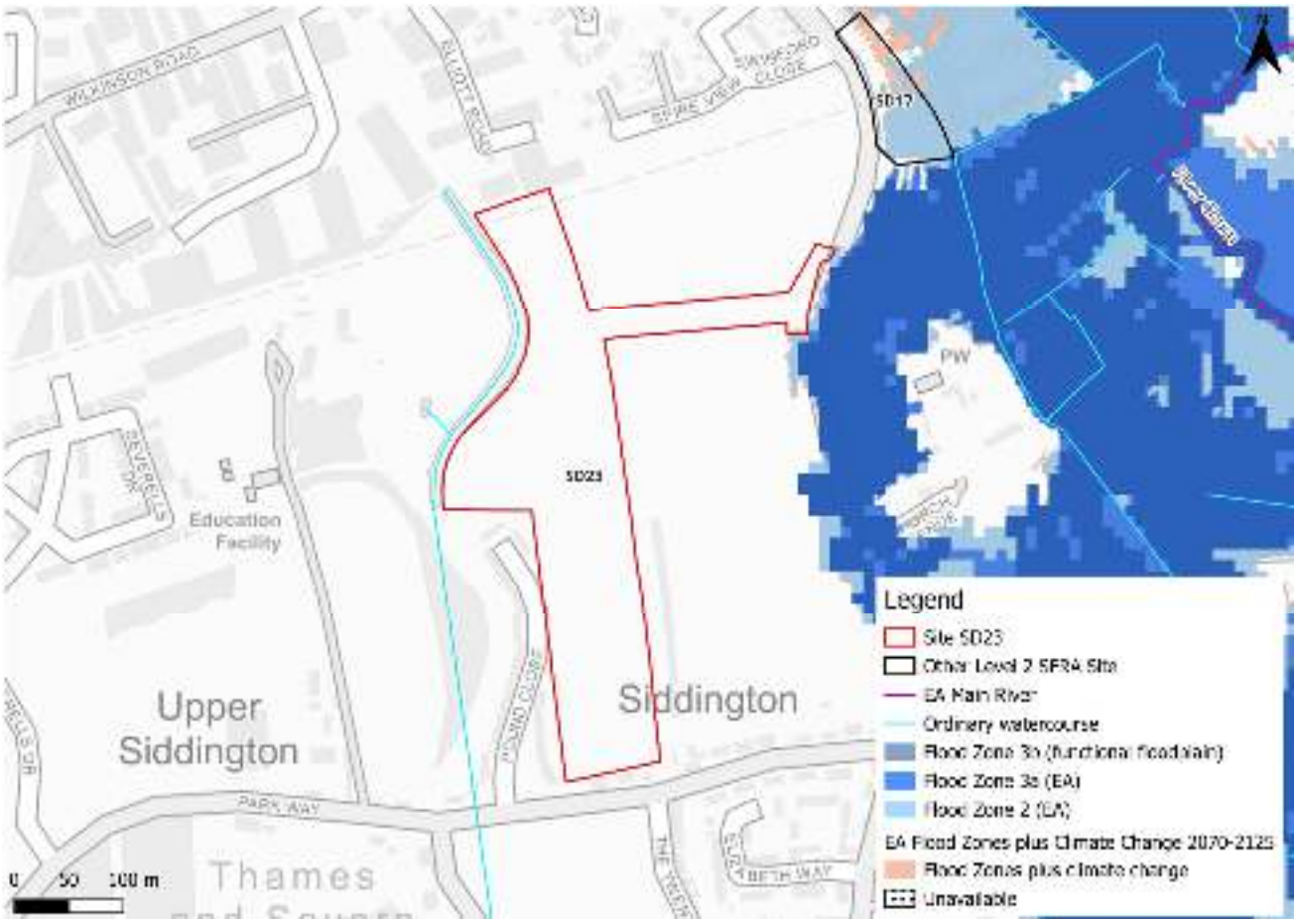

Figure 2-8: EA Flood Zones plus Climate Change

2.3 Historic flood incidents

The EA's Historic Flood Map (HFM) and Recorded Flood Outlines (RFO) datasets have been considered. There are no recorded historic flood events within the vicinity of the site, according to these datasets. The LLFA provided its historic floods register. There have been six recorded flooding incidents within the Siddington and Cerney Rural Ward within which the site is located.

2.4 Flood risk management

2.4.1 Flood defences

The site does not benefit from any formal engineered flood defences, according to the EA's spatial flood defences dataset.

2.4.2 Working with Natural Processes

The EA's Working with Natural Processes (WwNP) dataset has been interrogated to identify opportunities for Natural Flood Management (NFM) to reduce flood risk to the site and surrounding areas. Figure 2-9 shows that the site and wider area could benefit from

riparian, floodplain, and wider catchment tree planting. Tree planting can help to slow the flow to benefit areas downstream. There is also potential for runoff attenuation. The WwNP mapping is broadscale and indicative. Further investigation is required for any land shown to have potential for WwNP.

Figure 2-9: Working with Natural Processes

2.5 Emergency planning

2.5.1 Flood warning and alerts

The EA operates a Flood Warning Service for properties located within a Flood Warning Area (FWA) for when a flood event is expected to occur. The area at risk is included within a FWA, namely 061FWF02Cirncstr - River Churn from Baunton to Siddington including Cirencester, as shown in Figure 2-10.

Flood alerts may be issued before a flood warning for properties located within a Flood Alert Area (FAA) to provide advance notice of the possibility of flooding. A flood alert may be issued when there is less confidence that flooding will occur in a FWA. The area at risk is included within a FAA, namely 061WAF02Churn - River Churn and its tributaries, as shown in Figure 2-10.

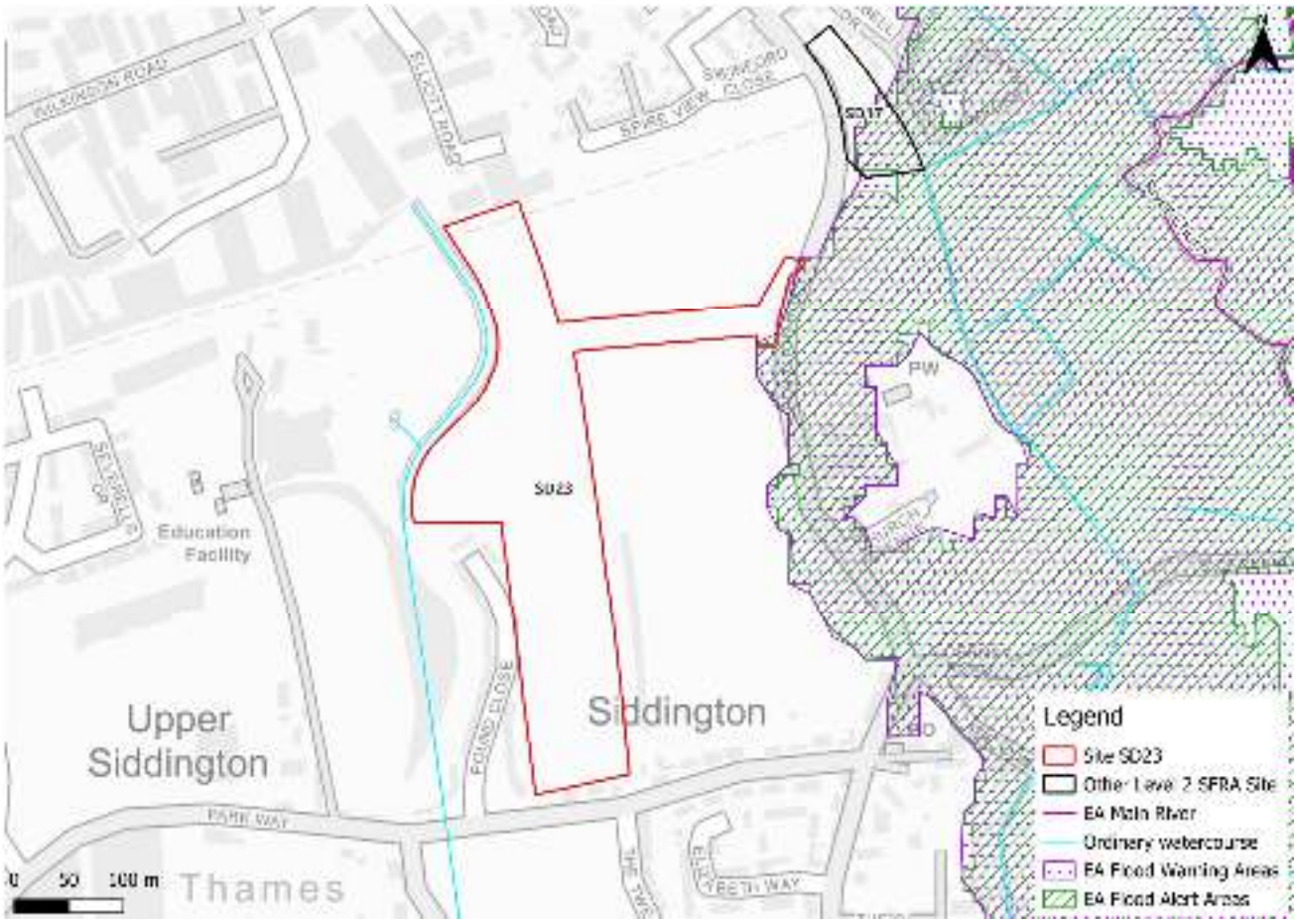

Figure 2-10: Flood warnings and alerts

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes could likely be achieved during a flood event via the west of the site via Siddington Road (Figure 2-11).

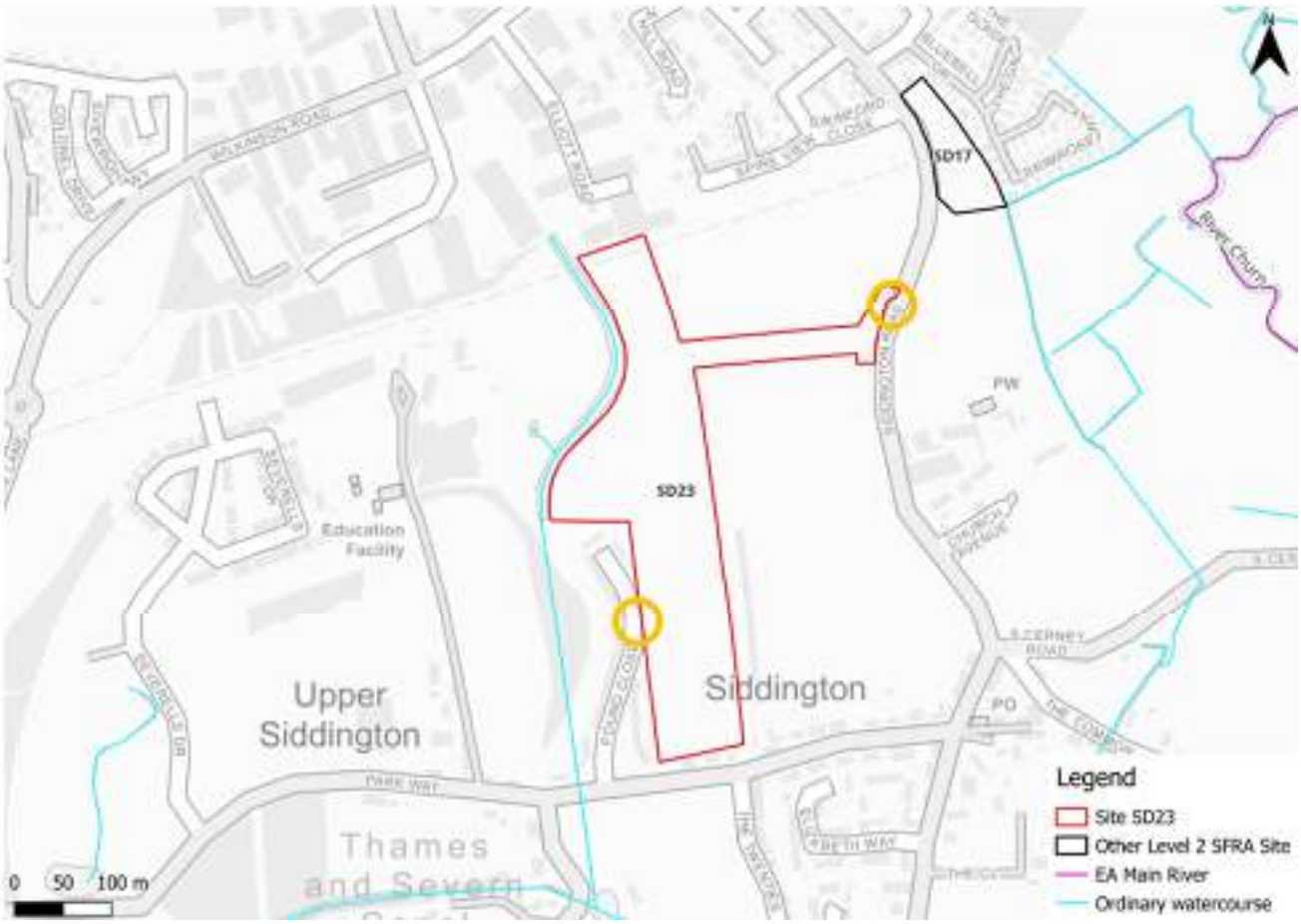

Figure 2-11: Potential access and escape routes

2.6 Observations, mitigation options, site suitability, sequential approach to development management - fluvial

- Observations:
  - The majority of the site is located within Flood Zone 1 and therefore at low risk from rivers.
  - Detailed modelling and the Flood Map for Planning show that the site is at no additional risk from climate change.
  - There is risk to the main access road, Siddington Road, heading south.
- Mitigation:
  - EA flood warnings and alerts should continue to be in place to ensure early evacuation of site users before an extreme flood event occurs.
- Access and escape:
  - Safe access and escape routes must be available at all times. This includes the ability of residents and site users to safely access and exit a building during a design flood and to evacuate before an extreme flood (0.1% AEP event plus climate change). Routes should be directed to the north of Siddington Road or via Pound Close to the west.

3 Flood risk from surface water

3.1 Existing risk

3.1.1 Flood Map for Planning - Surface Water Spatial Planning Extents and Depths Present Day

Based on the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Extents Present Day map (May 2026), the site is predominantly at low risk of surface water flooding as shown in Table 3-1 and Figure 3-1 and the depth map in Figure 3-2. There is some risk to the primary access road, Siddington Road. However, safe access and escape routes appear to be achievable via the north of Siddington Road and potentially via Pound Close to the west in all events.

Table 3-1: Existing surface water flood risk based on percentage area at risk based on the Flood Map for Planning - Surface Water Spatial Planning Extents Present Day datasets

Less than 0.1% AEP event (% area)	0.1% AEP event (% area)	1% AEP event (% area)	3.3% AEP event (% area)
97	1	1	1

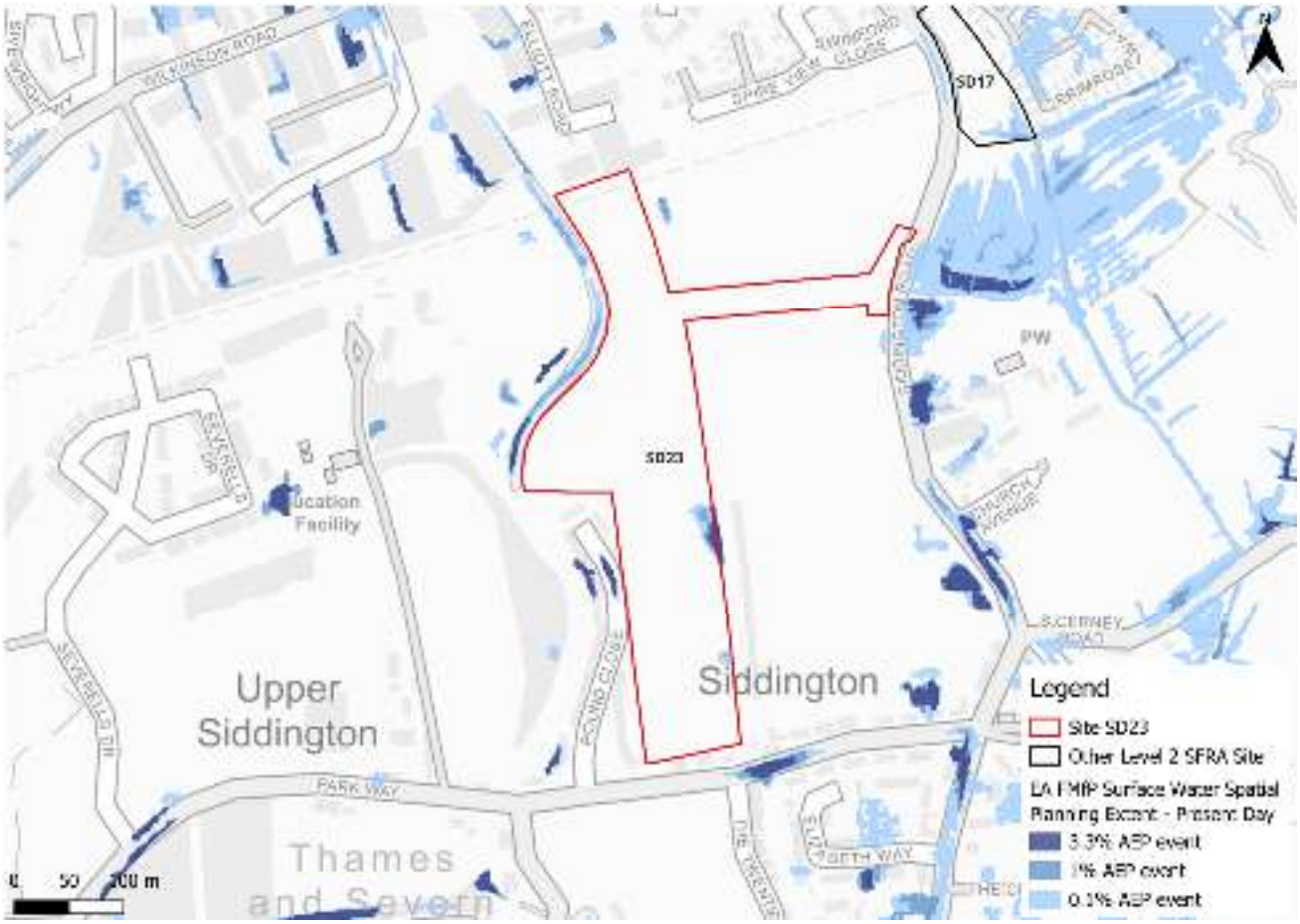

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

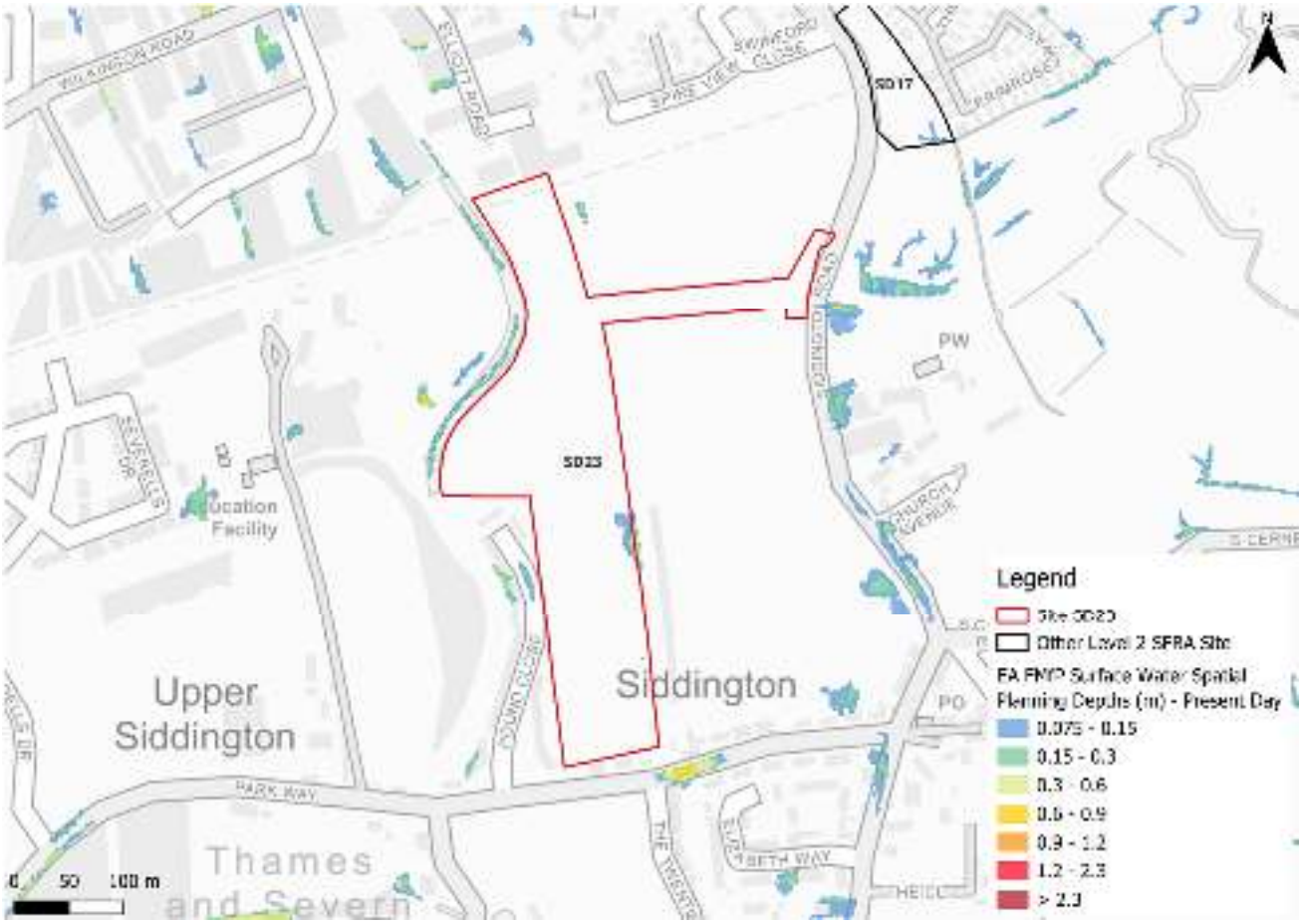

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 1% AEP event flood depths (m)

3.1.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning data does not include hazard information suitable for planning purposes. Therefore, this Level 2 SFRA considers the third generation Risk of Flooding from Surface Water (RoFSW) hazard mapping in addition to the Flood Map for Planning - Surface Water Spatial Planning extents and depths, as the best available information.

The RoFSW map shows there to be areas of low to moderate flood hazard along the centre-east boundary of the site (Figure 3-3).

Note: the Flood Map for Planning - Surface Water Spatial Planning data does not map flooding less than 0.075m (7.5cm) in depth. Therefore, where the map may show no flooding, there may be shallow flooding up to a depth of 0.075m. In contrast, the third generation RoFSW does not map flooding with a hazard rating of less than 0.575.

Figure 3-3: Third generation - Risk of Flooding from Surface Water map present day medium risk surface water flood hazard[1]

3.2 Impacts from climate change

3.2.1 Flood Map for Planning - Surface Water Spatial Planning Extents and Depths Climate Change

The EA's climate change allowance guidance states that SFRA's should assess the upper end peak rainfall allowance for the 2070s epoch. This dataset is included in the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Climate Change dataset (May 2026). The peak rainfall intensity allowances for the Gloucestershire and the Vale management catchment are shown in Table 3-2. The allowance for the 0.1% AEP event is not stated in the EA guidance.

1 Based on Section 7.5 Hazard rating. What is the Risk of Flooding from Surface Water map? Report version 2.0. April 2019. Environment Agency.

Table 3-2: Peak rainfall intensity allowances for the Gloucestershire and the Vale Management Catchment

Return period	Central allowance 2070s (% increase)	Upper end allowance 2070s (% increase)
3.3%	25	35
1%	25	40

Figure 3-4 shows the surface water flood extents for the 2070s upper end climate change scenario. The site is shown to be at additional risk from surface water climate change. There is a small additional area of ponding to the south and an expansion in the present day area of ponding.

Flood depths are mainly shallow, with only a small area between 0.3m - 0.6m deep (Figure 3-5). Safe access and escape routes would likely remain achievable via the north of Siddington Road and via Pound Close.

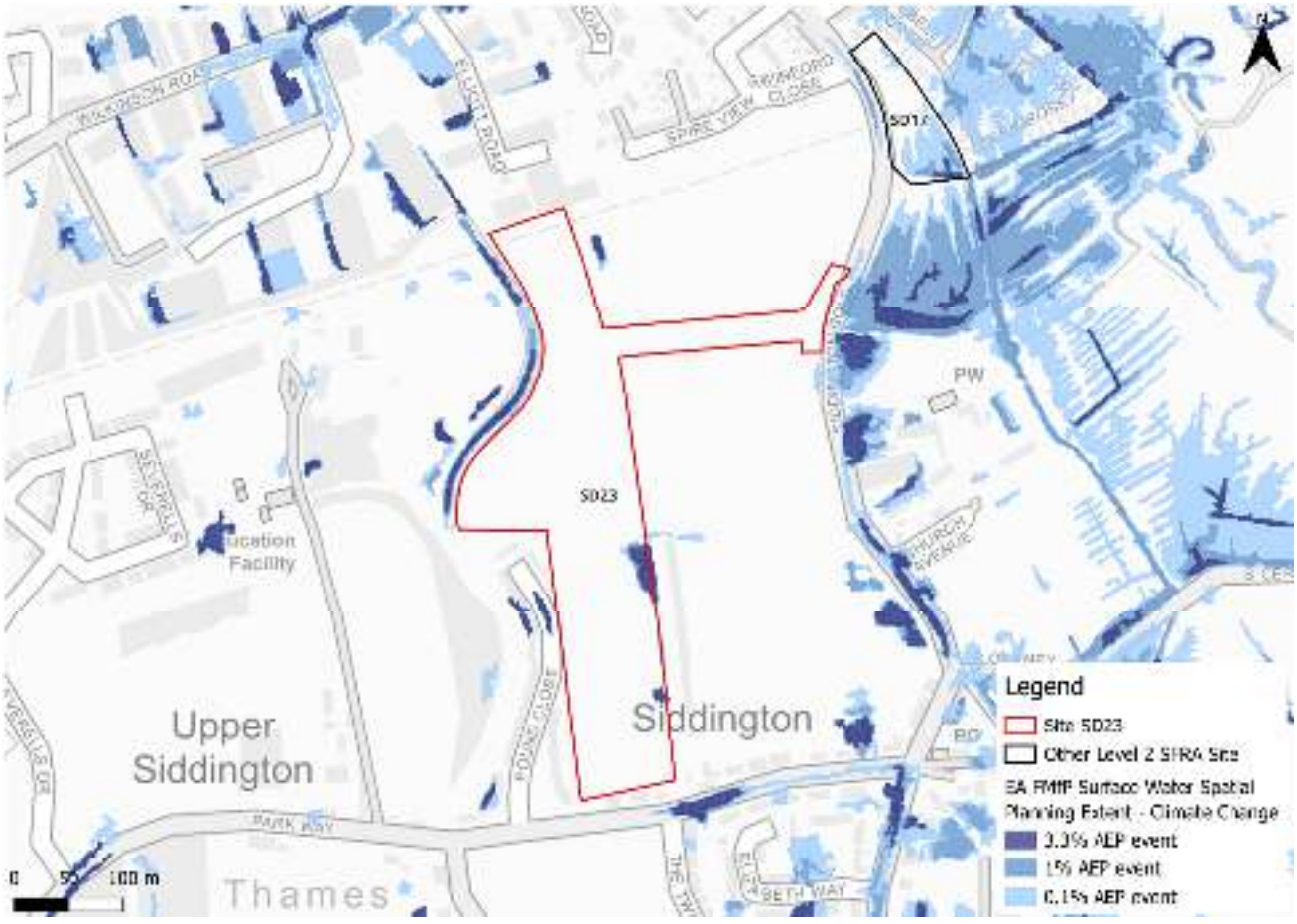

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

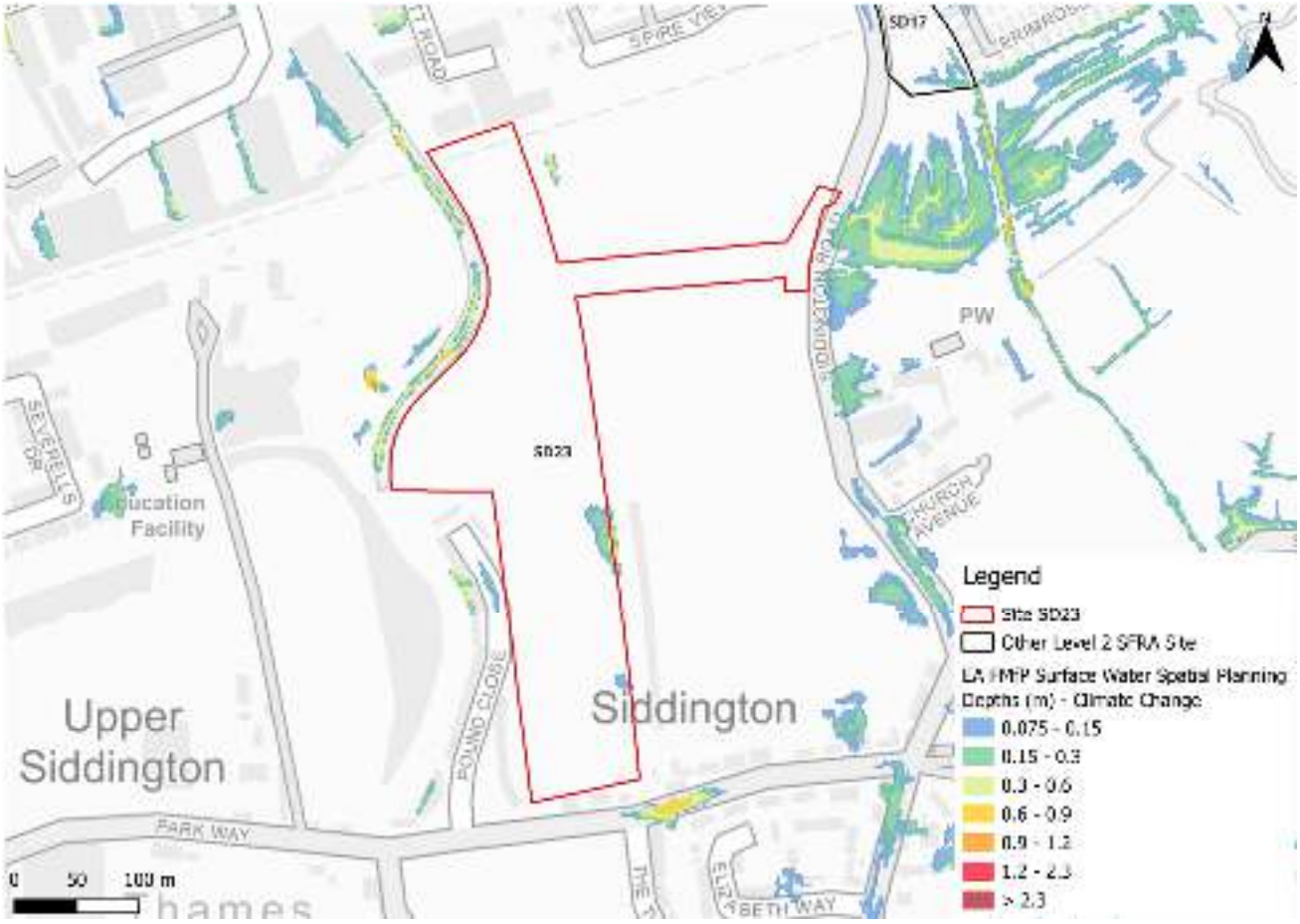

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 1% AEP event flood depths (m)

3.2.2 Risk of Flooding from Surface Water - Third Generation Hazard

At the time of writing, the EA's latest Flood Map for Planning - Surface Water Spatial Planning climate change data does not include hazard information suitable for planning purposes. This Level 2 SFRA therefore considers the RoFSW low-risk surface water event as a conservative proxy for the RoFSW medium risk event plus climate change, as the best available information to assess surface water flood hazards (Figure 3-6).

Figure 3-6: Third generation - Risk of Flooding from Surface Water map present day low risk surface water flood hazard as a climate change proxy

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There are no recorded sewer flooding incidents nearby the site nor within the Siddington & Cerney Rural Ward.

3.4 Observations, mitigation options, site suitability, sequential approach to development management - surface water

- Current risk to the site is predominantly low, with 97% of the site being outside of the 0.1% AEP surface water flood event.
- Risk to the site is shown to slightly increase in extent within the site when considering the impact of climate change.
- Topographic low spots should be considered and included in site design and ideally left in place to flood naturally when required.
- The drainage strategy must ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or betterment should apply. The developer should consult the LLFA and follow local and National SuDS guidance.

- Safe access and escape routes would likely be achievable via the north of Siddington Road to the east of the site, as well as Pound Close to the west of the site.

4 Cumulative impacts assessment and high risk catchments

4.1 Level 1 cumulative impacts assessment

A cumulative impact assessment was completed through the Cotswold Level 1 SFRA (2026), which aimed to identify catchments sensitive to the cumulative impact of new development. This site is located within one catchment, namely, the Churn (Baunton to Cricklade) catchment. This catchment is ranked as a high sensitivity catchment. Planning considerations for all sites can be found in Appendix F of the Level 1 SFRA. Cumulative impacts of development should also be considered as part of a site-specific FRA.

5 Groundwater, geology and SuDS suitability

Risk of groundwater emergence is assessed in this SFRA using JBA's 5m Groundwater Emergence Map. Figure 5-1 shows the map covering this site and the surrounding areas. Table 5-1 explains the risk classifications. The map shows there is a risk of groundwater emergence to both surface and subsurface assets in the western and eastern side of the site, including the access route. Here, groundwater may emerge at significant rates in this area has the capacity to flow overland and/or pond within any topographic low spots. The centre of the site is not at risk.

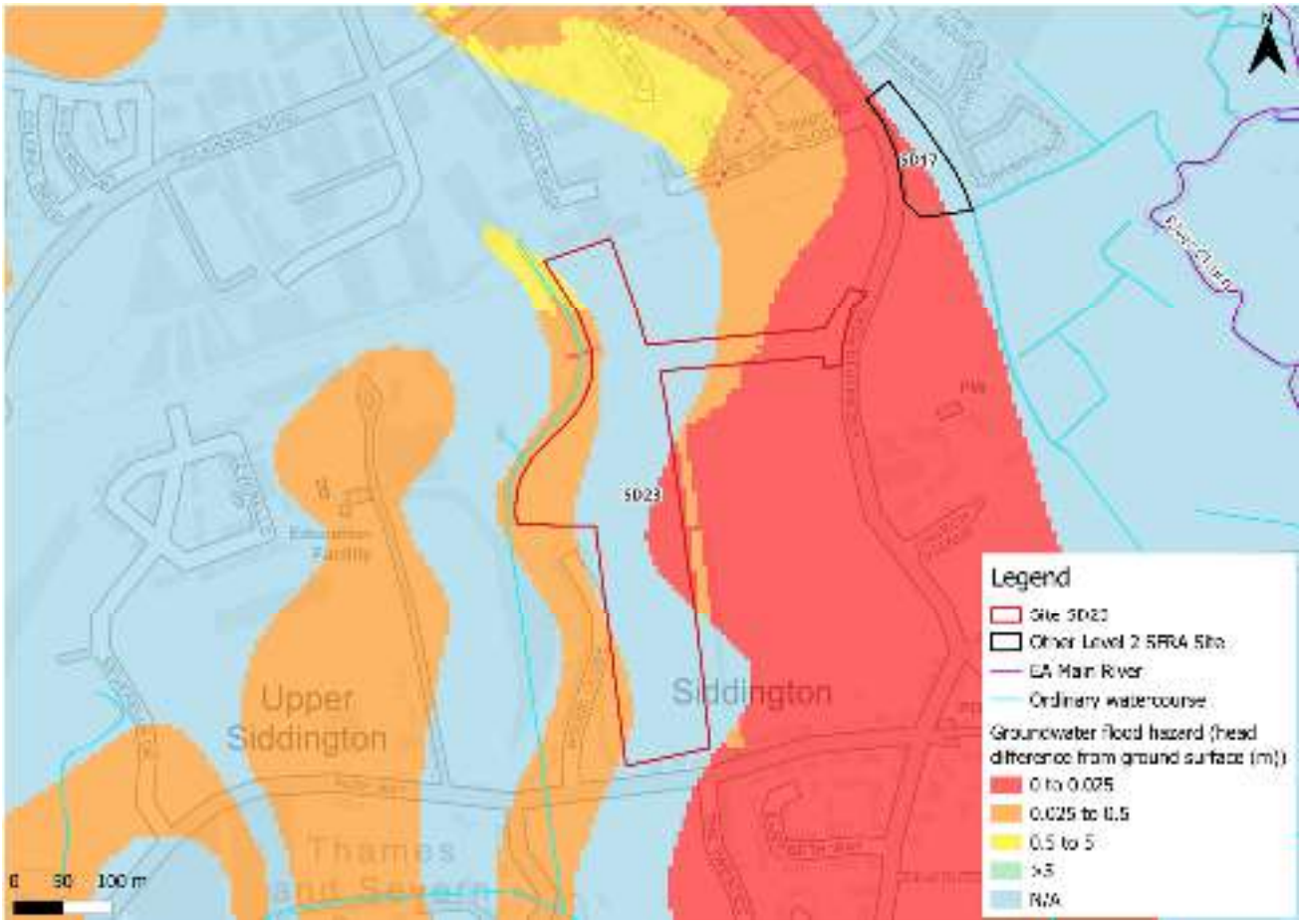

Figure 5-1: JBA 5m Groundwater Emergence Map

Table 5-1: Groundwater Hazard Classification

Groundwater head difference (m)*	Class label
0 to 0.025	Groundwater levels are either at very near (within 0.025m of) the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to both surface and subsurface assets. Groundwater may emerge at significant rates and has the capacity to flow overland and/or pond within any topographic low spots.
0.025 to 0.5	Groundwater levels are between 0.025m and 0.5m below the ground surface in the 100-year return period flood event. Within this zone there is a risk of groundwater flooding to surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.
0.5 to 5	Groundwater levels are between 0.5m and 5m below the ground surface in the 100-year return period flood event There is a risk of flooding to subsurface assets, but surface manifestation of groundwater is unlikely.
>5	Groundwater levels are at least 5m below the ground surface in the 100-year return period flood event. Flooding from groundwater is not likely.
N/A	No risk. This zone is deemed as having a negligible risk from groundwater flooding due to the nature of the local geological deposits.
*Difference is defined as ground surface in mAOD minus modelled groundwater table in mAOD.	

The underlying bedrock within the site is sandstone, limestone and argillaceous rocks (Figure 5-2). Sandstone and limestone generally have a high permeability and high level of porosity, increasing infiltration rates. Superficial deposits include clay and silt which have low permeability. Infiltration SuDS may not be an option in parts of the site, though the drainage strategy for the site should fully investigate water table levels through standpipe monitoring during the period of highest groundwater levels e.g. November to April.

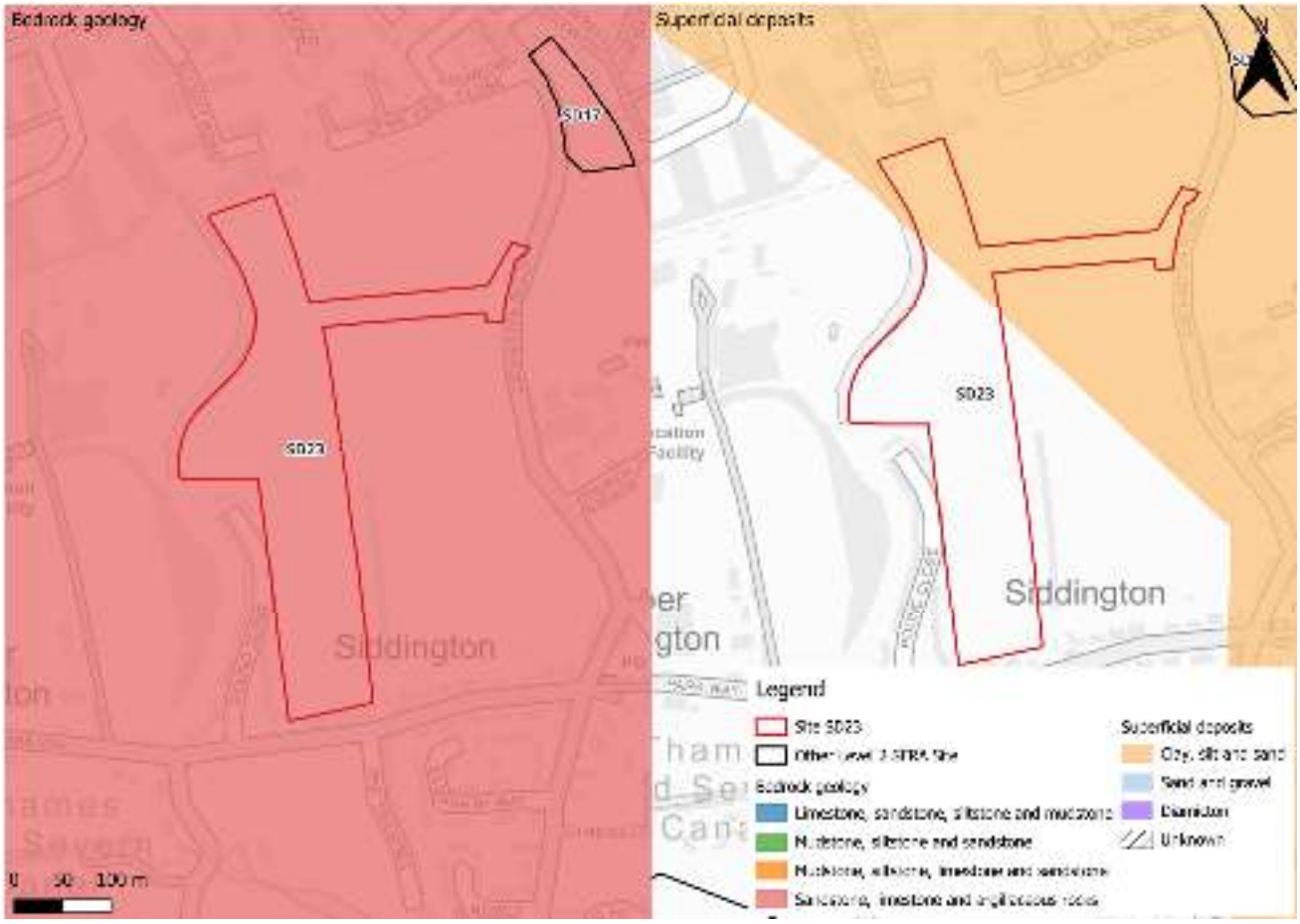

Figure 5-2: BGS Geology - Bedrock and superficial deposits

6 Residual risk

Although a site may be afforded some protection from defences and / or drainage infrastructure, there is always a residual risk of flooding from asset failure i.e. defence breaches, or blockages of culverts or drainage assets.

There does not appear to be any residual risk to the site from asset blockage or defence breach.

6.1 Flood risk from reservoirs

The EA's Reservoir Flood Maps (RFM) (2021) show where water may go in the unlikely event of a reservoir or dam failure. The site is not modelled to be at risk from reservoir flooding.

7 Overall site assessment

7.1 Can part b) of the Exception Test be passed?

This site is not required to pass part b) of the exception test as it is not located within Flood Zone 3a, however it must still be proven that the development can be safe for its lifetime, which is generally considered to be 100 years for residential development.

7.2 Main recommendations and site-specific FRA requirements

Based on the evidence presented in the Level 1 SFRA (2026) and this Level 2 SFRA:

- Based on current information, this site can be allocated.
- Safe access arrangements must be available and confirmed at the FRA stage.
- A drainage strategy should ensure there is no increase in surface water flood risk elsewhere as a result of new development. Greenfield runoff rates or betterment should apply with consideration of local and national SuDS guidance.
- Groundwater conditions must be investigated further through the site-specific FRA. This should be assessed through standpipe monitoring during the period of highest groundwater levels e.g. November to April.
- The site-specific FRA should be carried out in line with the latest versions of the NPPF; FRCC-PPG; EA online guidance; the CDC Local Plan, and national and local SuDS policy and guidelines.
- Throughout the FRA process, consultation should be carried out with, where applicable, the local planning authority; the lead local flood authority; emergency planning officers; the Environment Agency; the water companies; the highways authorities; and the emergency services.

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Cotswold Level 2 Strategic Flood Risk Assessment Site Summary

Site BK14A - The Limes, Station Road

Final Draft Report

Prepared for	Date
Cotswold District Council	August 2026

COTSWOLD
District Council

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Reviewed by	Mike Williamson BSc MSc CGeog FRGS EADA Principal Analyst
Authorised by	Mike Williamson BSc MSc CGeog FRGS EADA Principal Analyst

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Contract

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JBA Project Code	2025s1921

This report describes work commissioned by Cotswold District Council by an instruction dated 28 May 2026. The Client's representative for the contract was Joanne Corbett of Cotswold District Council. Laura Thompson-Jones of JBA Consulting carried out this work.

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The methodology adopted and the sources of information used by JBA in providing its services are outlined in this Report. The work described in this Report was undertaken between June and August 2026 and is based on the conditions encountered and the information available during the said period. The scope of this Report and the services are accordingly factually limited by these circumstances.

The conclusions and recommendations contained in this Report are based upon information provided by others and upon the assumption that all relevant information has been provided by those parties from whom it has been requested and that such information is accurate.

Acknowledgements

We would like to thank the Environment Agency for their assistance with this work.

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1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site BK14A. The content of this report assumes the reader has already consulted the 'Cotswold Level 1 SFRA' (2026) and the 'Cotswold Level 2 SFRA Main Report' (2026) and is therefore familiar with the terminology used in this report.

1.1 Site BK14A

- Location: The Limes, Station Road (NGR 417089, 235485)
- Existing site use: Greenspace. Also includes a current residential property and curtilage of which it is assumed is to remain in situ
- Existing site use vulnerability: More vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 1.52
- Watercourse: Blockley Brook ordinary watercourse
- Environment Agency (EA) flood model: N/A
- Summary of requirements from Level 2 SFRA scoping stage:
    - Assessment of fluvial flood depths, velocities and hazards
    - Assessment of surface water flood extent, depths and hazards
    - Assessment of all other sources of flood risk
    - Assessment of flood risk management measures and natural flood management

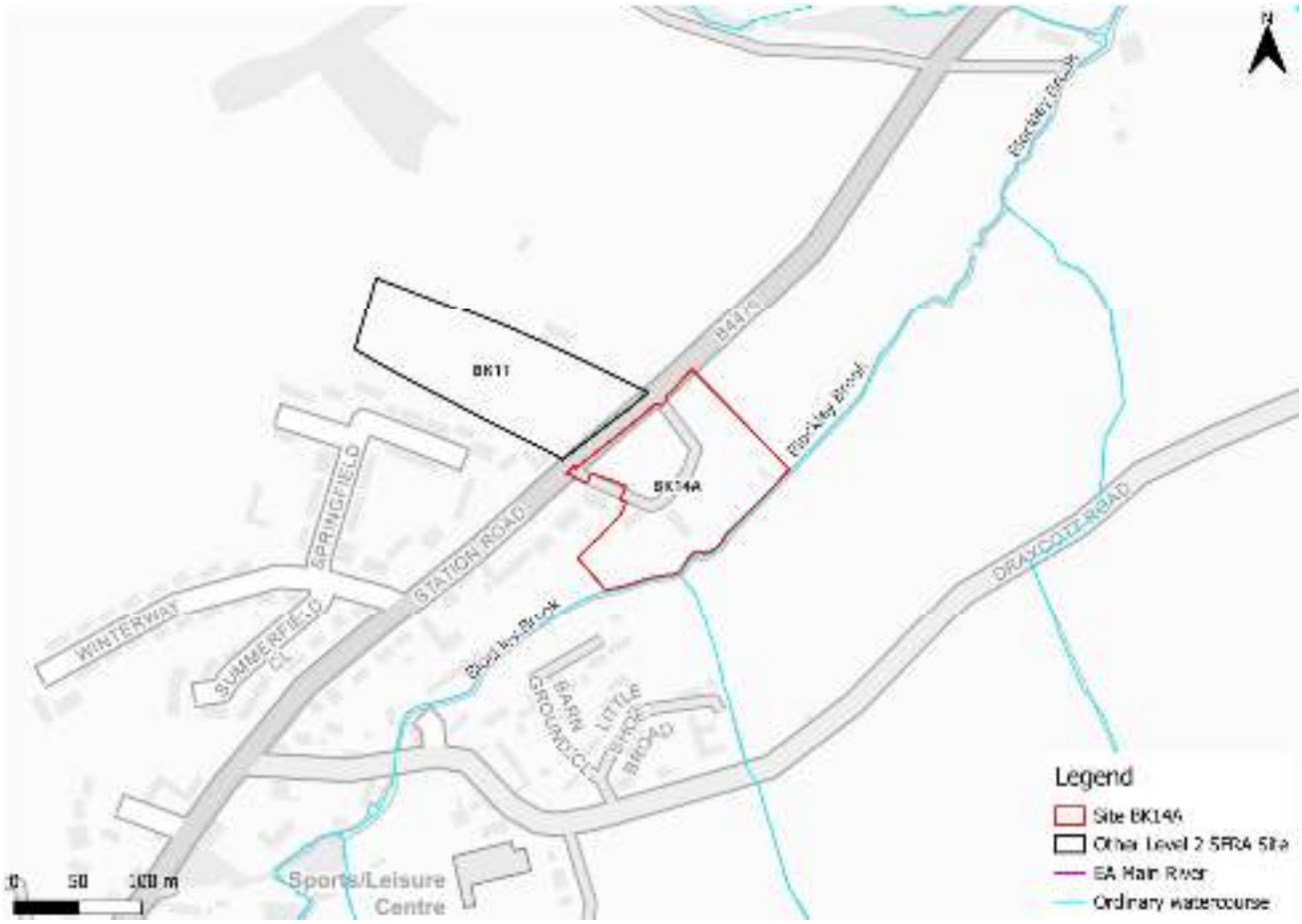

Figure 1-1: Site location boundary

Figure 1-2: Topography

The topography of the site slopes from west to east towards the floodplain of Blockley Brook.