2.2 Impacts from climate change

2.2.1 Flood Map for Planning - Flood Zones plus Climate Change

Based on the Flood Map for Planning - Flood Zones plus Climate Change dataset, the site is not shown to be at risk when considering 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 are no recorded flooding incidents within the Blockley 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. The are no potential areas which could benefit the site.

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 is not located within a FAA.

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes are available during a flood event via Station Road to the south of the site (Figure 2-2).

Figure 2-2: Potential access and escape routes

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

- Observations:
  - The site is located within Flood Zone 1 and is not shown to be at additional risk when considering climate change.
- Access and escape:
  - Based on current information, safe access and escape routes are available via Station Road to the south 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

Based on the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Extent map (May 2026), the site is at nominal risk of surface water flooding as shown in Table 3-1 and Figure 3-1. In the 1% AEP event, surface water flood depths are shown to be less than 0.15 m (Figure 3-2).

Safe access and escape routes are achievable via Station Road to the south of 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)
90	9	1	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 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 the medium risk event to not impact the site (Figure 3-3). There are therefore clear differences between the Flood Map for Planning - Surface Water Spatial Planning map and the third generation RoFSW hazard mapping. 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 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 SFRAs 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 Avon Warwickshire 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 Avon Warwickshire 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. The flow path through the centre of the site becomes more prominent in the 1% AEP and 0.1% AEP events.

Flood depths in the 1% AEP event are shallow, not exceeding 0.3m (Figure 3-5). Safe access and escape routes would likely remain achievable via Station Road to the south of the site.

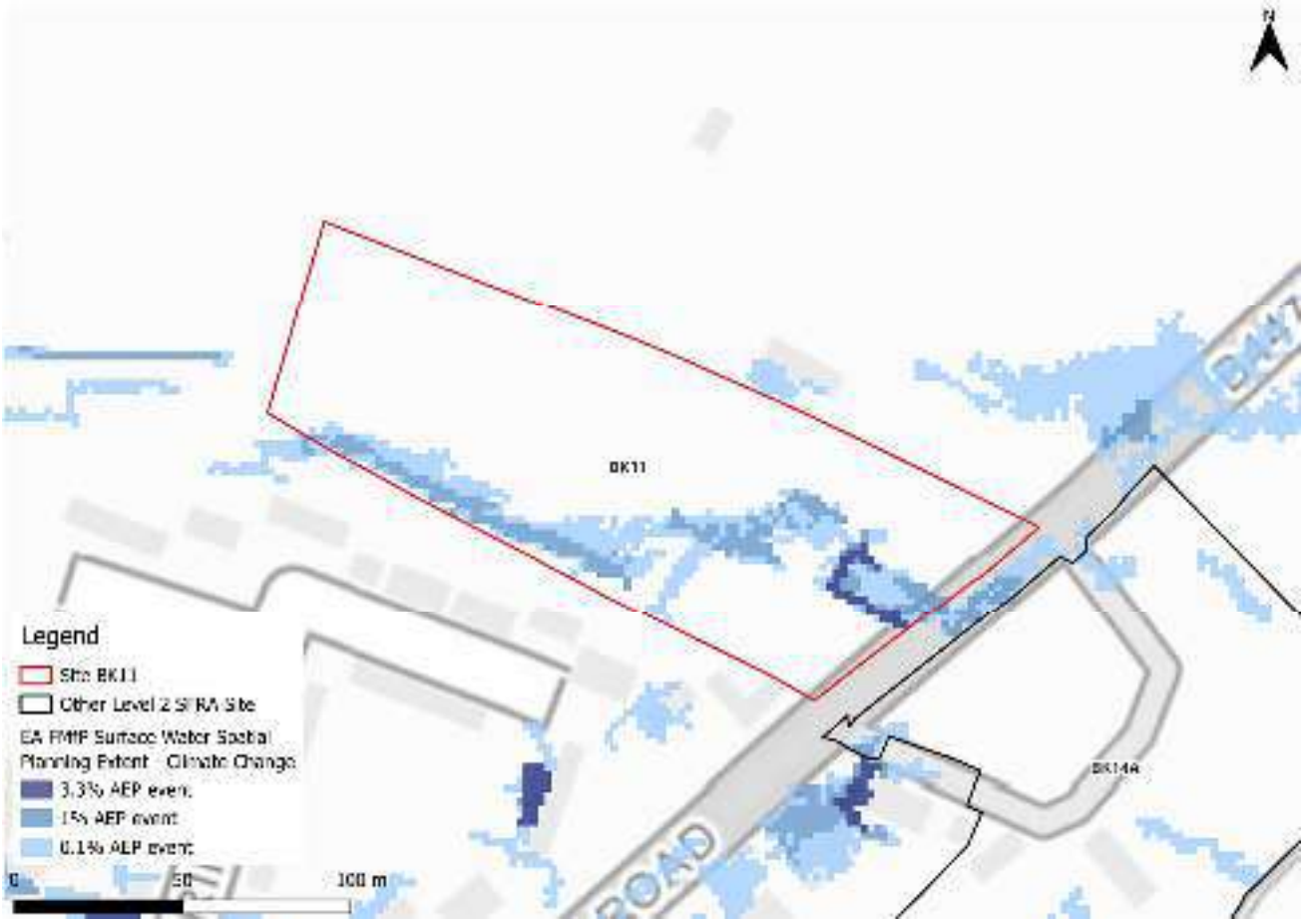

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 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, the low risk event is shown to not impact the site (Figure 3-6). This reinforces the clear differences present between the Flood Map for Planning - Surface Water Spatial Planning map and the third generation RoFSW hazard mapping.

Figure 3-6: Third generation - Risk of Flooding from Surface Water map present day 0.1% AEP event surface water flood hazard[1] as a climate change proxy

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There is one recorded sewer flooding incidents within the Blockley Ward.

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

- Current risk to the site is predominantly low, with 90% 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, however depths remain largely very shallow.
- Flood depths are shallow and it should be possible to manage the risk onsite. Topographic 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 Station Road 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 one catchment, namely, the Blockley Bk - source to conf Knee Bk 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 entire site is within an area where there is no risk of groundwater emergence. Infiltration SuDS may therefore be appropriate at this site.

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, limestone and sandstone (Figure 5-2) which will have variable permeability and porosity. There is no record of superficial deposits in the area.

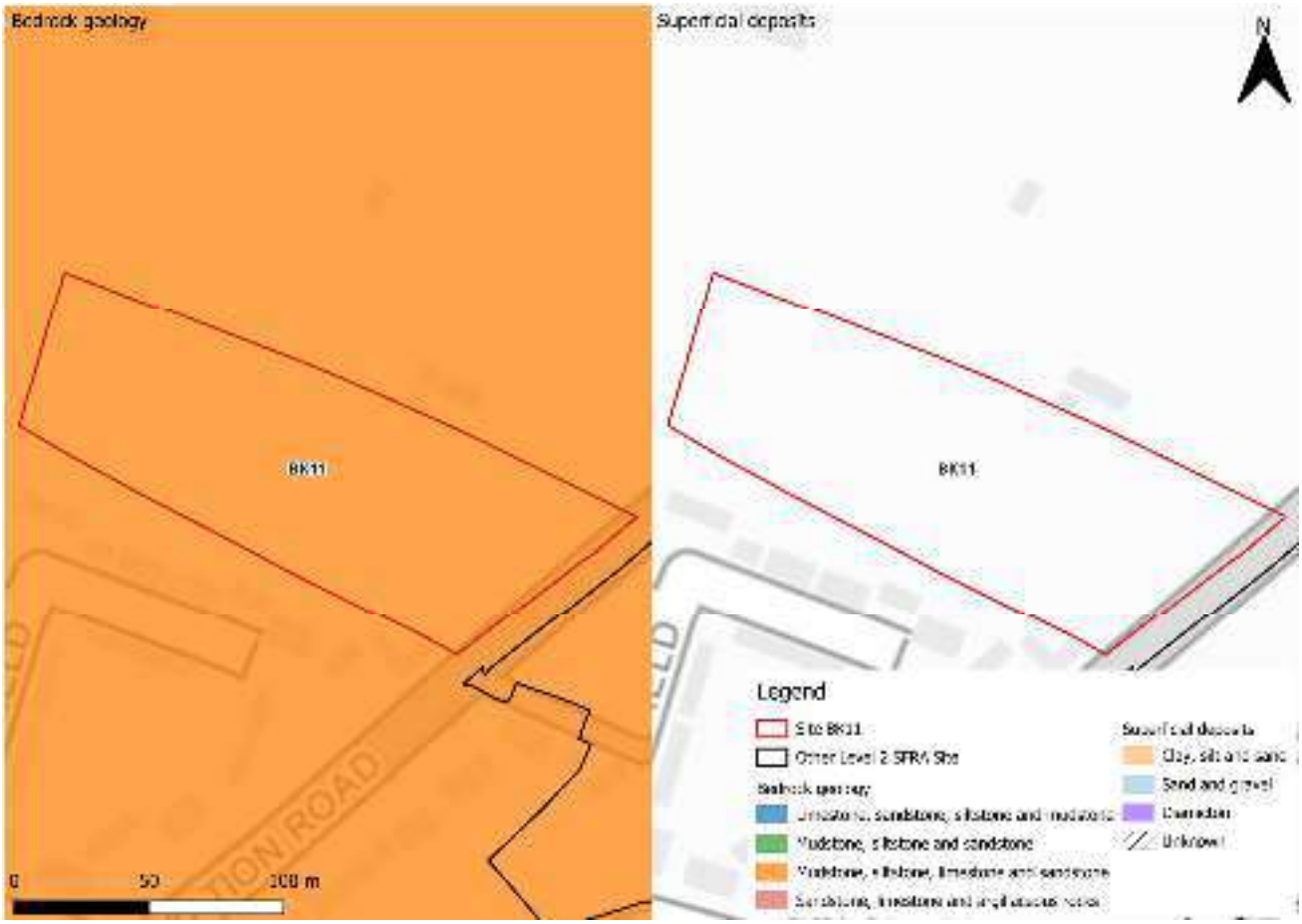

Figure 5-2: BGS Geology - Bedrock and superficial deposits

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 is no potential residual risk to the site.

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:

- It should be appropriate to develop this site for more vulnerable purposes given its location within Flood Zone 1 and nominal 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.
- 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 F39C/F52

Draft Report

Prepared for	Date
Cotswold District Council	July 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.

Purpose and Disclaimer

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of Cotswold District Council and its appointed agents in accordance with the Agreement under which our services were performed.

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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 July 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

List of Figures

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1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site F39C/F52. 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 F39C/F52

- Location: Land west of Terminus Cottage and Station Cottage
- Existing site use: Open greenspace, car park
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 3.33
- Watercourse: Unnamed ordinary watercourse
- Environment Agency (EA) flood model: N/A
- Summary of requirements from Level 2 SFRA scoping stage:
    - 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

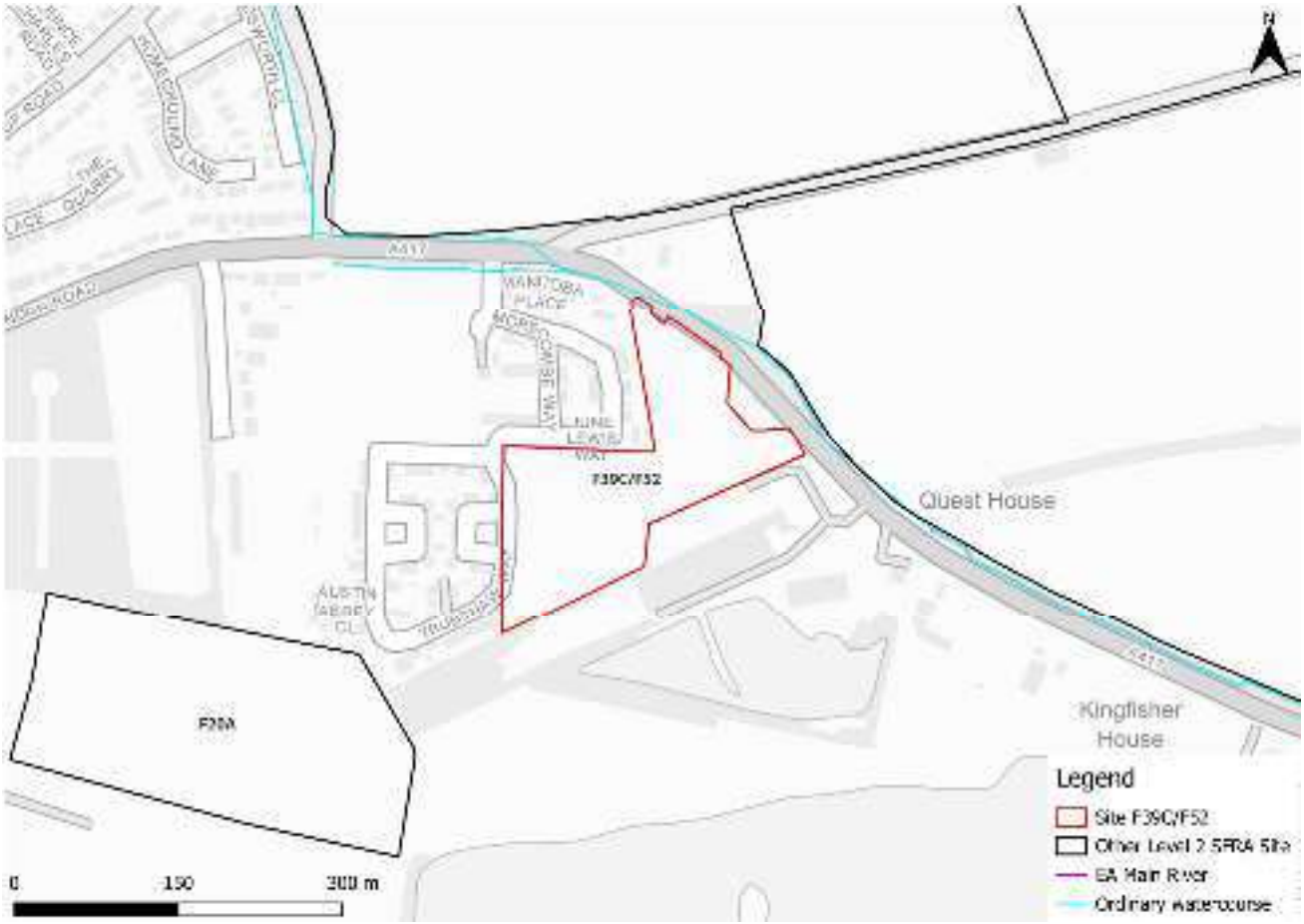

Figure 1-1: Site location boundary

Figure 1-2: Aerial photography

Figure 1-3: Topography

The topography is generally consistent across the site, with some areas of higher elevation within northwest (Figure 1-3).

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 located within Flood Zone 1 and therefore at low risk of flooding from rivers. There is an unnamed ordinary watercourse adjacent to the northeastern boundary of the site. The EA's New National Model (NNM) does not cover this watercourse, therefore the potential fluvial risk posed to the site cannot be assessed. This should be considered as part of a site-specific FRA.

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)
100	0	0	0

Figure 2-1: Present day risk

2.2 Impacts from climate change

2.2.1 Flood Map for Planning - Flood Zones plus Climate Change

Based on the Flood Map for Planning - Flood Zones plus Climate Change dataset, the site is not shown to be at risk when considering 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 are no recorded flooding incidents within the Blockley 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 2-2 shows the site and wider area could benefit from riparian 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.

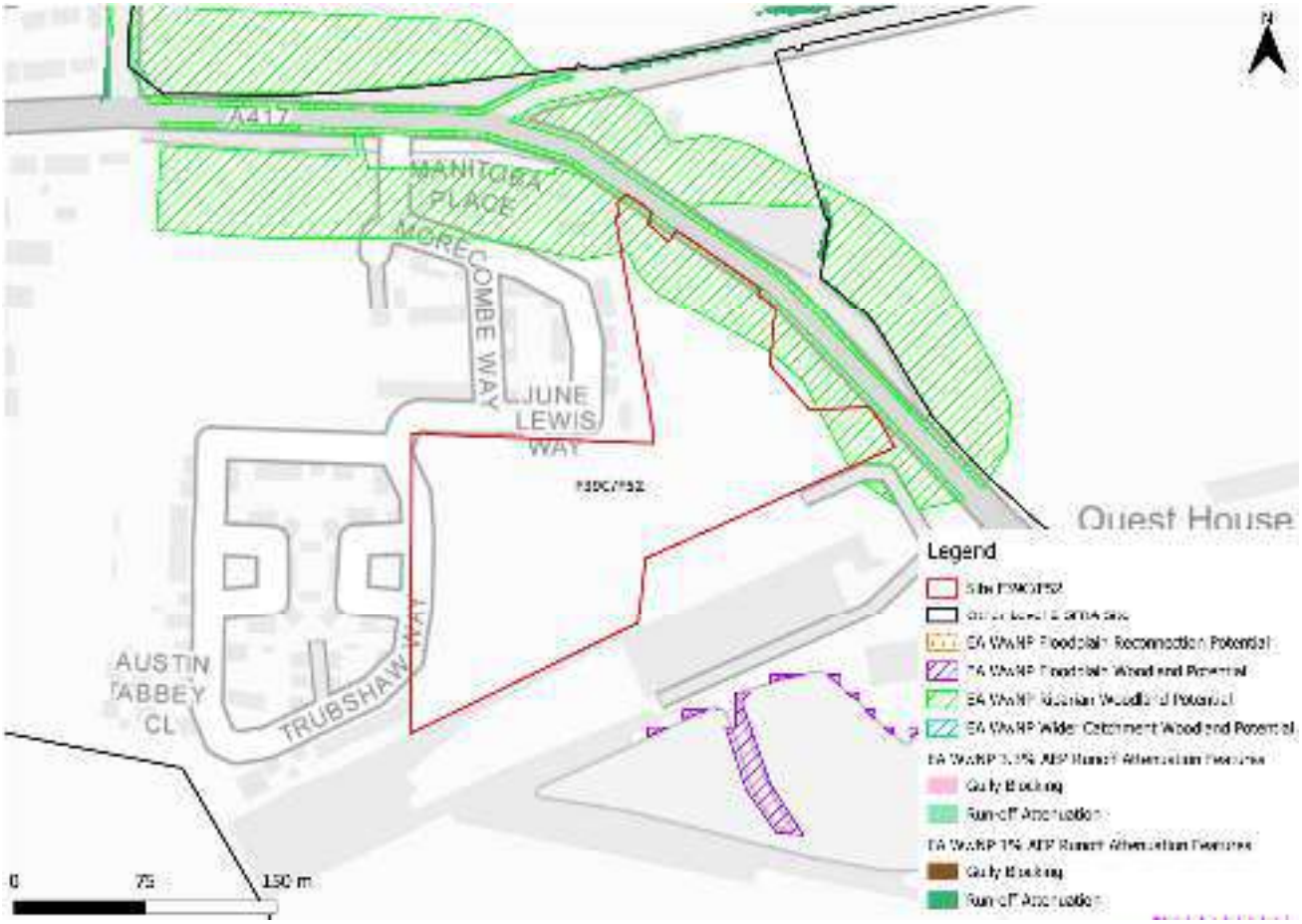

Figure 2-2: Working with Natural Processes

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 is not located within a FAA.

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes are available during a flood event via the A417 to the east and north of the site (Figure 2-3).

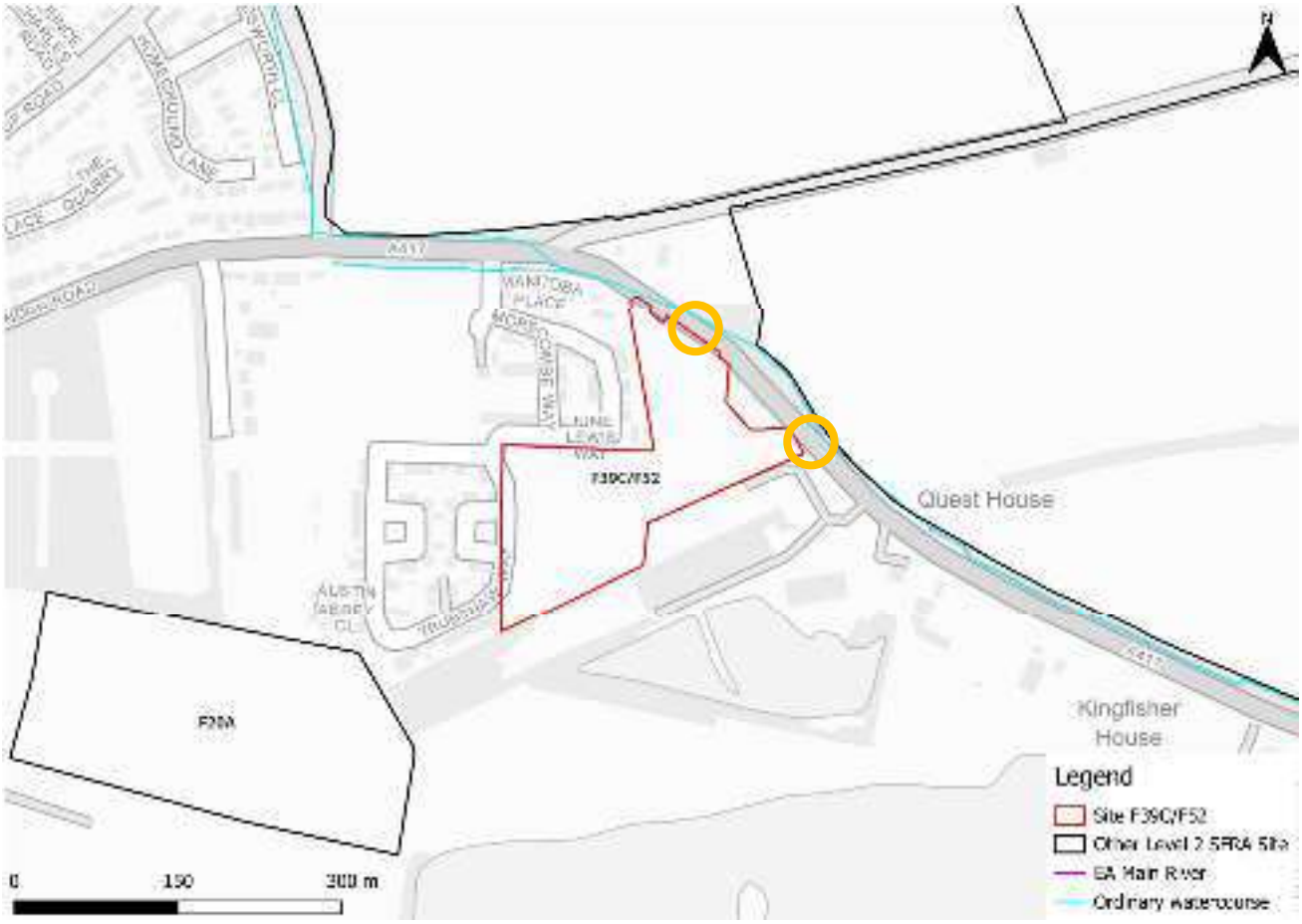

Figure 2-3: Potential access and escape routes

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

- Observations:
  - The site is located wholly within Flood Zone 1 and therefore at low risk of flooding from rivers.
  - The site is not shown to be at increased risk from fluvial flooding in the future, based on the EA's Flood Zones plus Climate Change dataset.
  - The potential fluvial risk posed by the unnamed ordinary watercourse to the site cannot be assessed given no modelling is available. This should be considered as part of a site-specific FRA.
- Access and escape:
  - Based on current information, safe access and escape routes are available via the A417 to the north and east 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

Based on the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Extent map (May 2026), surface water risk is largely very low (Table 3-1). Surface water risk is present onsite as areas of scattered ponding in topographic low spots, with an area of ponding in the 3.3% AEP event in the north of the site (Figure 3-1). In the 1% AEP event, surface water flood depths are shown to be between 0.3 and 0.6 m within the area of ponding in the north of the site (Figure 3-2). Depths within the remaining onsite risk areas are shallow.

Safe access and escape routes would likely be achievable via the A417 to the east of 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)
82	11	4	3

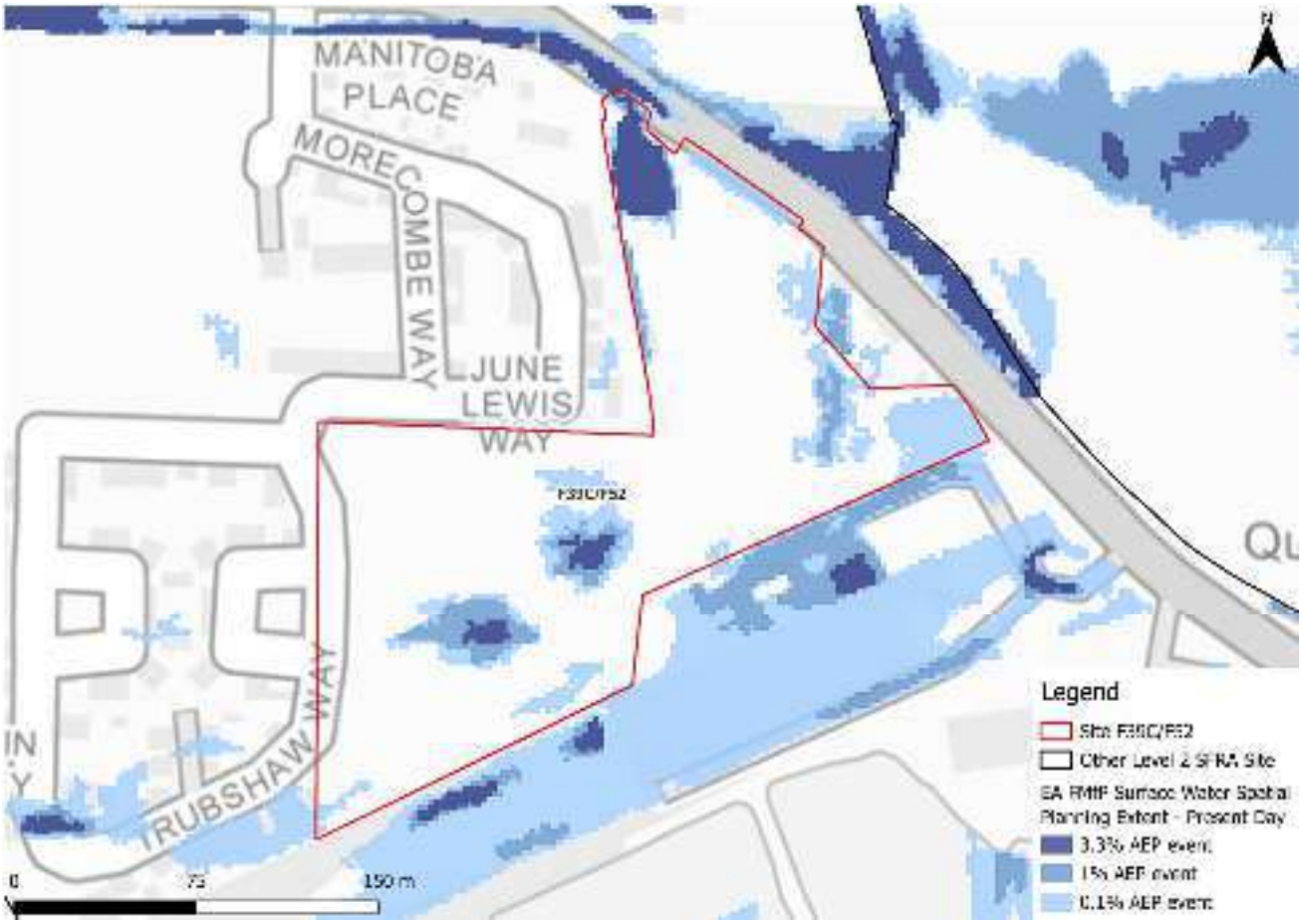

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

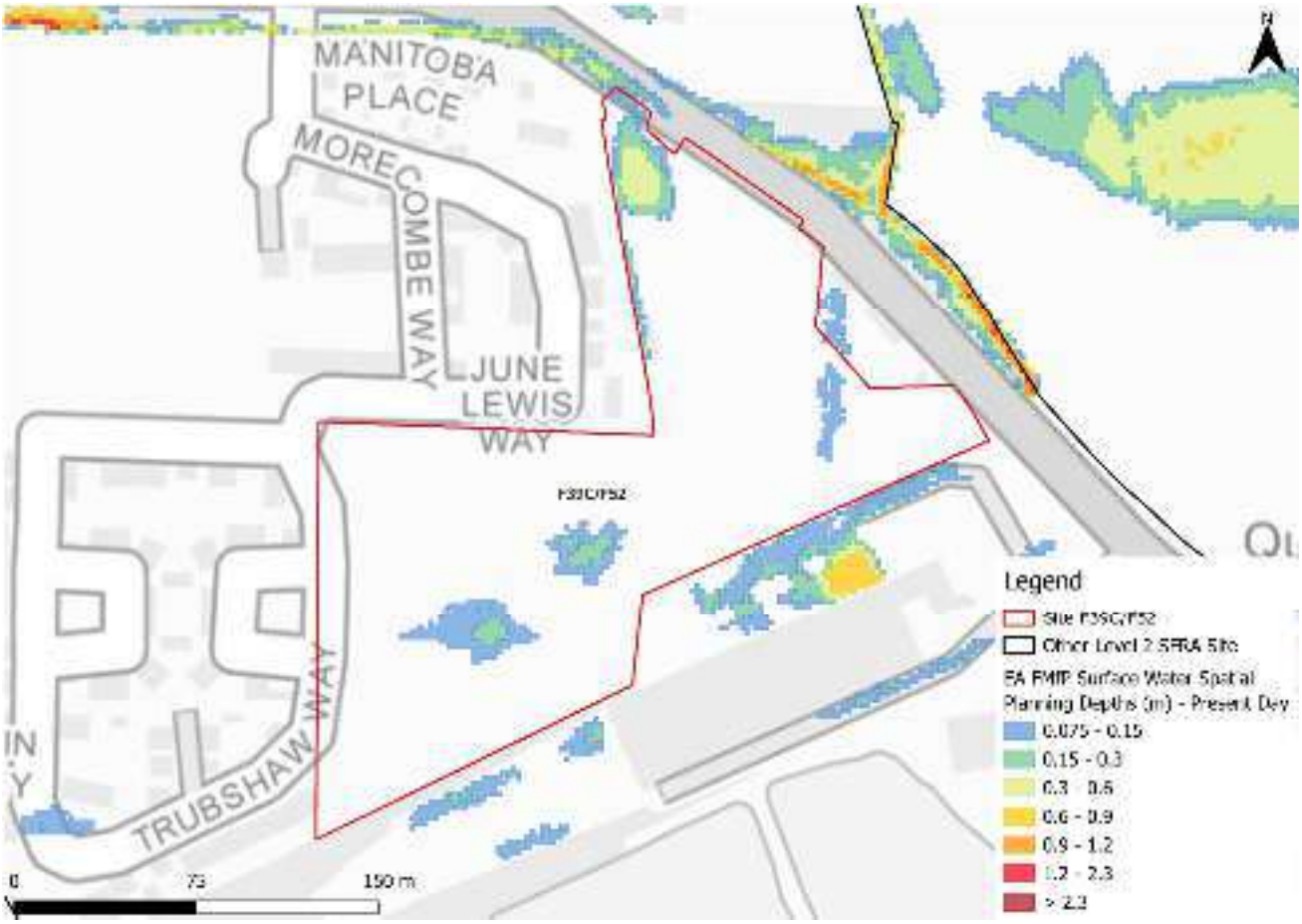

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 1% AEP event surface water flood depths (m)

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 the medium risk event to not impact the site (Figure 3-3). There are therefore clear differences between the Flood Map for Planning - Surface Water Spatial Planning map and the third generation RoFSW hazard mapping. Update 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.

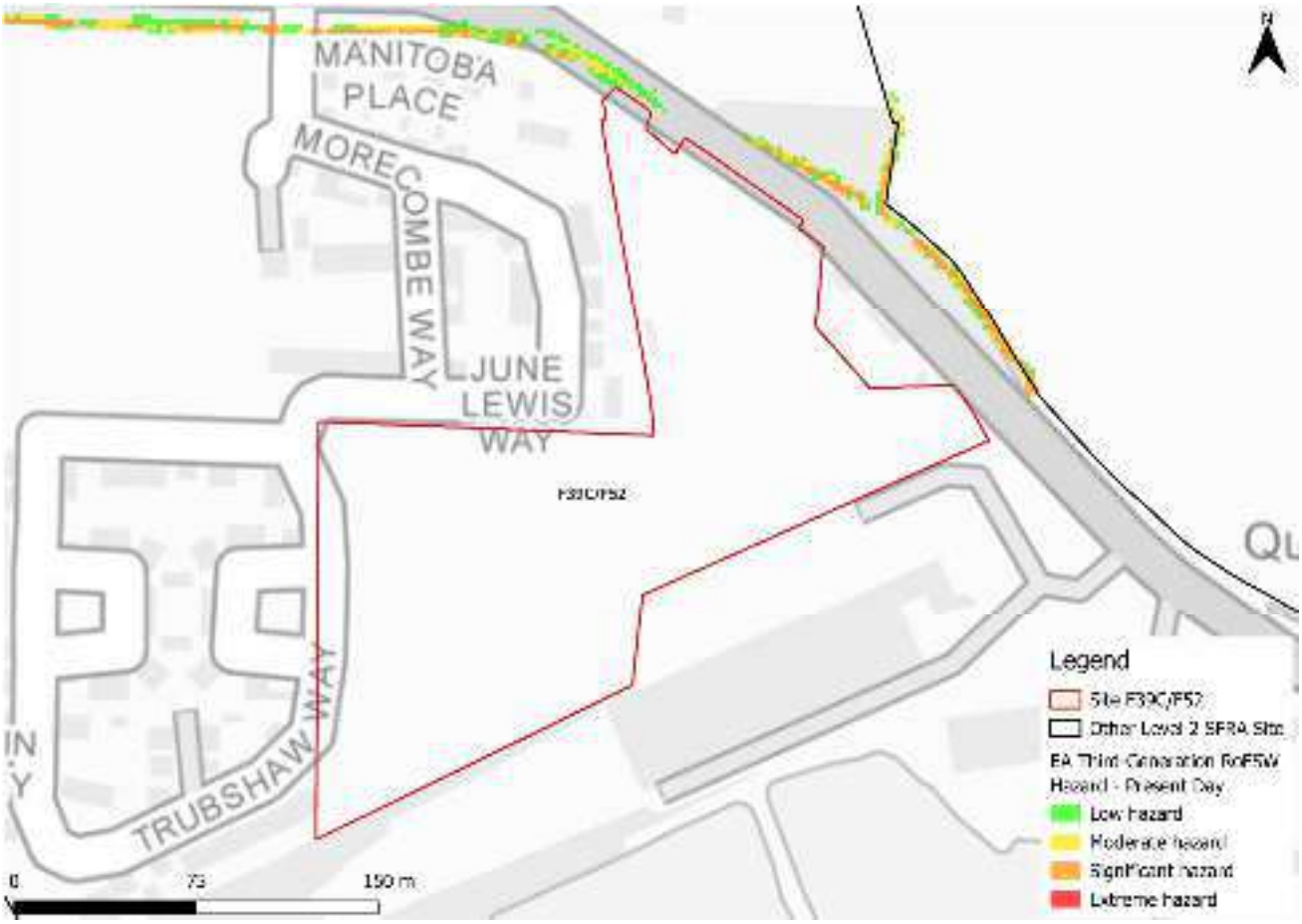

Figure 3-3: Third generation - Risk of Flooding from Surface Water map present day medium risk surface water flood hazard[1]

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 SFRAs 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 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 are some additional areas of ponding within the 0.1% AEP event, particularly within the east of the site.

Flood depths in the 1% AEP event are shown to remain at between 0.3 and 0.6 m within the north of the site (Figure 3-5). Safe access and escape routes would likely remain achievable via the A417 to the east of the site.

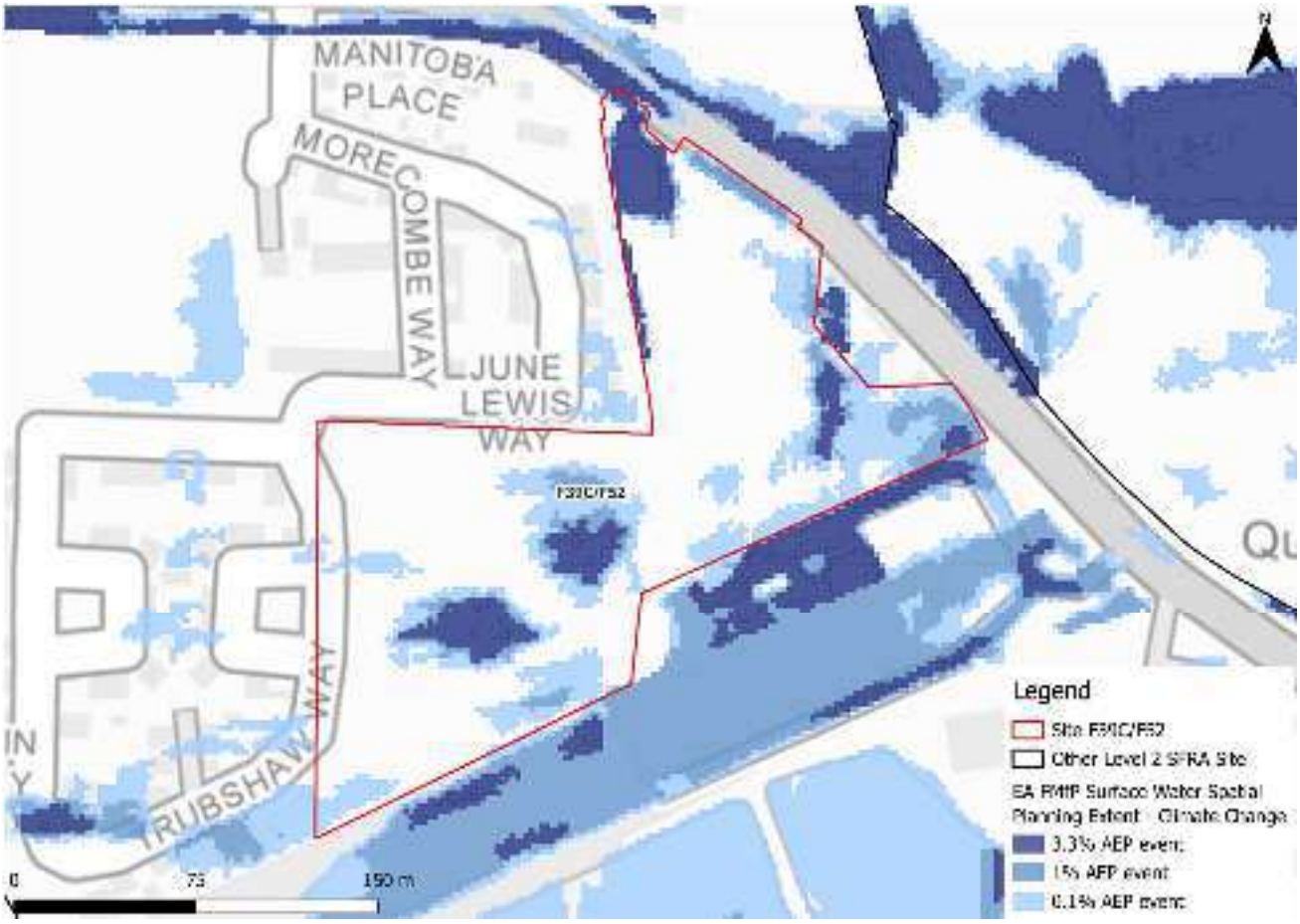

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

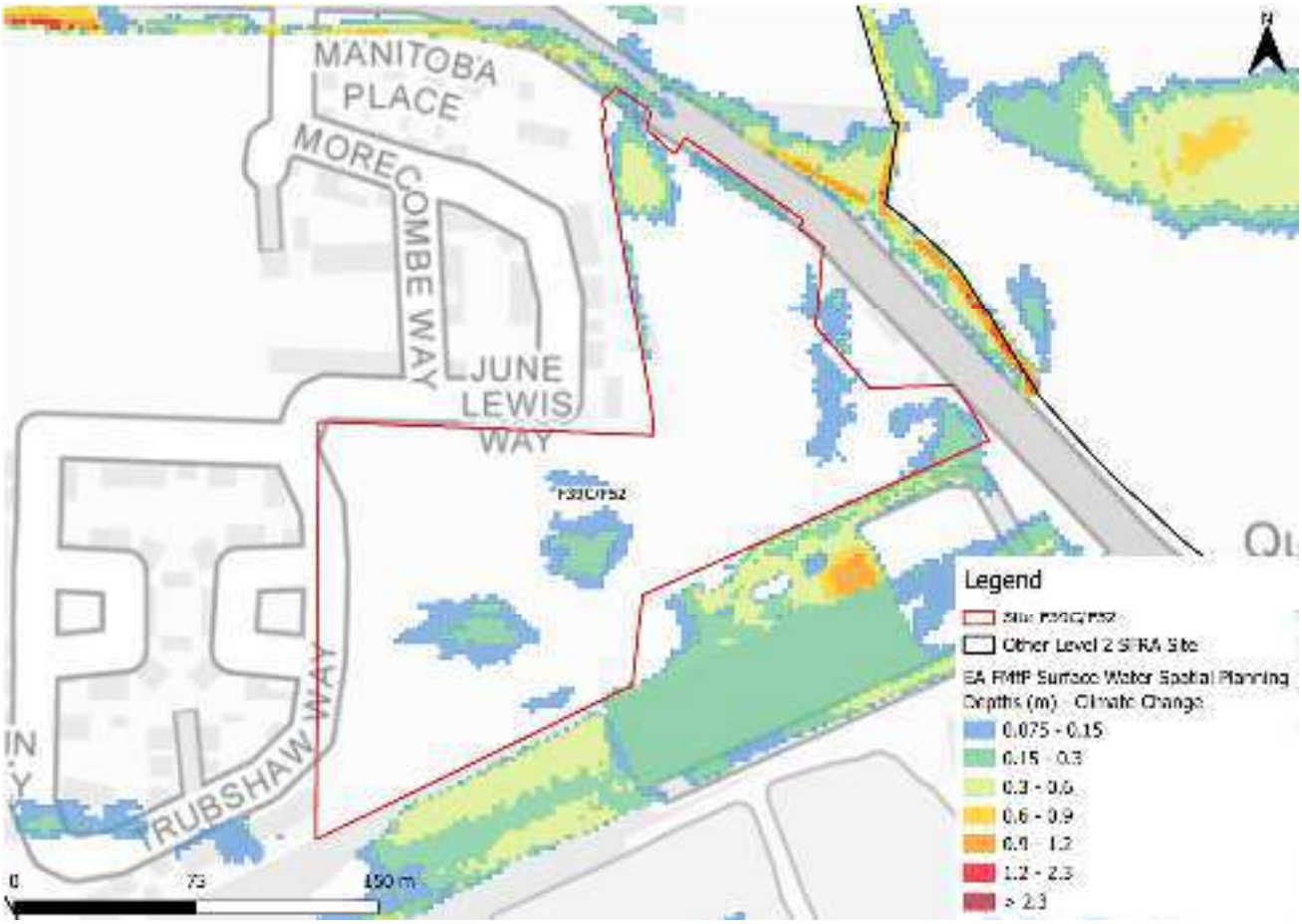

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 0.1% AEP event flood depths (m)

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 'moderate' within the north of the site (Figure 3-6).

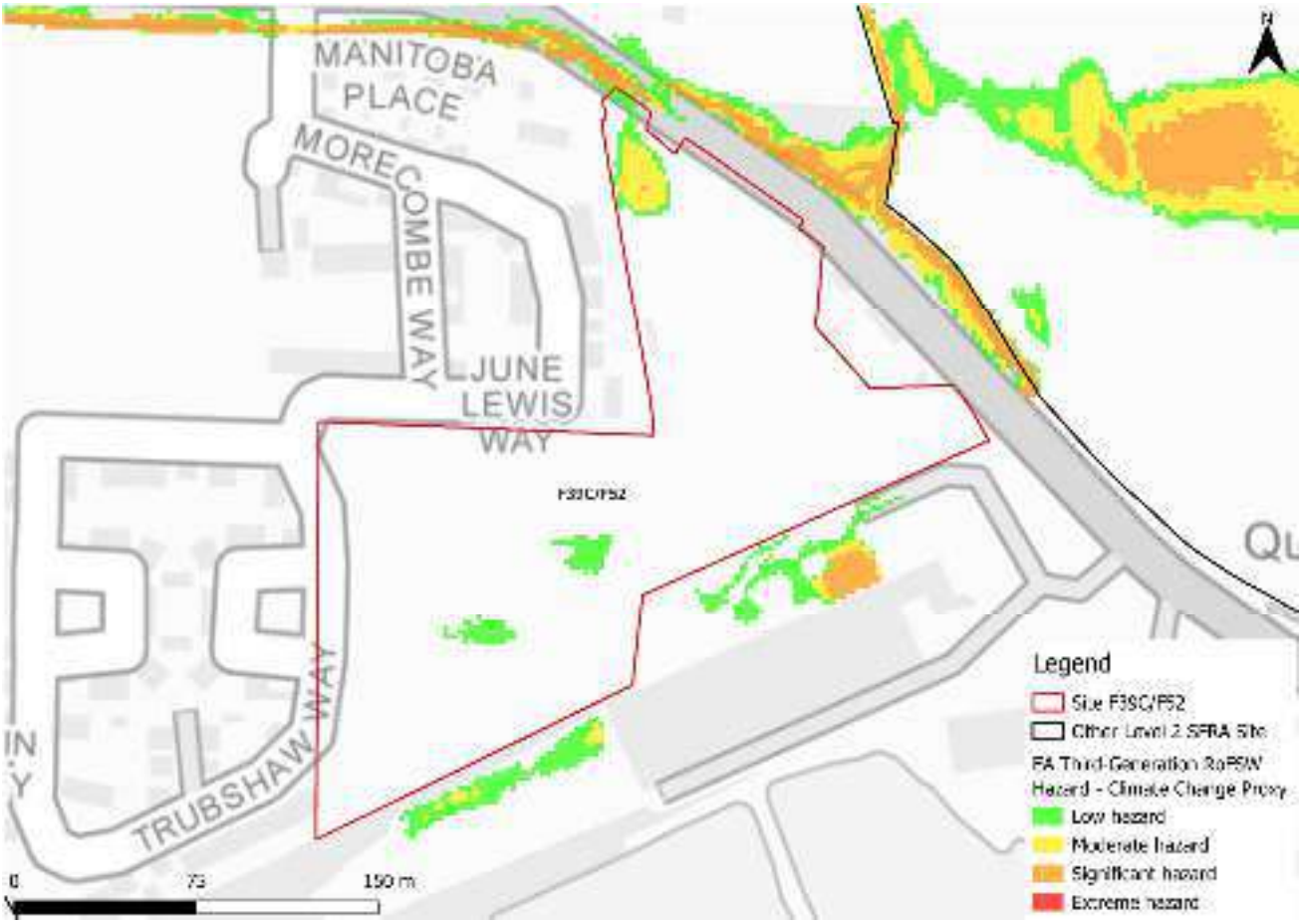

Figure 3-6: Third generation - Risk of Flooding from Surface Water map present day 0.1% AEP event surface water flood hazard[1] as a climate change proxy

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There are five recorded sewer flooding incidents within the Lechlade, Kempsford & Fairford South Ward.

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

- Current risk to the site is predominantly low, with 72% of the site being outside of the 0.1% AEP surface water flood extent. Surface water risk is present onsite as areas of scattered ponding in topographic low spots
- Risk to the site is shown to slightly increase in extent within the site when considering the impact of climate change, however depths remain largely very shallow.
- A drainage strategy would be required to 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.

- Topographic low spots should be considered and included in site design and ideally left in place to flood naturally when required.
- Safe access and escape routes would likely be achievable via the A417 to the east 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 Thornhill Ditch and tributaries at Cotswolds Water Park catchment. This catchment is ranked as a high sensitivity catchment. 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 entire site is within an area where there is a risk of groundwater flooding to both surface and subsurface assets. Infiltration SuDS would therefore be unsuitable at this site.

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, limestone, sandstone and argillaceous rocks (Figure 5-2) which will have variable permeability and porosity. There is no record of superficial deposits in the area. Infiltration SuDS at this site are unlikely to be an option, though the drainage strategy for the site should fully investigate water table levels and ground conditions in both dry and wet conditions.

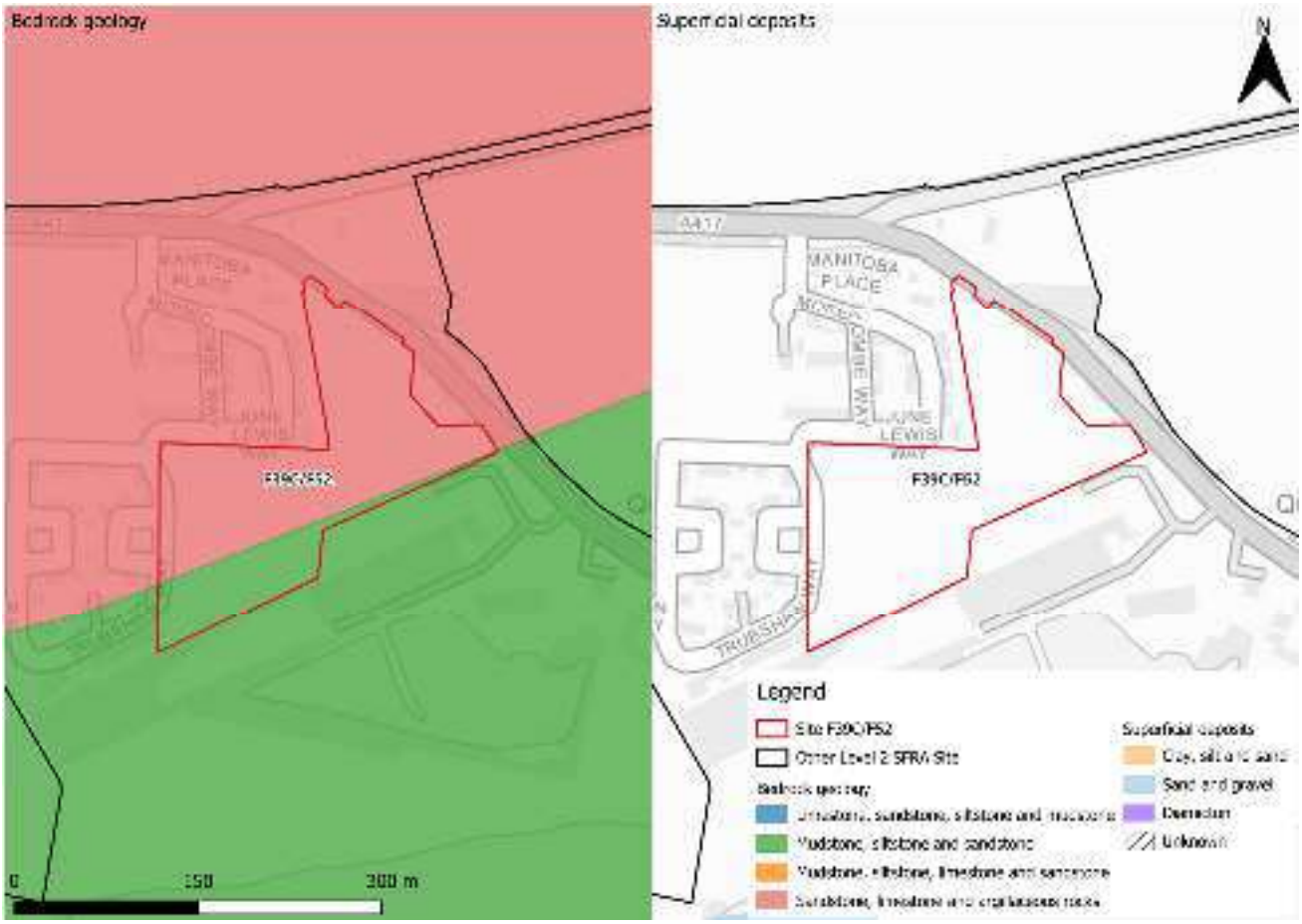

Figure 5-2: BGS Geology - Bedrock and superficial deposits

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 unnamed ordinary watercourse. However, the watercourse is culverted beneath the A417 adjacent to the site, as indicated by the blue circle in 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.

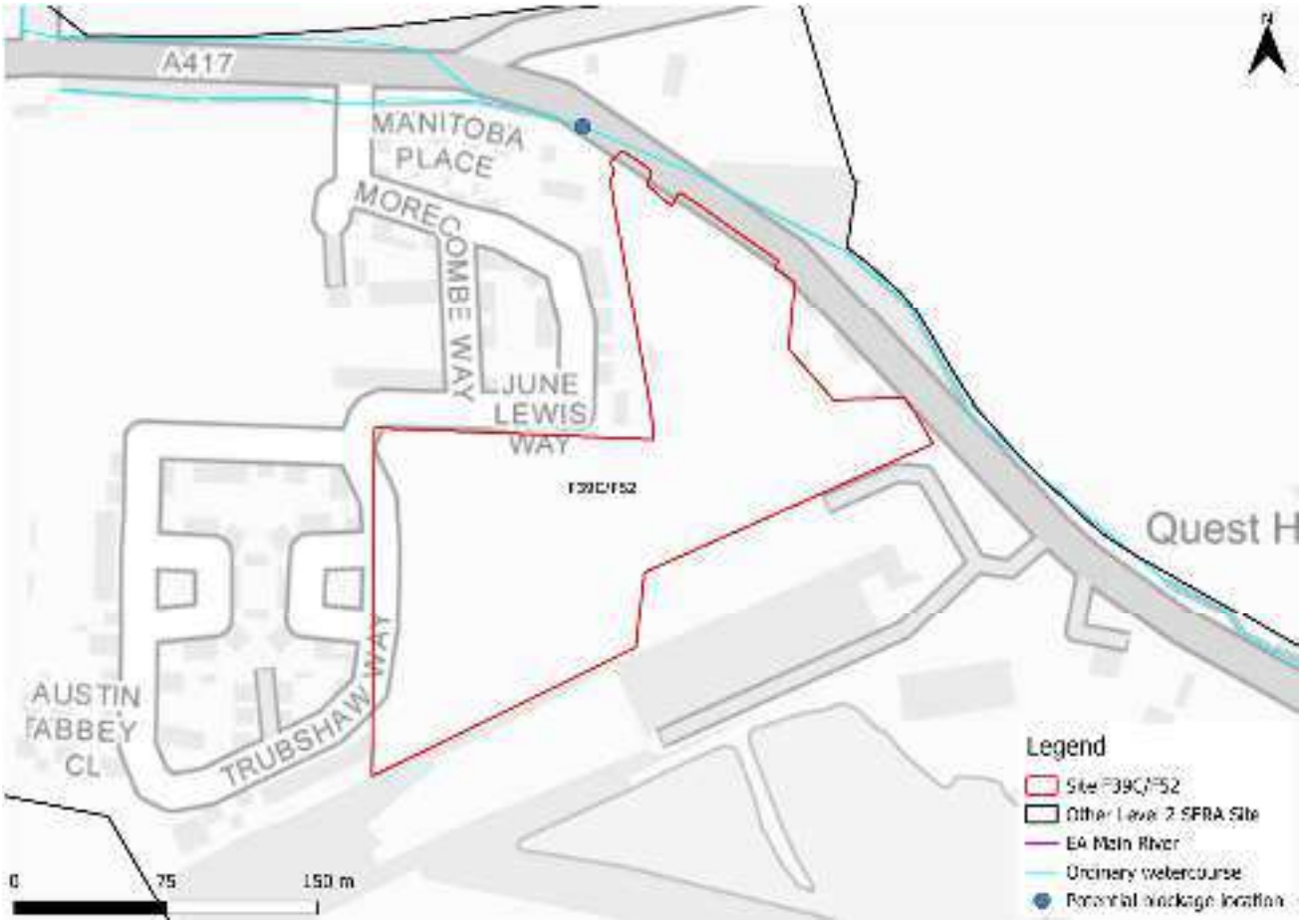

Figure 6-1: Potential blockage location

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 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 appropriate to develop this site for more vulnerable purposes given its location within Flood Zone 1 and nominal surface water flood risk.
- Modelling of the unnamed ordinary watercourse adjacent to the site 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.
- 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 of Fairford

Draft Report

Prepared for	Date
Cotswold District Council	July 2026

COTSWOLD
District Council

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Contract

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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. 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 the strategic extension to the north-east of Fairford site. 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 of Fairford

- Location: Fairford
- Existing site use: Agricultural land
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Mixed use
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 72.8
- Watercourse: River Coln, unnamed ordinary watercourses
- Environment Agency (EA) flood model: No detailed model available
- Summary of requirements from Level 2 SFRA scoping stage:
    - 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

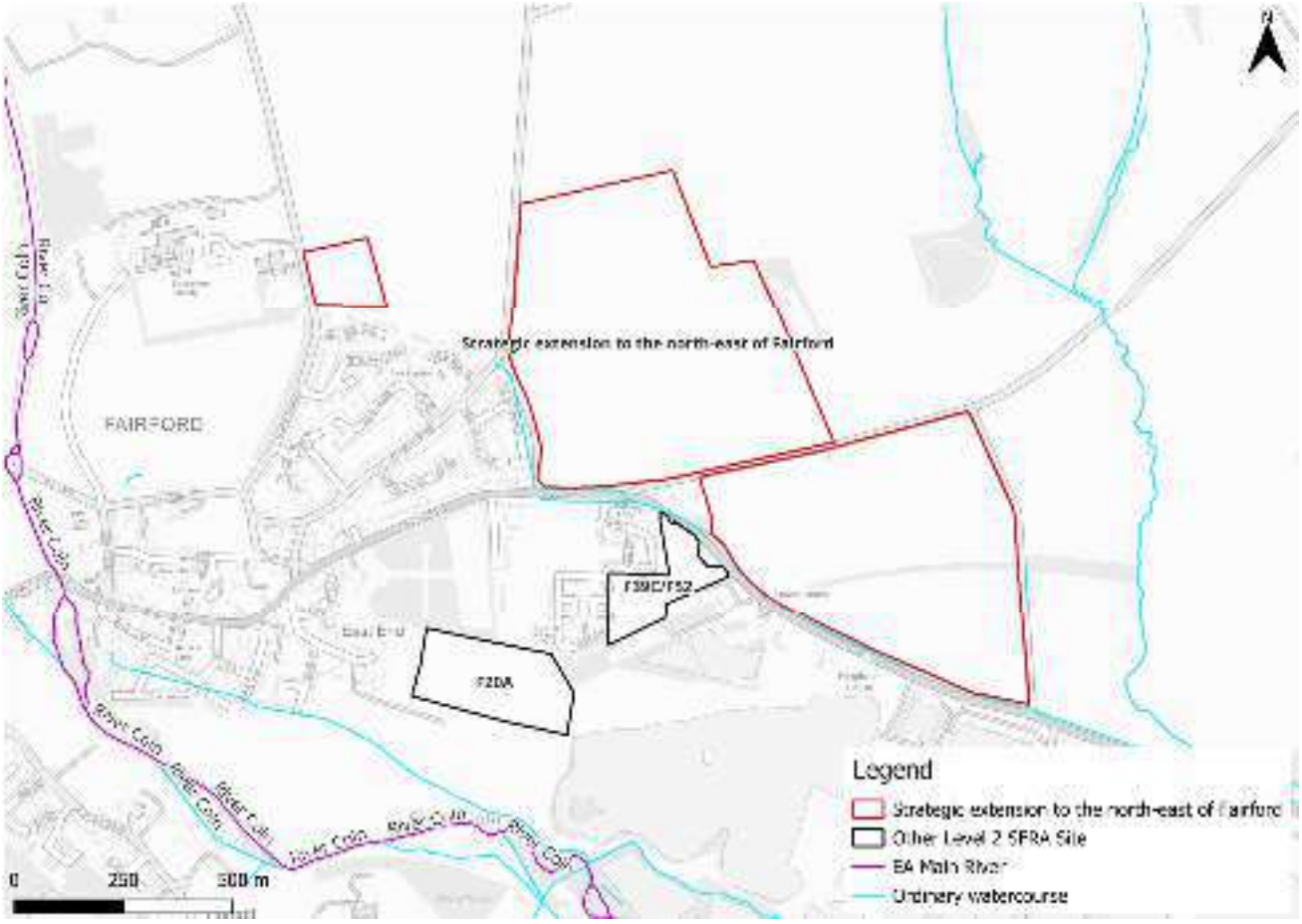

Figure 1-1: Site location boundary

Figure 1-2: Aerial photography

There are areas of higher elevation in the north of all three site parcels, with the land sloping down towards the south, sloping towards the River Coln floodplain to the southwest of the parcels (Figure 1-3).

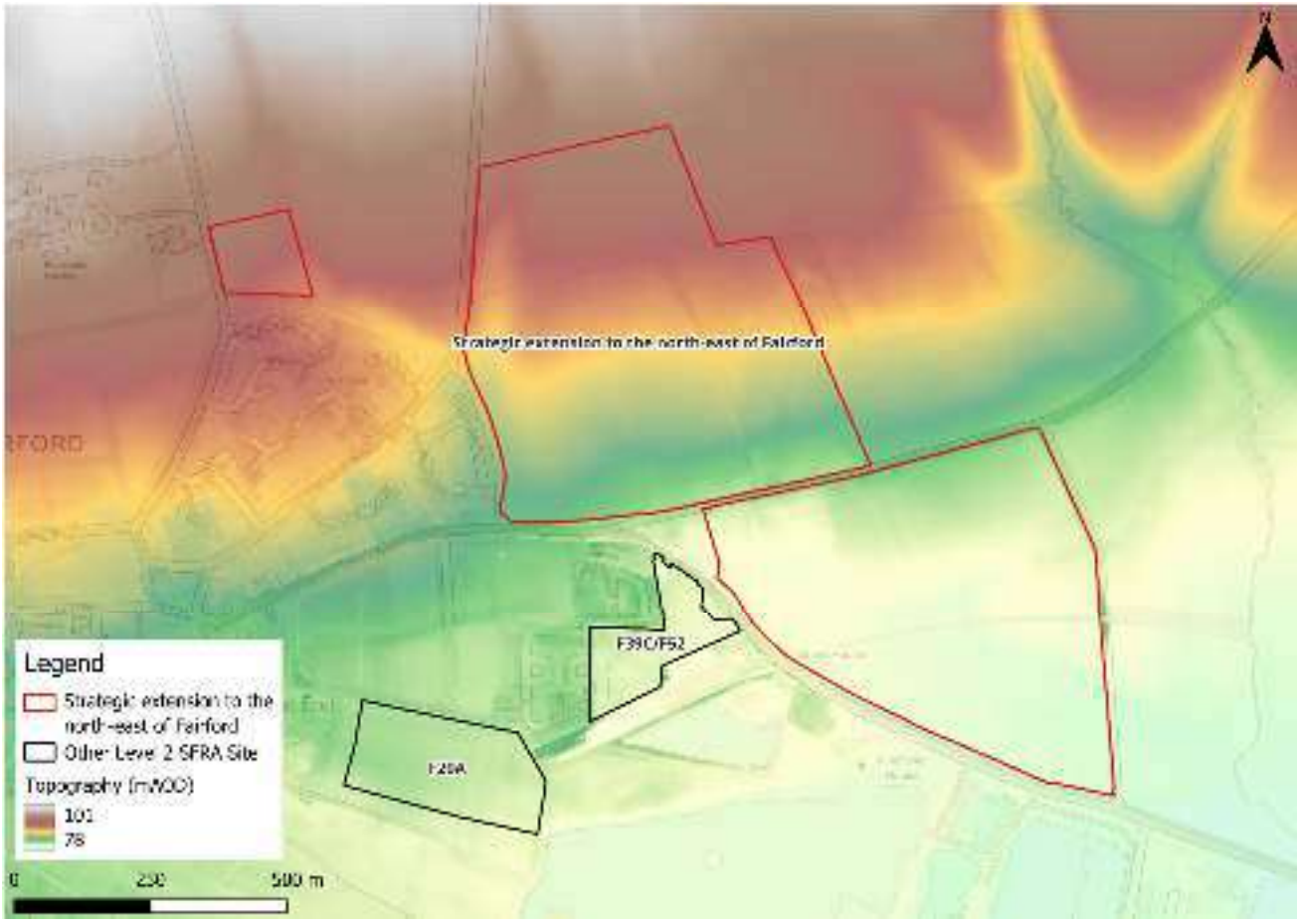

Figure 1-3: Topography

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 majority of the site is located within Flood Zone 1 and therefore at low risk of flooding from rivers (Figure 2-1), but for a small area on the southern boundary of the southern site parcel that is in Flood Zone 2. Risk comes from the River Coln to the southwest. Please note, the Flood Map for Planning does not consider flood defence infrastructure (Section 2.4).

There is no detailed model for the River Coln and the ordinary watercourses are unmodelled. The EA's New National Model (NNM) also does not include the ordinary watercourses. Flood depths and hazards cannot therefore be assessed.

Figure 2-1: Present day risk

2.2 Impacts from climate change

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 2-1). There is no local detailed model for the River Coln or the ordinary watercourses through the site, therefore the required event cannot be assessed.

Table 2-1: 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

2.2.1 Flood Map for Planning - Flood Zones plus Climate Change

Figure 2-2 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 slight increase in risk compared to present day at the southern site parcels southwestern boundary though nothing significant.

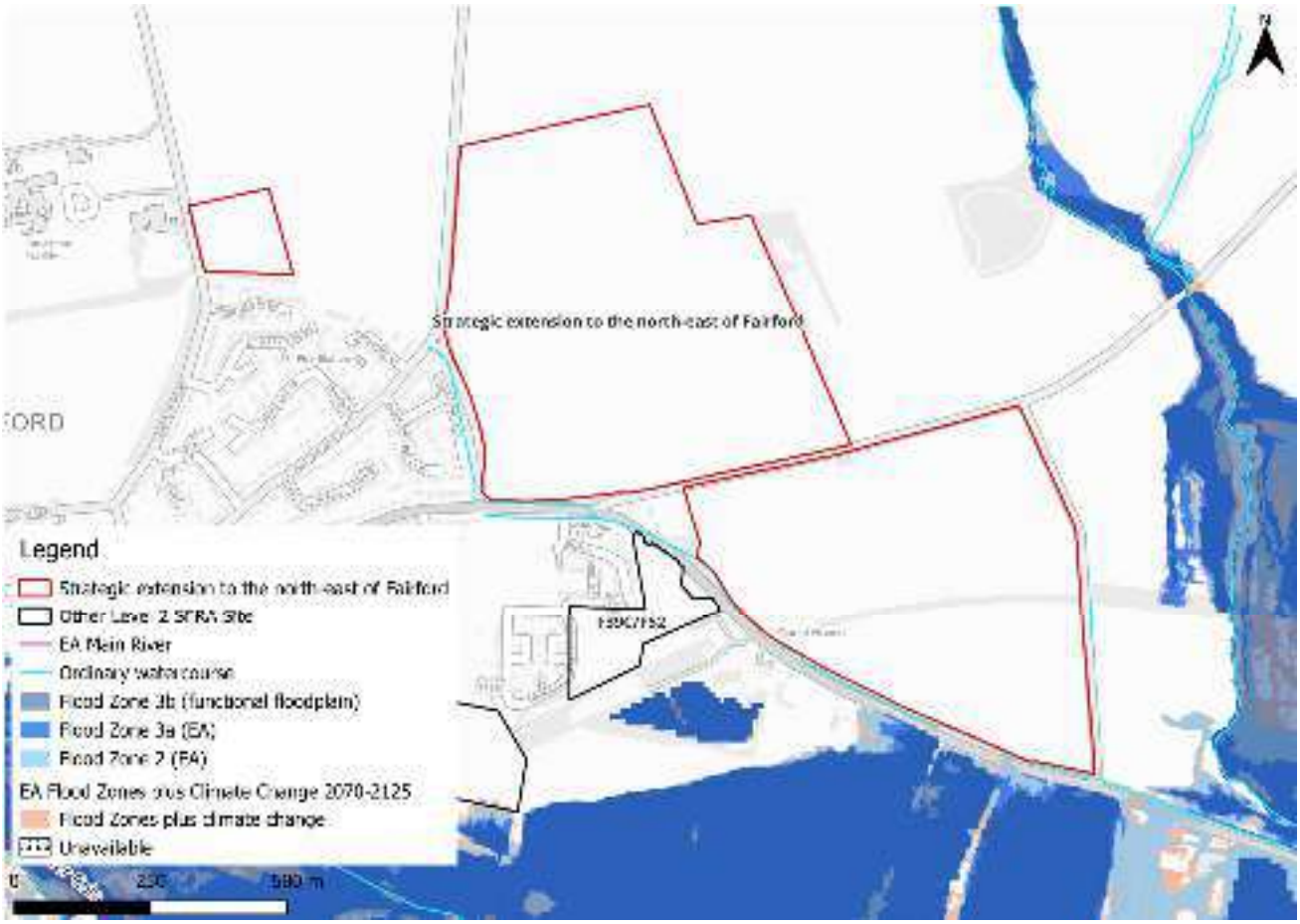

Figure 2-2: EA Flood Zones plus Climate Change

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 & 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. **Error! Reference source not found.** shows that the floodplains of the ordinary watercourses near the site could benefit from riparian and floodplain tree planting. Tree planting can help to slow the flow to benefit areas downstream. There is also potential for floodplain reconnection on the ordinary watercourse to the east. The WwNP mapping is broadscale and indicative. Further investigation is required for any land shown to have potential for WwNP.

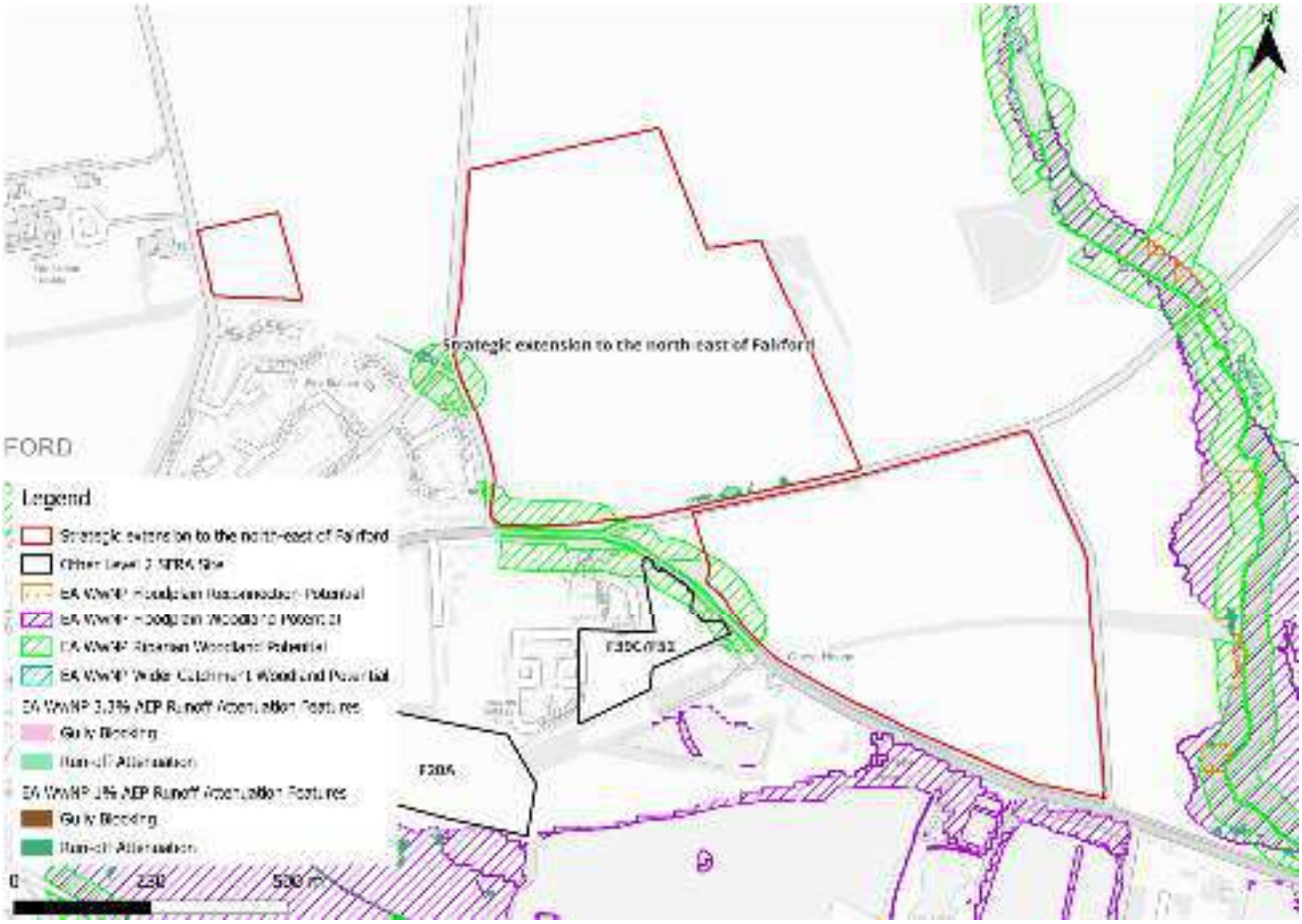

Figure 2-3: Working with Natural Processes

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 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 is not located within a FAA.

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 2-4).

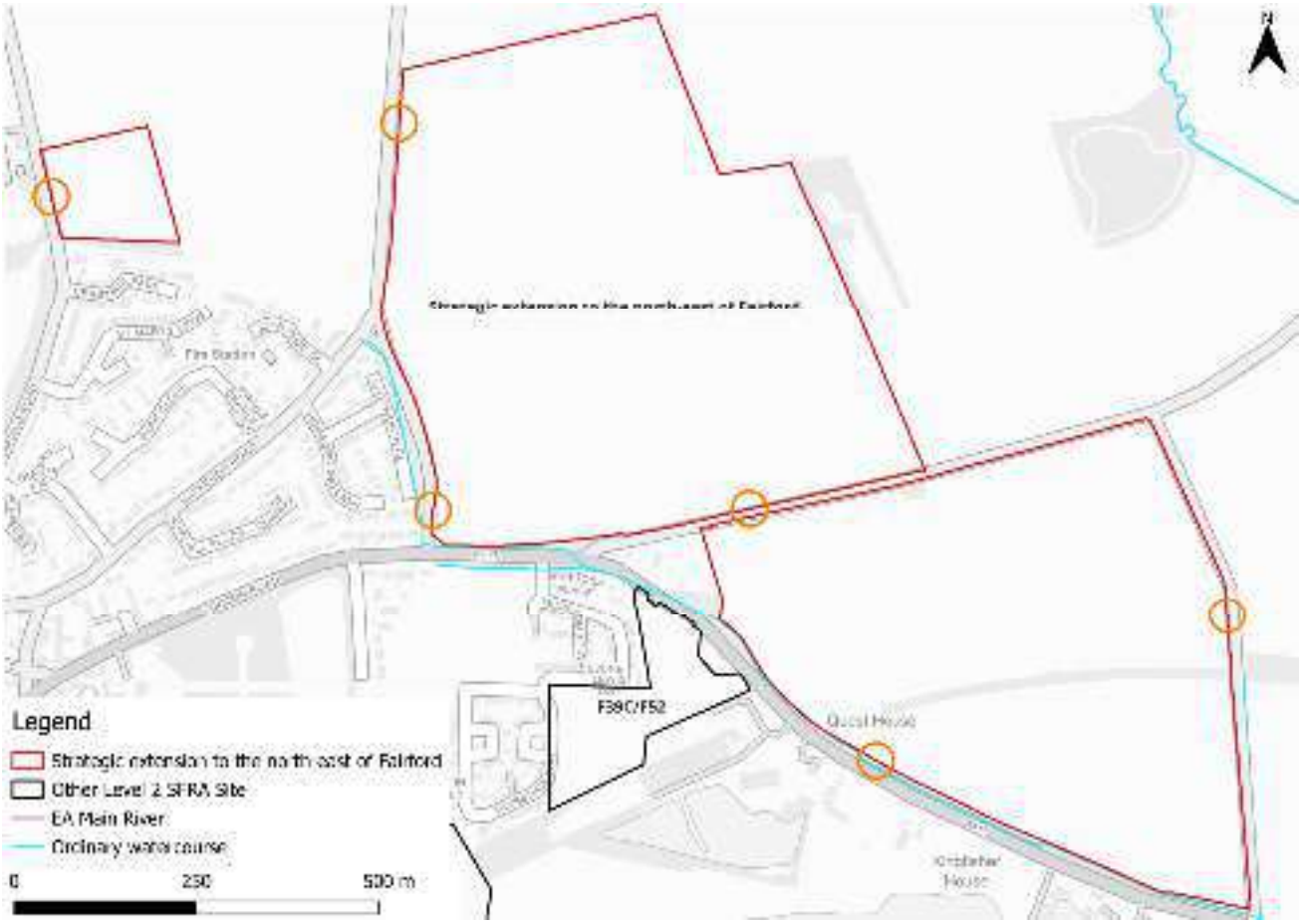

Figure 2-4: Potential access and escape routes

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

- Observations:
  - The site is located mostly within Flood Zone 1 and therefore at low risk of flooding from rivers.
  - The unnamed ordinary watercourses are unmodelled. Potential risk from these watercourses should be assessed at the FRA stage.
- Mitigation:
  - No development buffers should be in place along the ordinary watercourses in the form of blue green corridors, which can provide a flood storage function as well as providing Biodiversity Net Gain (BNG), ecological, amenity, social, and wellbeing benefits. This is reflected in the WwNP mapping showing potential for riparian tree planting along each watercourse.
- Access and escape:
  - Based on current information, safe access and escape routes appear achievable via multiple locations surrounding each site parcel.

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), surface water risk across the northern site parcels is nominal, but for some ponding along the southern boundary of the larger northern site parcel, as shown in Figure 3-1. However, there is a surface water flow path through the centre of the southern site parcel.

Greatest surface water flood depths in the 1% AEP event are not significant at between 0.3 and 0.6m (Figure 3-2). Safe access and escape routes appear to be achievable via multiple locations.

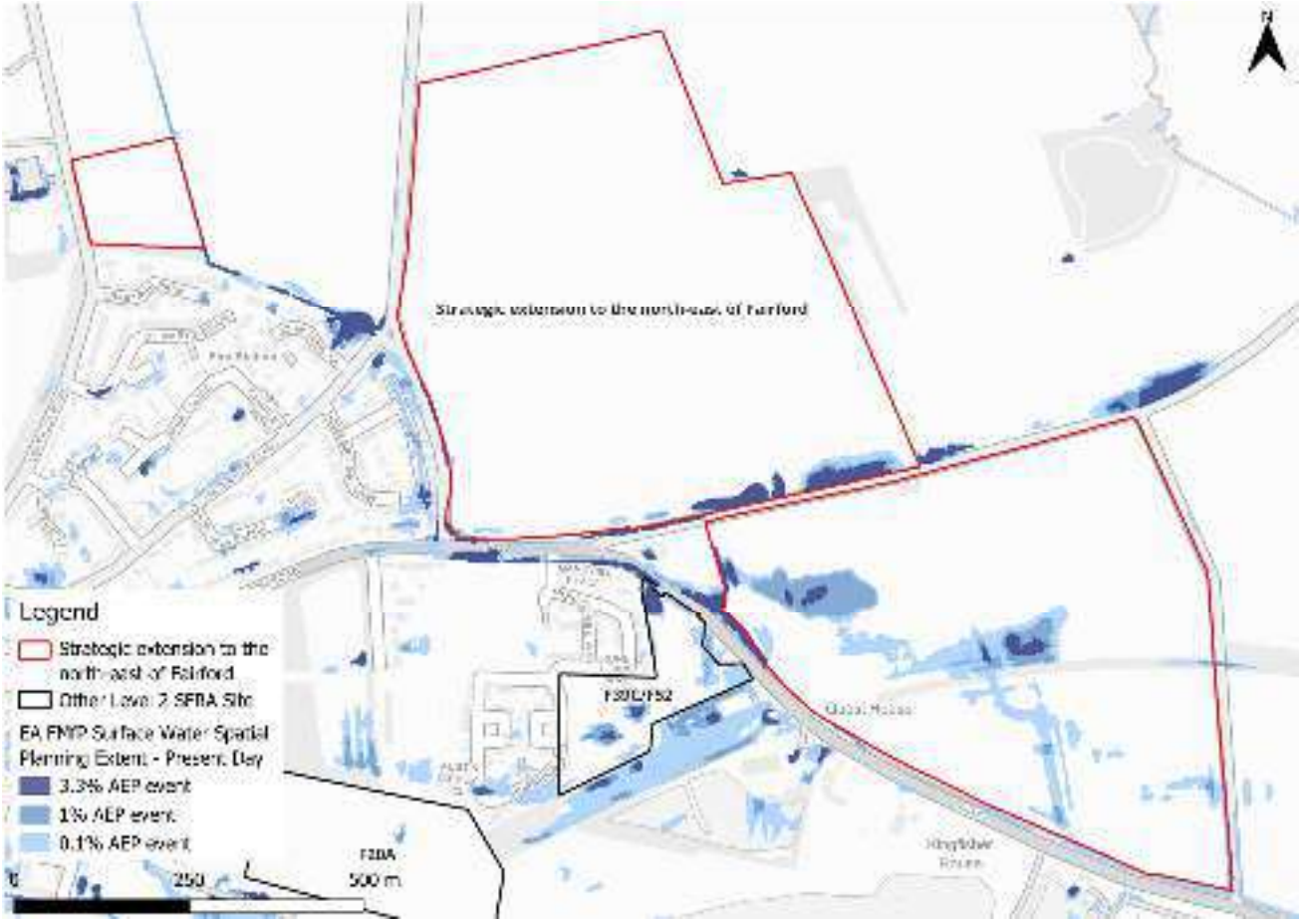

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

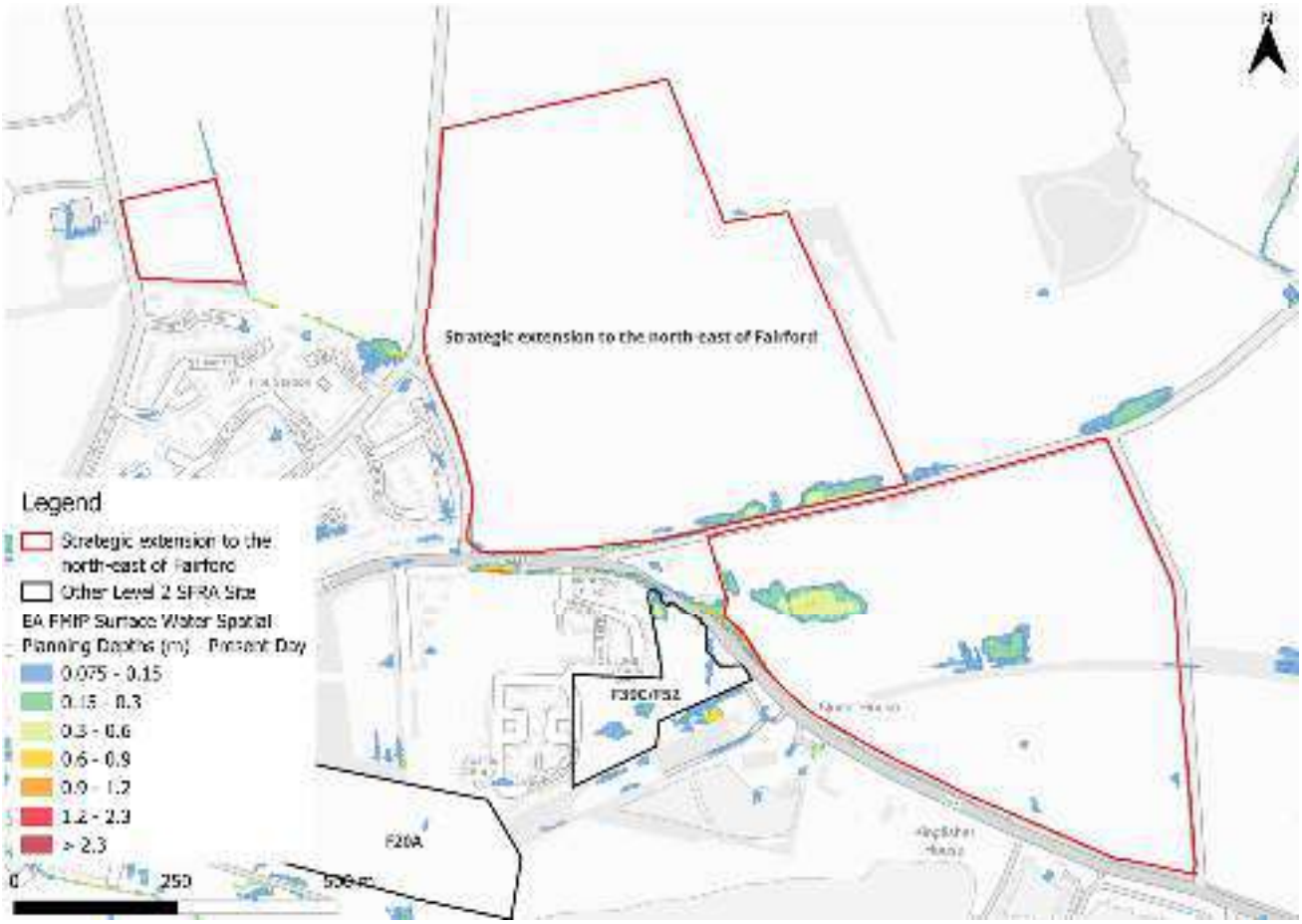

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 1% AEP event surface water flood depths (m)

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 low to moderate flood hazards along the southern boundary of the larger northern site parcel though no risk in the southern parcel (Figure 3-3). There are 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 smaller 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 3-1: 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. Surface water risk is shown to increase across each site parcel, particularly in the southern parcel, when considering climate change. Flood depths are shown to largely remain at between 0.3 and 0.6m (Figure 3-5). Safe access and escape routes would likely remain achievable via several locations.

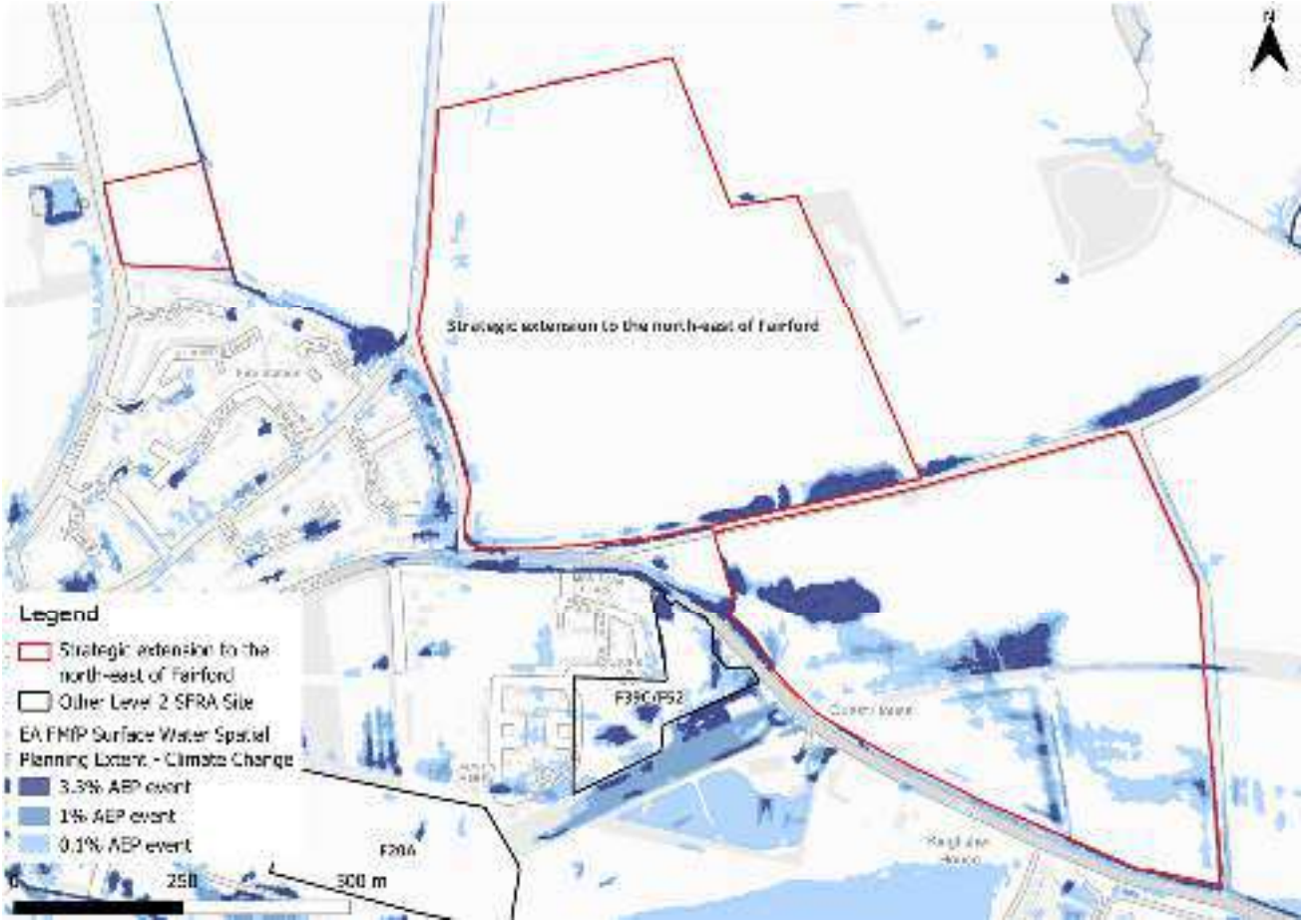

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

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 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 'significant' in some areas (Figure 3-6).

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 have been no recorded sewer flooding incidents within the Siddington & Cerney Rural Ward.

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

- Current risk is predominantly low and outside of the 0.1% AEP surface water flood extent. However, there is some risk in the southern site parcel and along the southern boundary of the larger northern parcel.
- Risk to the site is not shown to increase significantly when considering the impact of climate change.
- Topographic low spots and surface water flow paths should be considered and included in site design and left in place to flood naturally when required.
- The drainage strategy for each site parcel 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.

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 Coln catchment. This has been identified as a high sensitivity catchment. 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 larger site parcels are located within an area where there is a risk of groundwater emergence to surface and subsurface assets. In these areas, groundwater may emerge at significant rates in this area and has the capacity to flow overland and/or pond within any topographic low spots. Infiltration SuDS may not be achievable at any site parcel.

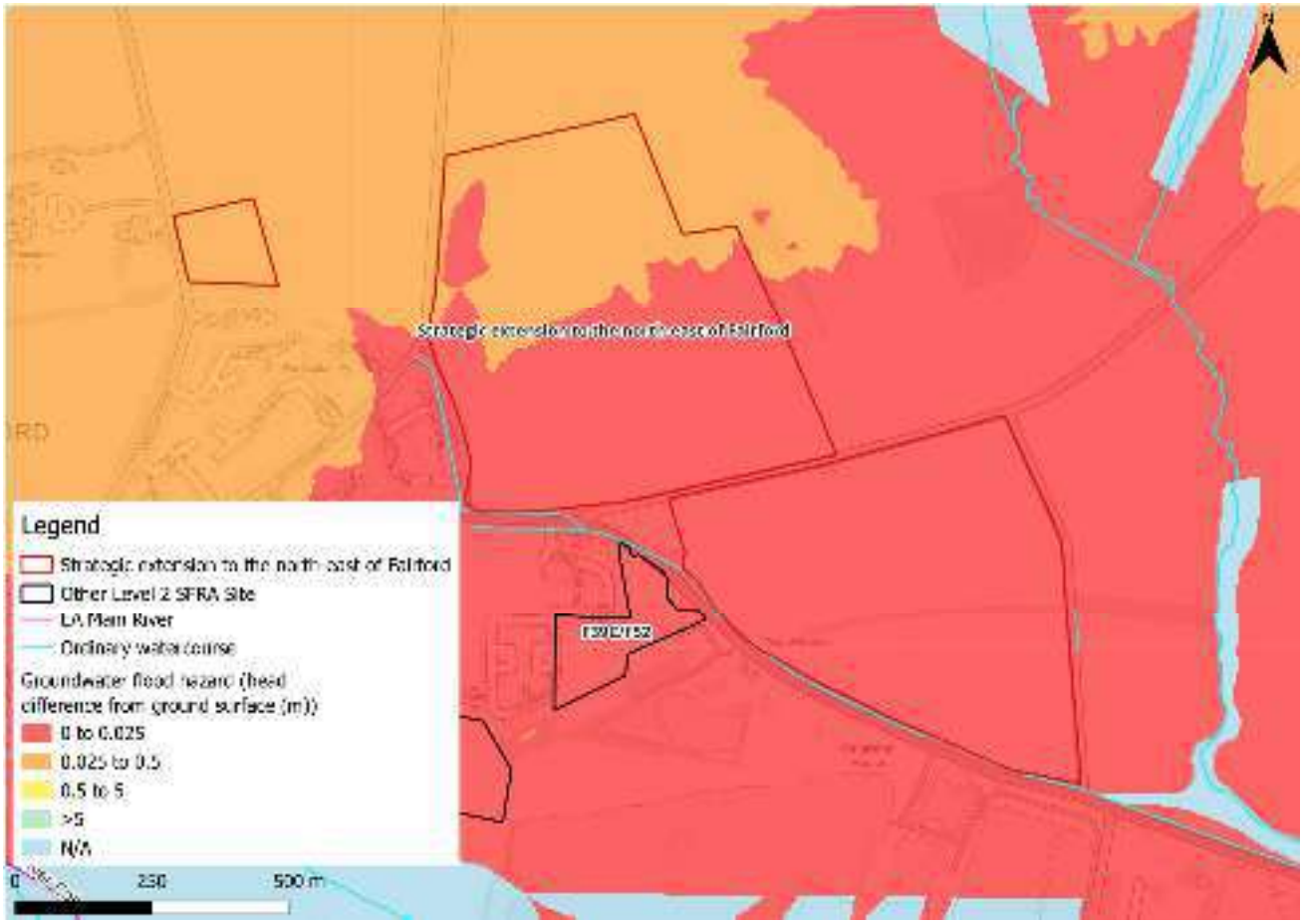

Figure 5-1: JBA 5m Groundwater Emergence Map

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 majority of the underlying bedrock within the site is sandstone, limestone and argillaceous rocks, with an area of the site being mudstone, siltstone and sandstone (Figure 5-2). Sandstone and limestone can have high permeability and porosity, increasing infiltration rates, though the permeability of limestone can vary widely. There is no record of superficial deposits at the site.

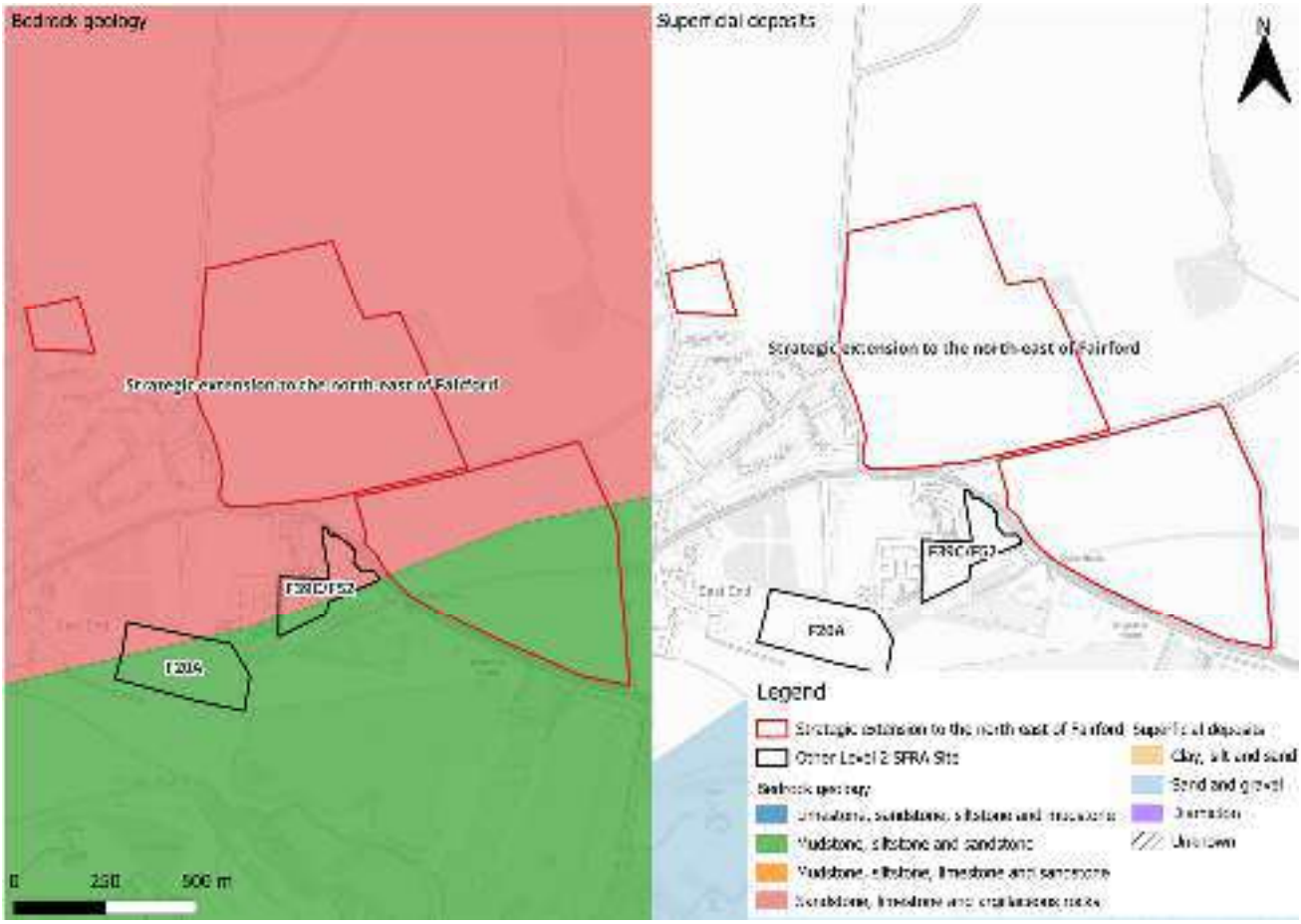

Figure 5-2: BGS Geology - Bedrock and superficial deposits

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:

- It should be possible to develop these site parcels for mixed uses, including for residential, given its location largely within Flood Zone 1 and nominal surface water risk.
- Ideally, no development buffers should be in place along the unnamed ordinary watercourses in the form of blue green corridors, which can provide a flood storage function as well as providing BNG, ecological, amenity, social, and wellbeing benefits.
- Potential risk from the ordinary watercourses should be assessed at the FRA stage.
- Groundwater conditions must be investigated further through the site-specific FRA. This should be assessed through percolation testing in both wet and dry weather conditions across each site parcel.
- Safe access and escape routes appear achievable from several locations, based on current information.
- 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 F53A

Draft Report

Prepared for	Date
Cotswold District Council	July 2026

COTSWOLD
District Council

Document Status

Issue date	July 2026
BIM reference	RNS-JBA-XX-XX-RP-EN-0026
Revision	P01
Prepared by	Laura Thompson-Jones BSc FRGS Senior Analyst
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

JBA Project Manager	Mike Williamson
Address	Phoenix House, Lakeside Drive, Centre Park, Warrington, WA1 1RX
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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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 F53A. 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 F53A

- Location: Land at Totterdown Hill, Horcott
- Existing site use: Agricultural land
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 12.8
- Watercourse: N/A
- Environment Agency (EA) flood model: N/A
- Summary of requirements from Level 2 SFRA scoping stage:
    - 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

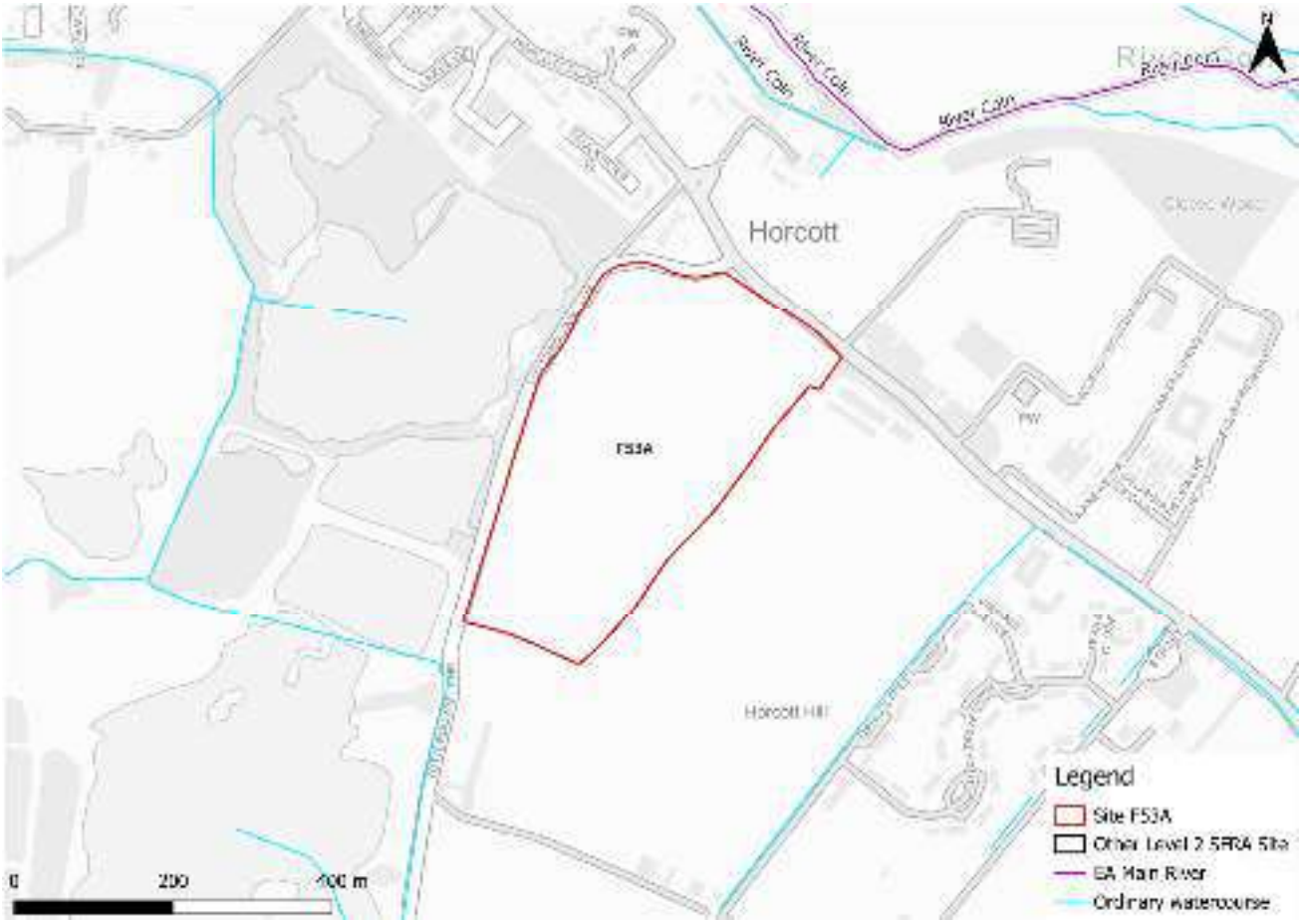

Figure 1-1: Site location boundary

Figure 1-2: Aerial photography

The site slopes from east to west, towards Horcott Lakes (Figure 1-3).

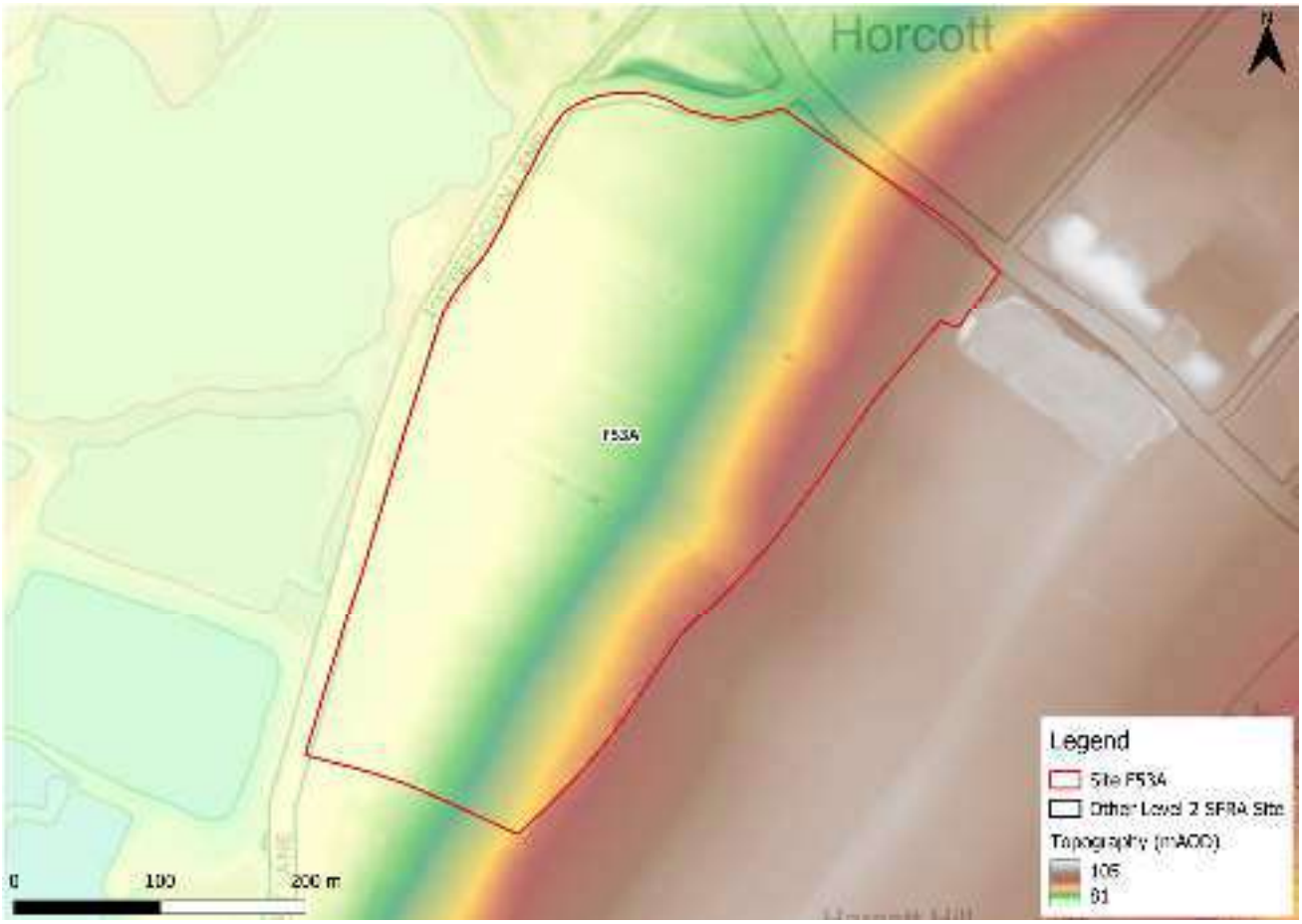

Figure 1-3: Topography

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 site is wholly located within Flood Zone 1 and therefore at low risk of flooding from rivers (Figure 2-1). Please note, the Flood Map for Planning does not consider flood defence infrastructure (Section 2.4). The flood zones to the west of the site cover the existing lakes.

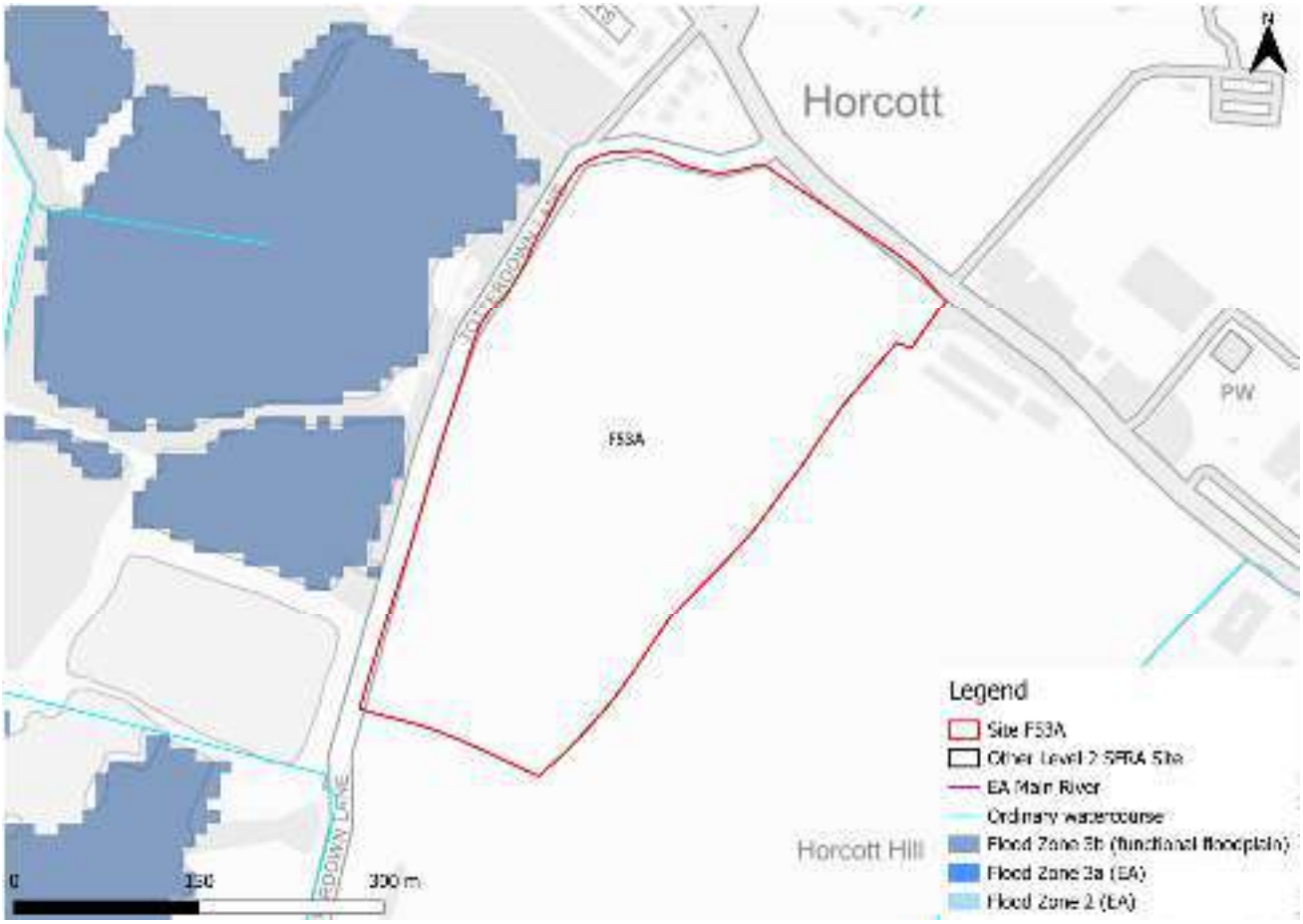

Figure 2-1: Present day risk

2.2 Impacts from climate change

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 21% on peak flows (Table 2-1).

Table 2-1: 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

2.2.1 Flood Map for Planning - Flood Zones plus Climate Change

Based on the EA's Flood Map for Planning - Flood Zones plus Climate Change dataset, the site is not shown to be at increased risk of fluvial flooding when considering 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 13 recorded flooding incidents within the Lechlade, Kempsford & Fairford South 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 2-2 shows that the almost the entire site, and wider area, could benefit from wider catchment tree planting. Tree planting can help to slow the flow to benefit areas downstream. There are also opportunities for run-off 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.

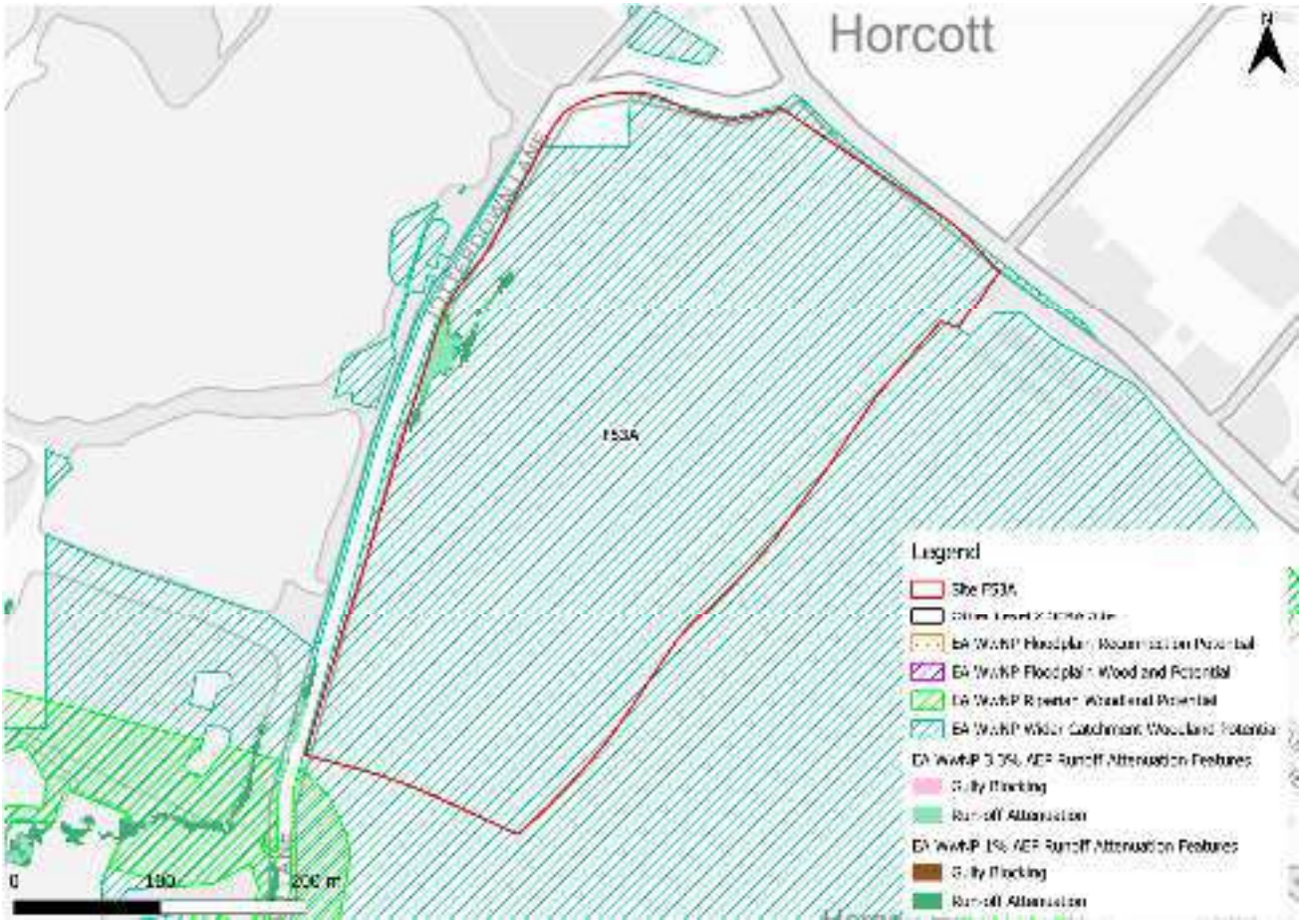

Figure 2-2: Working with Natural Processes

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 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 is not located within a FAA.

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes are available during a flood event via Totterdown Lane to the west of the site or Horcott Road to the north (Figure 2-3).

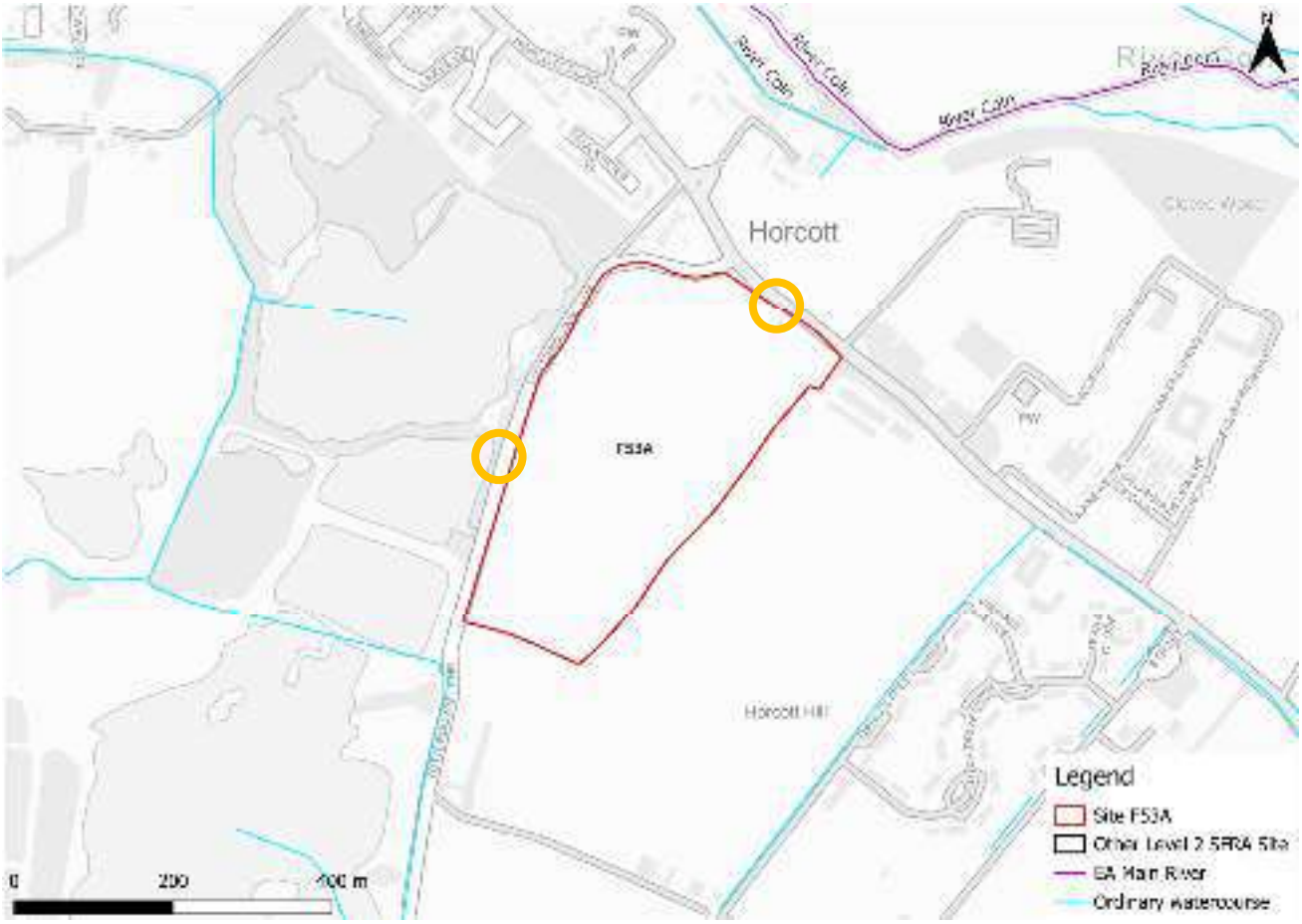

Figure 2-3: Potential access and escape routes

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

- Observations:
  - The site is located wholly within Flood Zone 1 and therefore at low risk of flooding from rivers.
  - The site is not shown to be at increased risk from fluvial flooding in the future, based on the EA's Flood Zones plus Climate Change dataset.
- Access and escape:
  - Based on current information, safe access and escape routes appear achievable via Totterdown Lane to the west of the site or Horcott Road to the north.

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), surface water risk across the site is generally low, as shown in Table 3-1 and Figure 3-1.

There is a significant area of ponding within the southwest of the site, behind the Totterdown Lane raised road infrastructure. Greatest flood depths within this area in the 1% AEP event are between 0.6 and 0.9 m immediately behind the road embankment (Figure 3-2).

Safe access and escape routes would ideally need to be made available via the north of 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)
88	2	1	9

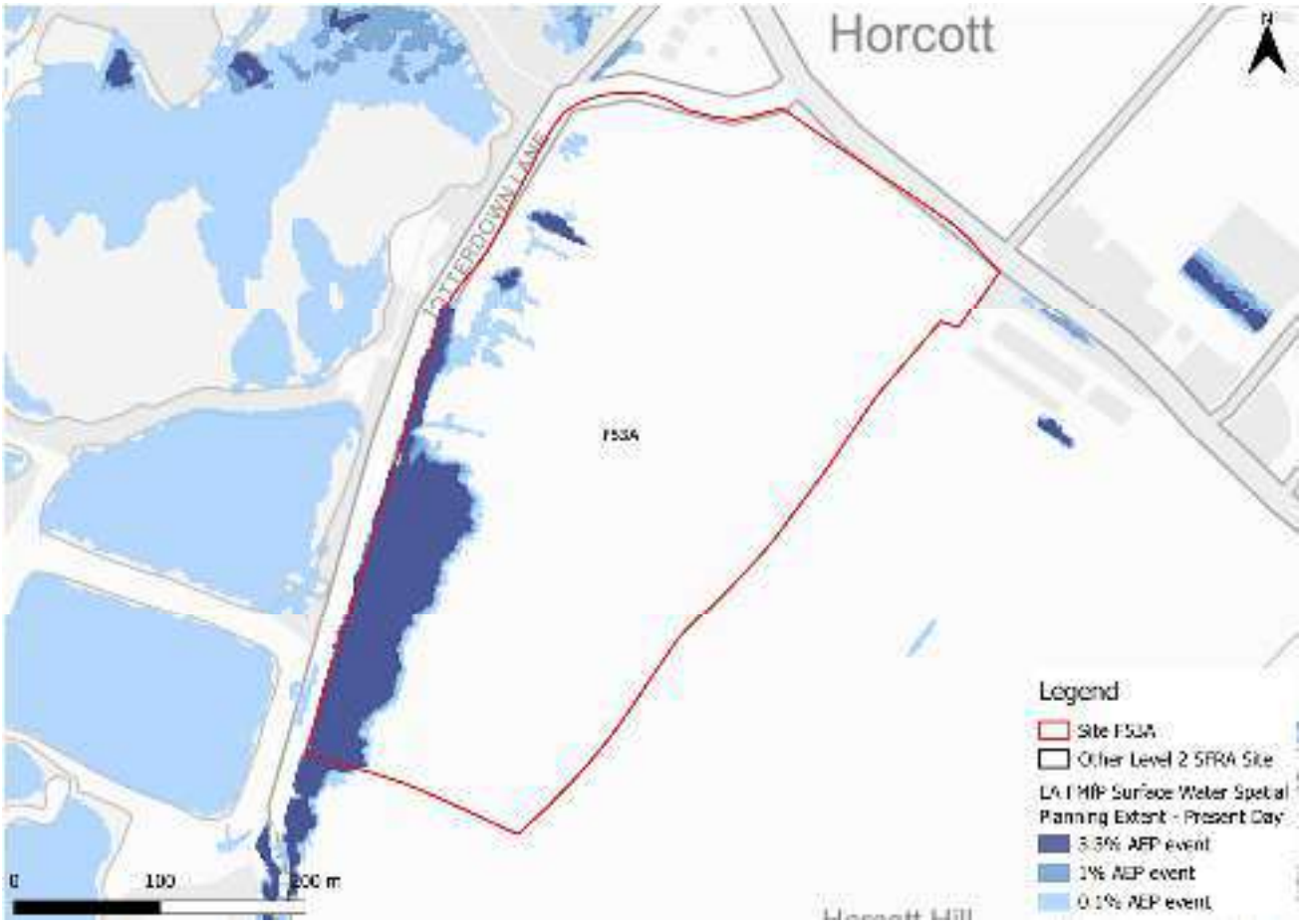

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

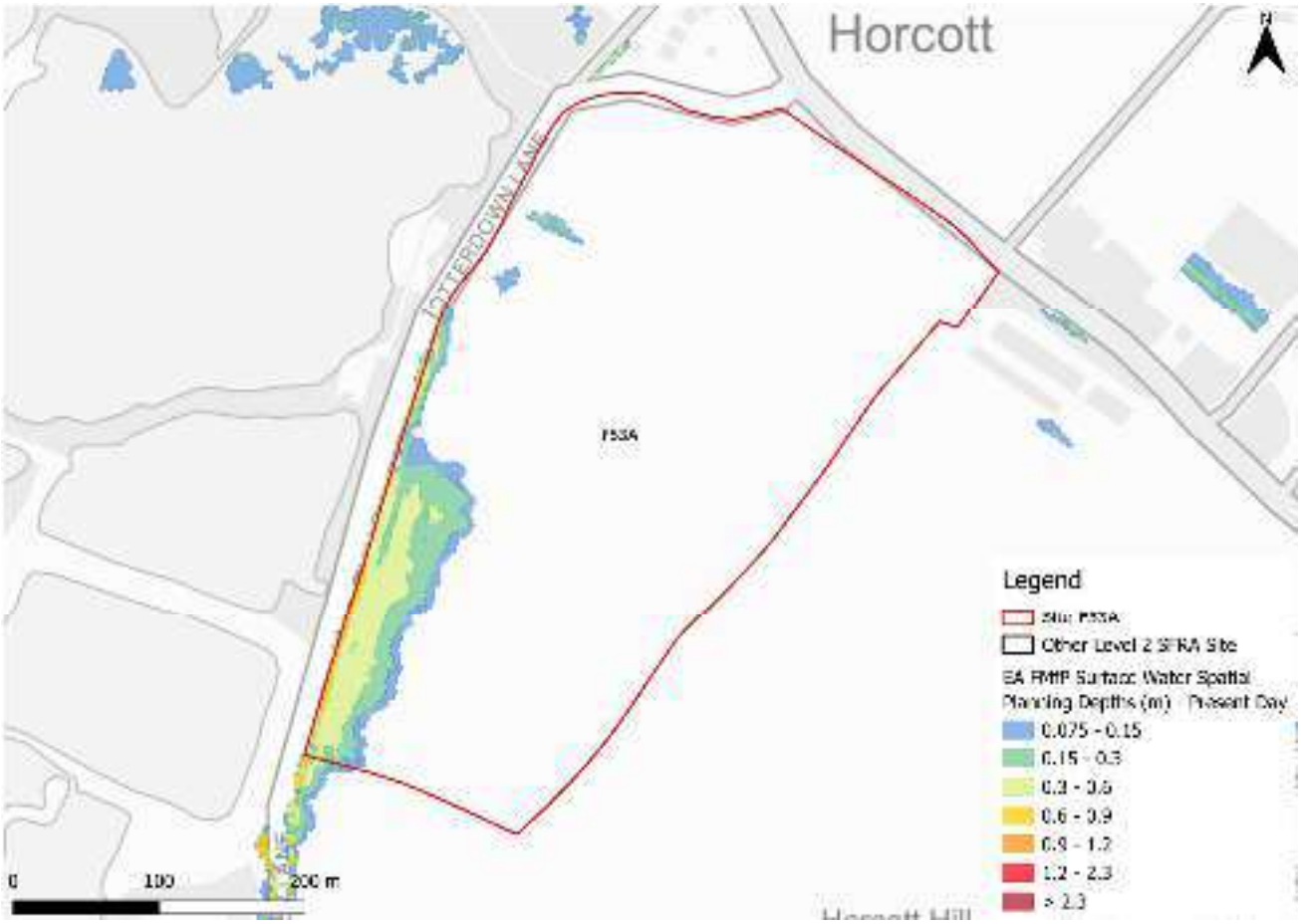

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 1% AEP event surface water flood depths (m)

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 flood hazard to be 'significant' (Figure 3-3). There are some 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.

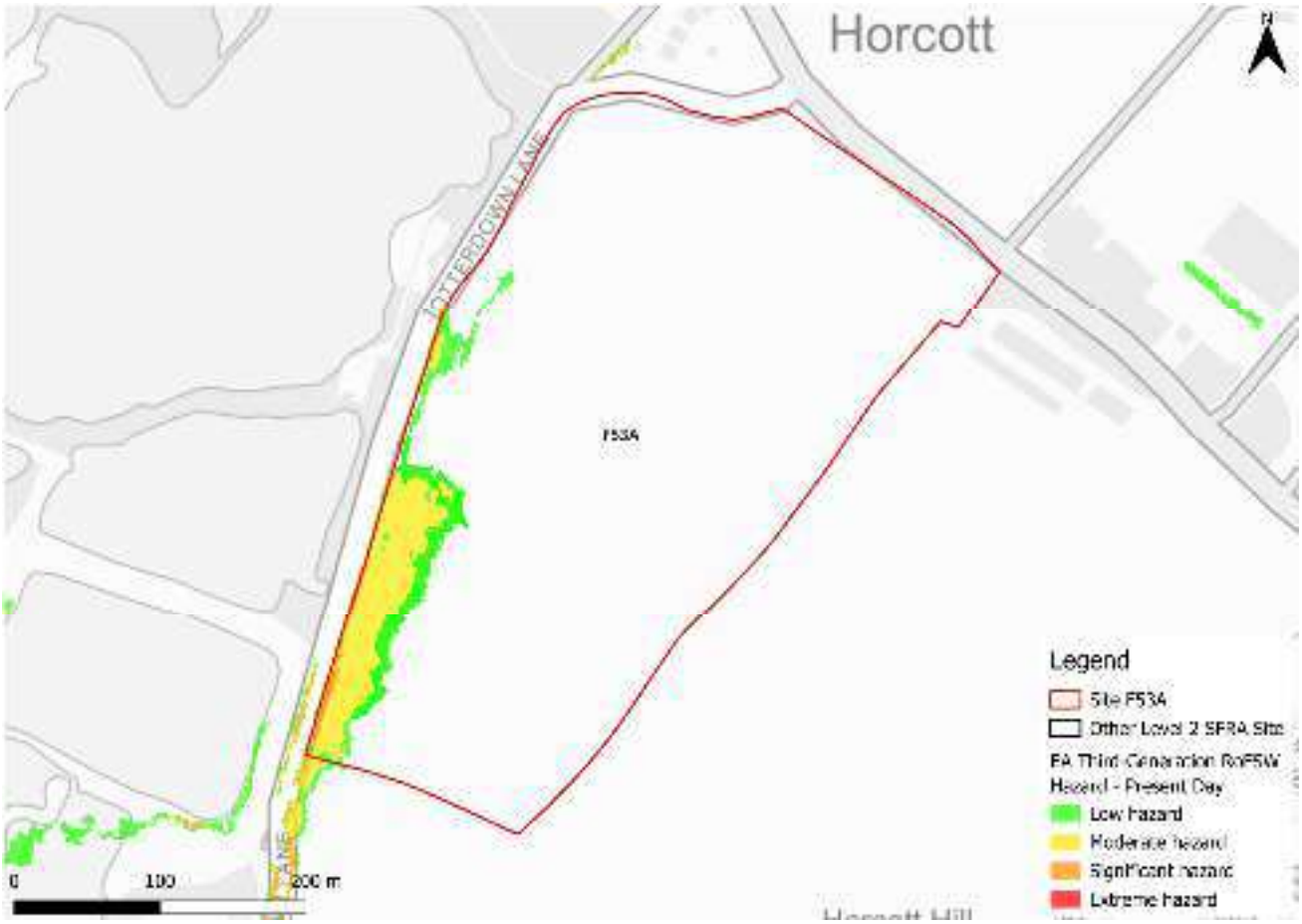

Figure 3-3: Third generation - Risk of Flooding from Surface Water map present day 1% AEP event surface water flood hazard[1]

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. Surface water risk across the site is not shown to increase significantly when considering climate change. Flood depths are shown to remain at between 0.6 and 0.9 m immediately behind the road embankment (Figure 3-5). Safe access and escape routes would likely remain achievable if provided via the south or west of the site.

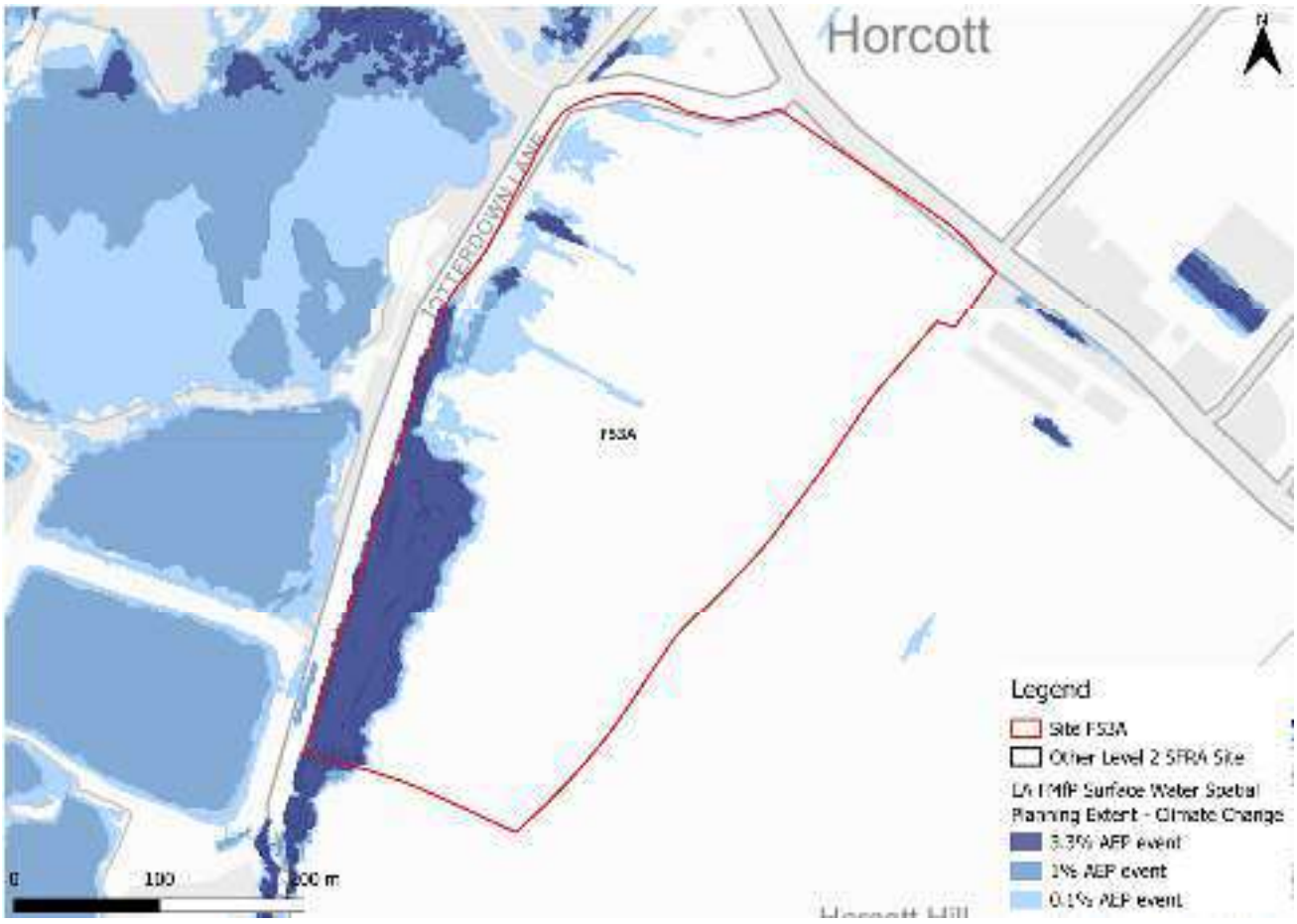

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

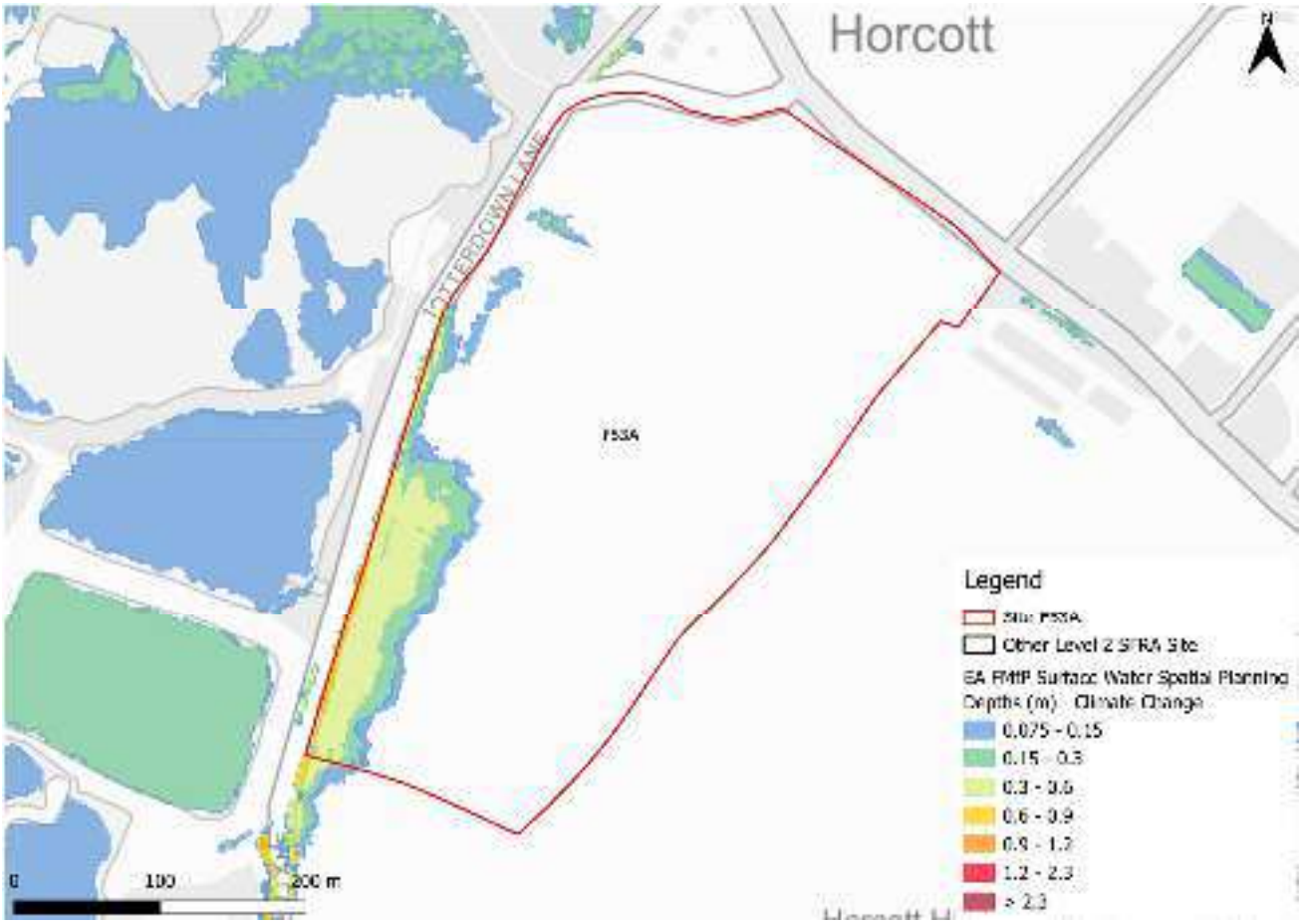

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 1% AEP event surface water flood depths (m)

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 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 'significant' (Figure 3-6).

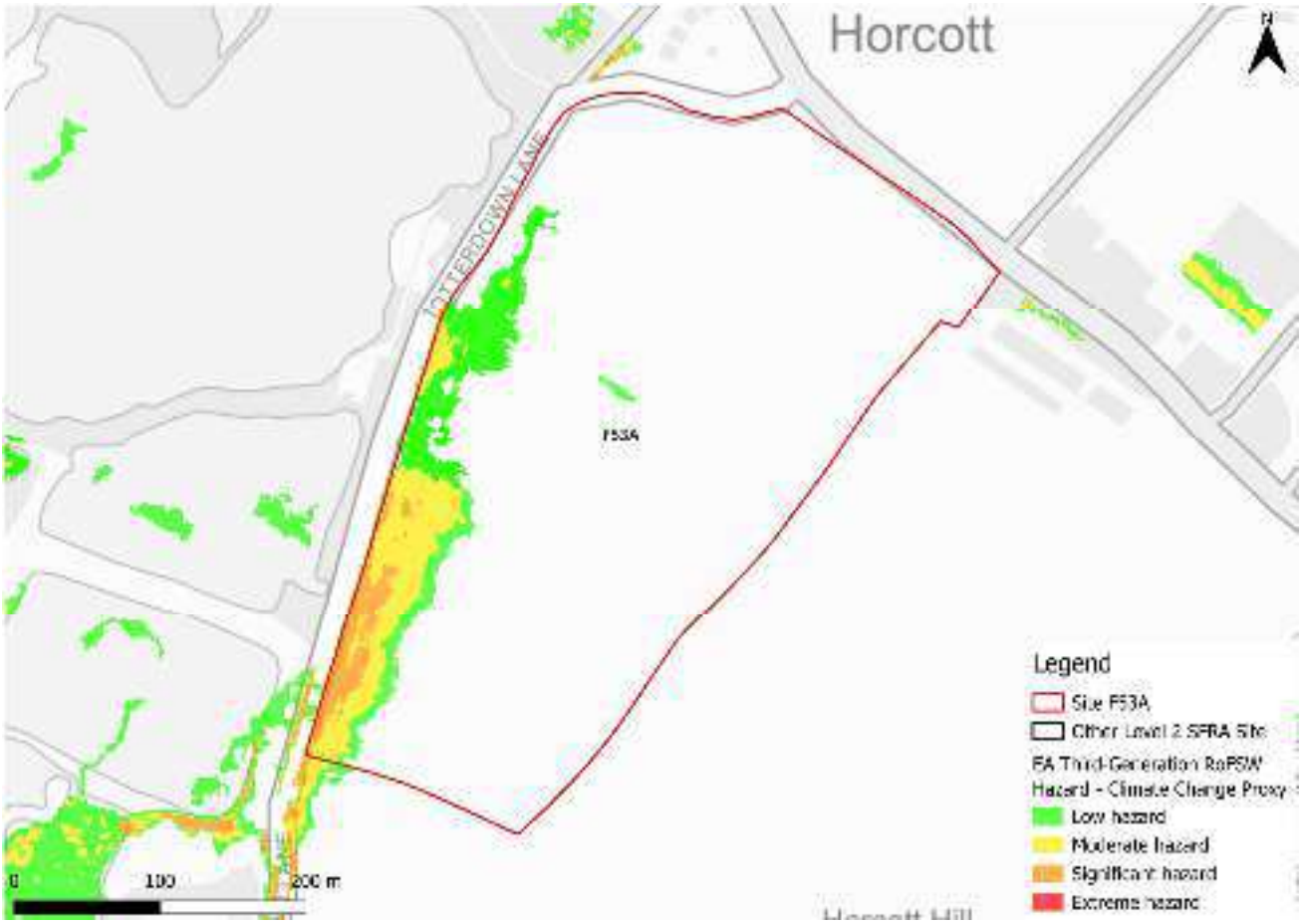

Figure 3-6: Third generation - Risk of Flooding from Surface Water map present day 0.1% AEP event surface water flood hazard as a climate change proxy

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There have been five recorded sewer flooding incidents within the Lechlade, Kempsford & Fairford South Ward.

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

- Current risk to the site is predominantly low, with 88% of the site being outside of the 0.1% AEP surface water flood extent. Surface water risk is confined to a significant area of ponding within the southwest of the site.
- Development should avoid the area shown to be at surface water risk within the southwest of the site. Ideally, this area would 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.
- Risk to the site is not shown to increase significantly in extent within the site when considering the impact of climate change.

- 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 Horcott Road to the north of the site, and the northern end of Totterdown Lane.

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 a low sensitivity catchment, namely Dudgrove Brook. 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 eastern half of the site is located within an area where there is no risk of groundwater emergence. Infiltration SuDS may be an appropriate option in this area. Within the western half of the site, there is a risk of groundwater emergence to both surface and subsurface assets. This area includes the area of surface water flood risk. Infiltration SuDS would not be suitable within this area of the site.

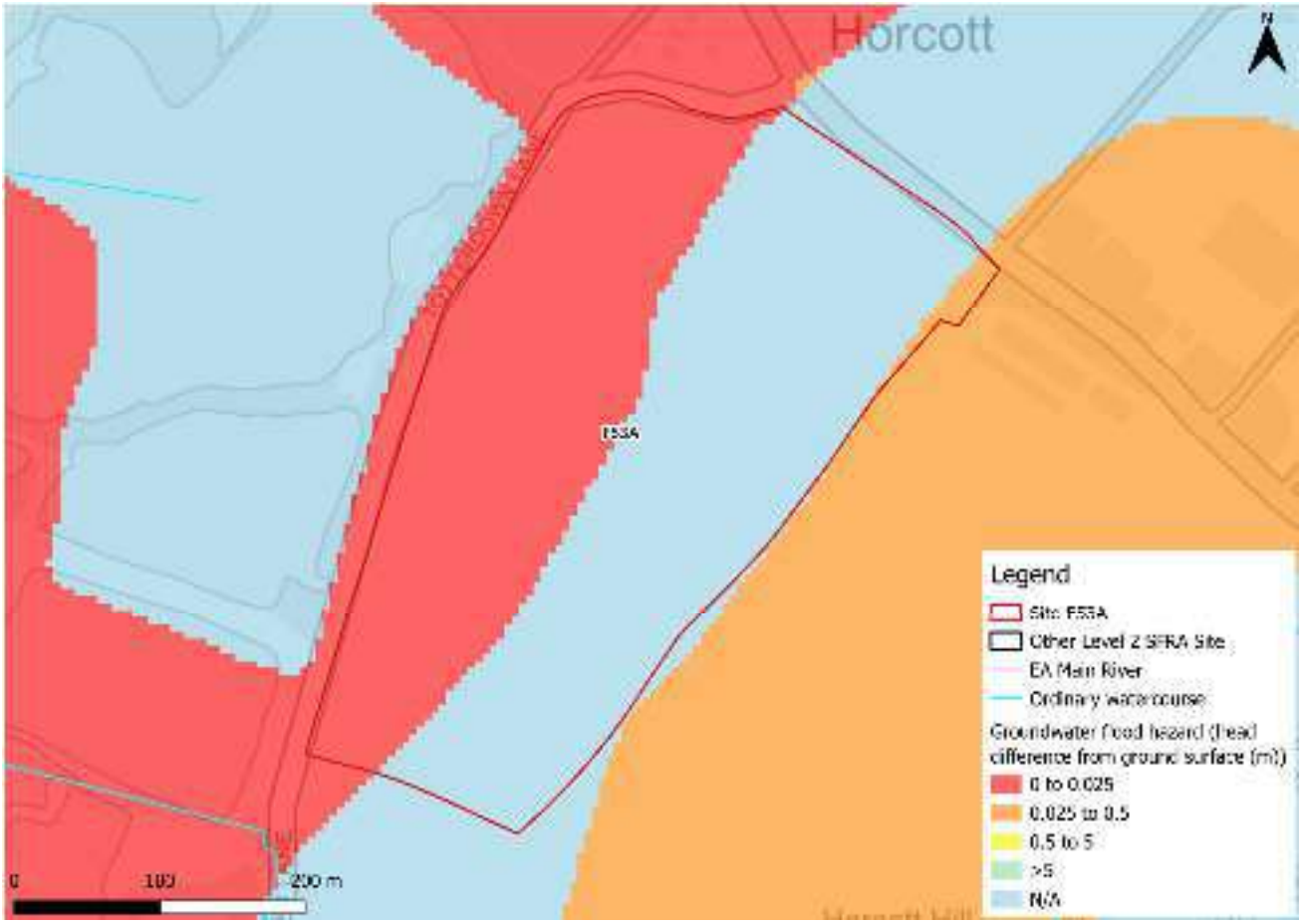

Figure 5-1: JBA 5m Groundwater Emergence Map

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. The superficial deposits within the site are sand and gravel, which generally have a high porosity.

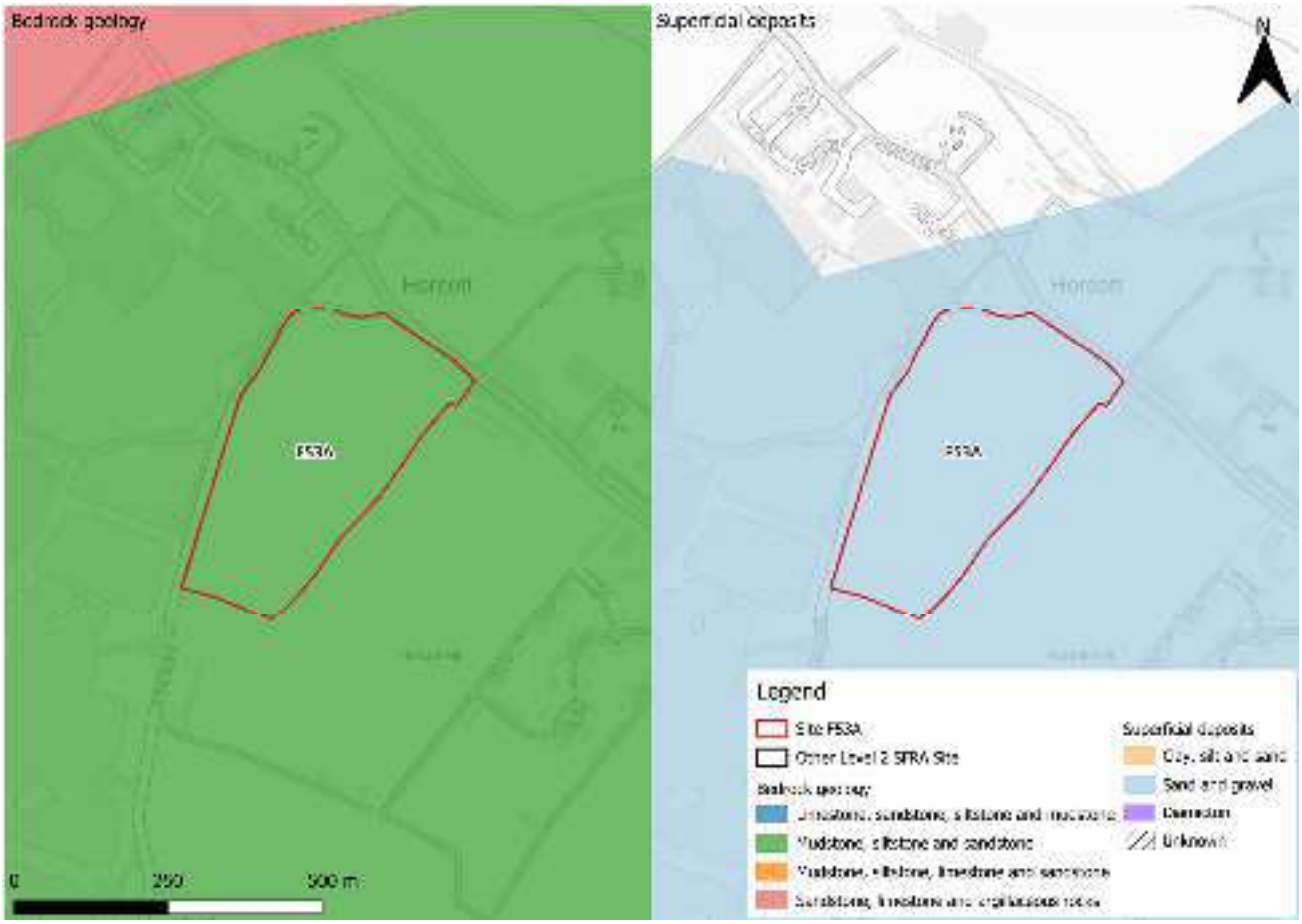

Figure 5-2: BGS Geology - Bedrock and superficial deposits

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 is no potential residual risk to the site.

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:

- It should be possible to develop this site for mixed use given its location within Flood Zone 1 and surface water risk confined to a distinct area of ponding within the south of the site.
- The area of the site shown to be at surface water flood risk would ideally be utilised as open greenspace to provide a flood storage function as well as providing BNG, ecological, amenity, social, and wellbeing benefits.
- A drainage strategy must be in place to manage surface water flood risk and runoff rates.
- 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 south west of Kemble

Draft Report

Prepared for	Date
Cotswold District Council	July 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

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Acknowledgements

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1 Background

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1.1 Strategic extension to the south west of Kemble

- Location: Kemble
- Existing site use: Agricultural land
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 86.1
- Watercourse: N/A
- Environment Agency (EA) flood model: N/A
- Summary of requirements from Level 2 SFRA scoping stage:
    - 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

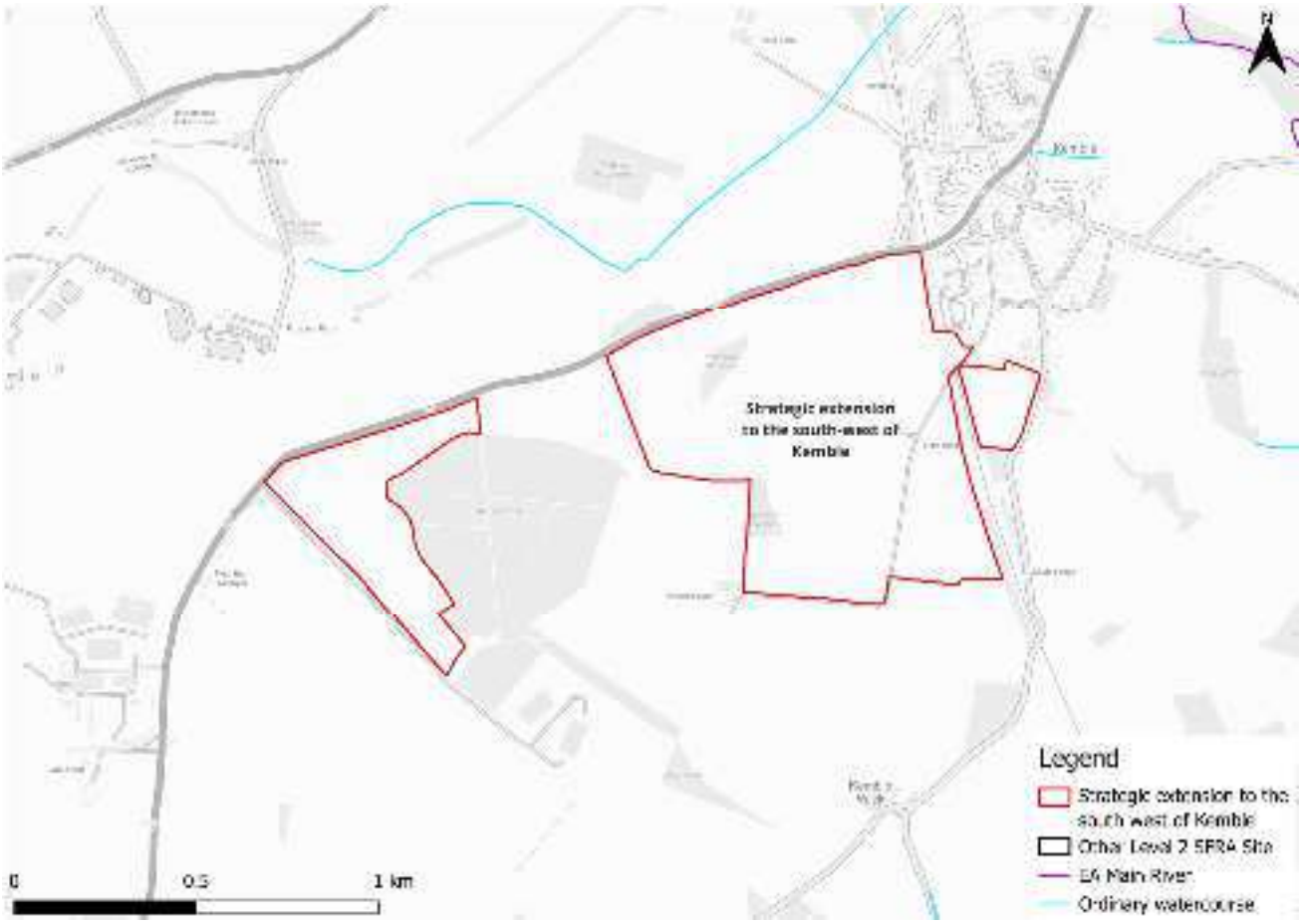

Figure 1-1: Site location boundary

Figure 1-2: Aerial photography

The larger site parcel in the east slopes southwards towards the Flagham Brook floodplain. The smaller site parcel to the east slopes eastwards (Figure 1-3).

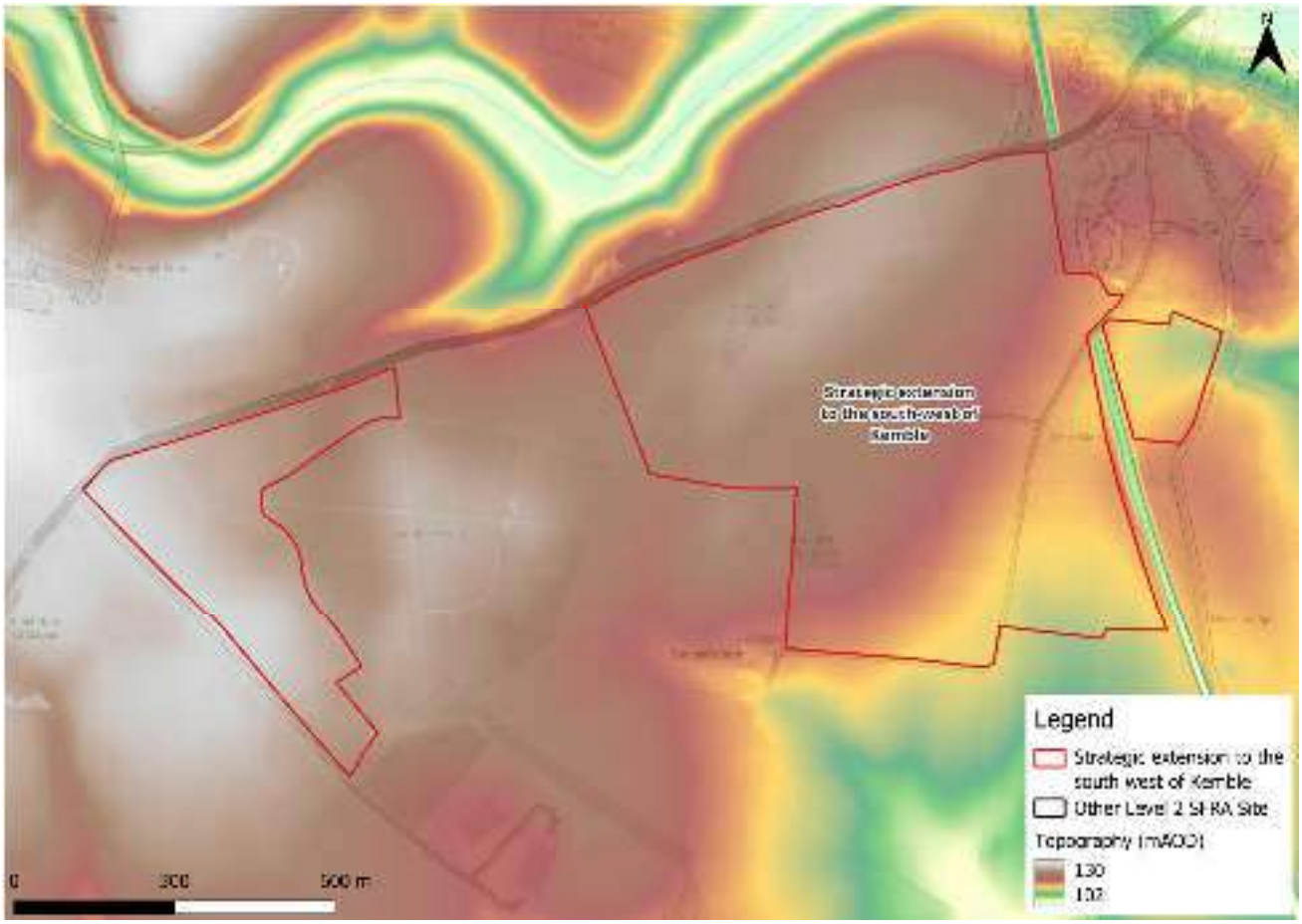

Figure 1-3: Topography

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 site is wholly located within Flood Zone 1 and therefore at low risk of flooding from rivers, as shown in Figure 2-1. Please note, the Flood Map for Planning does not consider flood defence infrastructure (Section 2.4).

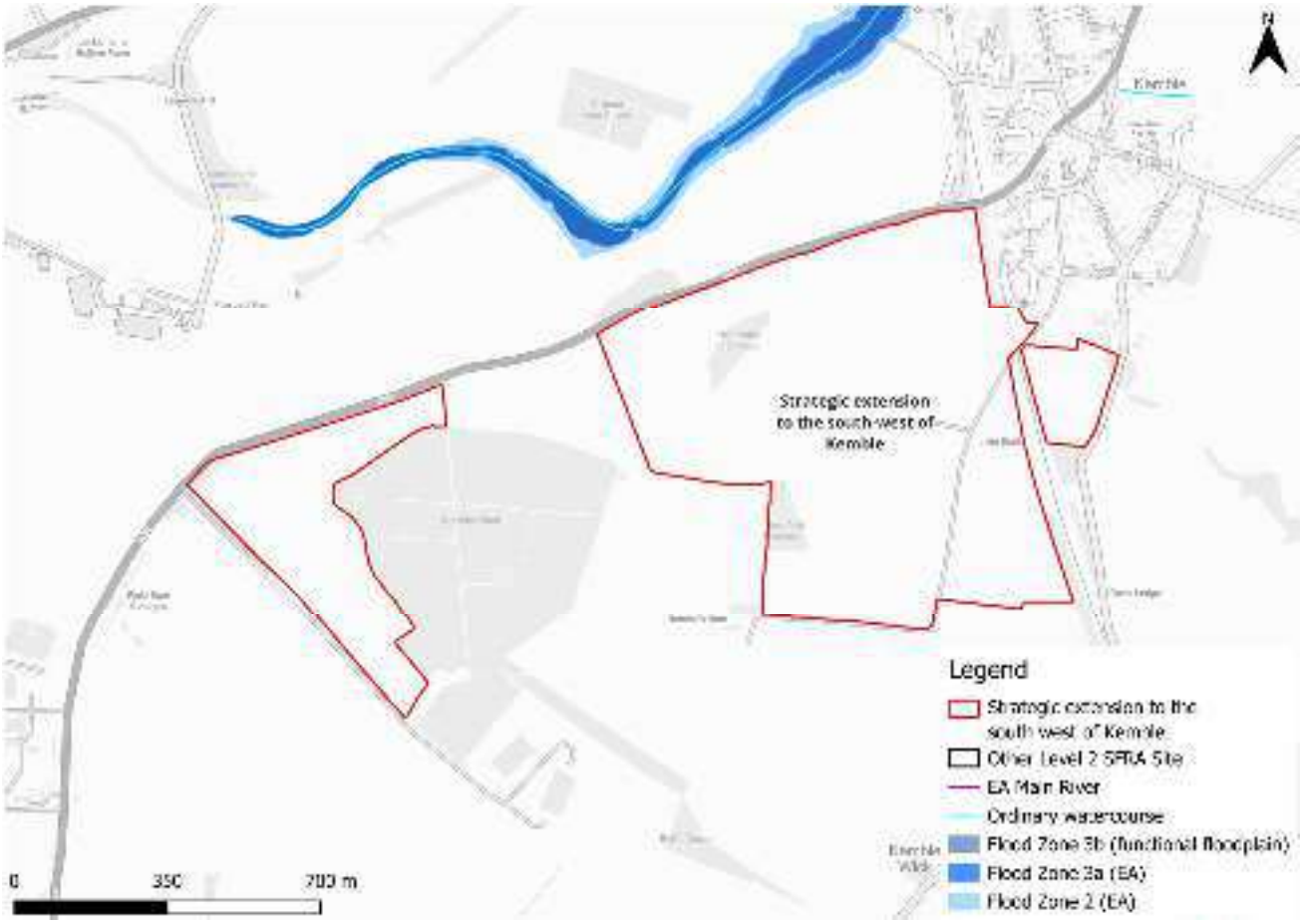

Figure 2-1: Present day risk

2.2 Impacts from climate change

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 21% on peak flows (Table 2-1).

Table 2-1: 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

2.2.1 Flood Map for Planning - Flood Zones plus Climate Change

Based on the EA's Flood Map for Planning - Flood Zones plus Climate Change dataset, the site is not shown to be at increased risk of fluvial flooding when considering 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 ten recorded flooding incidents within the Kemble 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 2-2 shows that there are opportunities within the site for run-off 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.

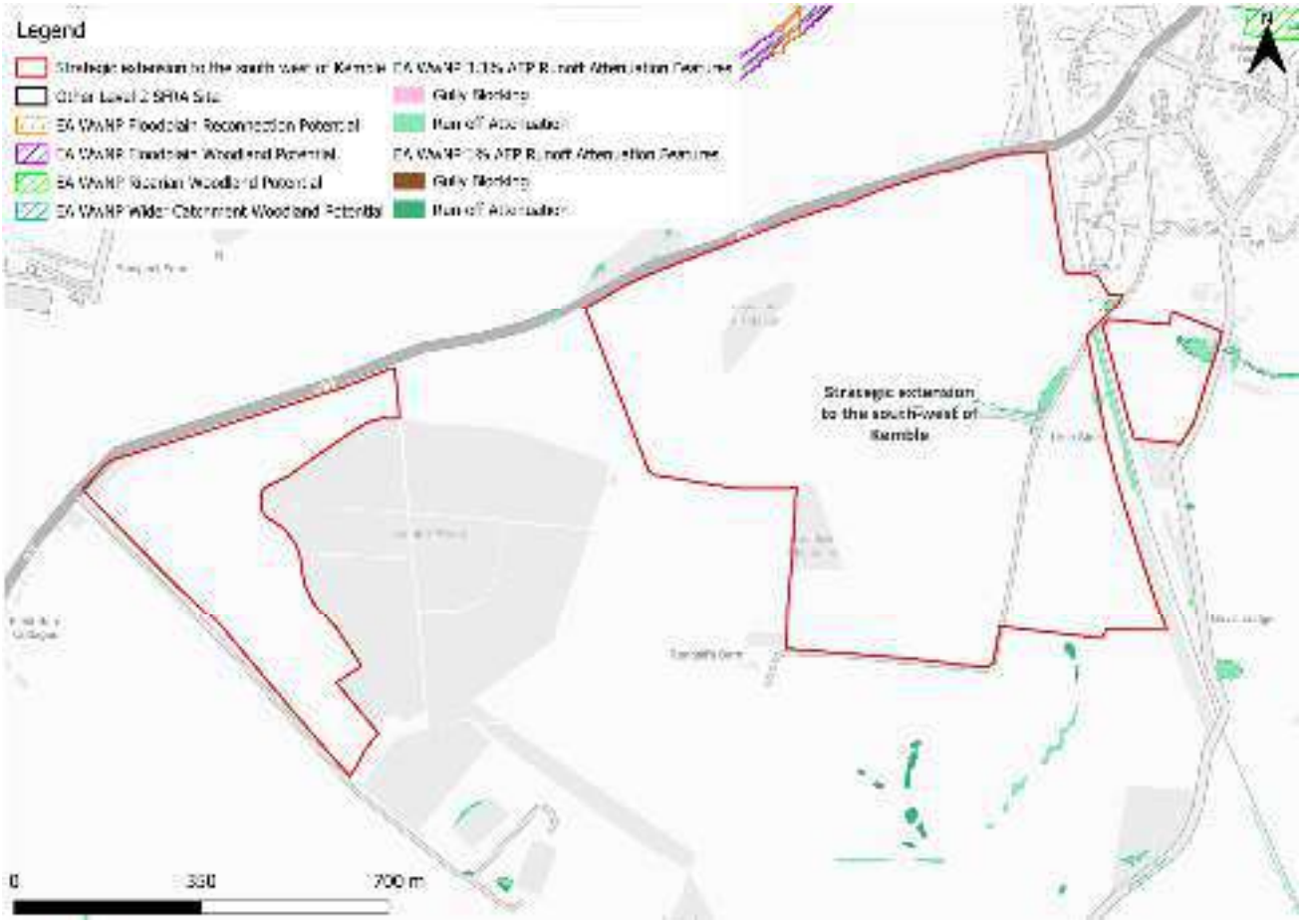

Figure 2-2: Working with Natural Processes

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 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 is not located within a FAA.

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 2-3).

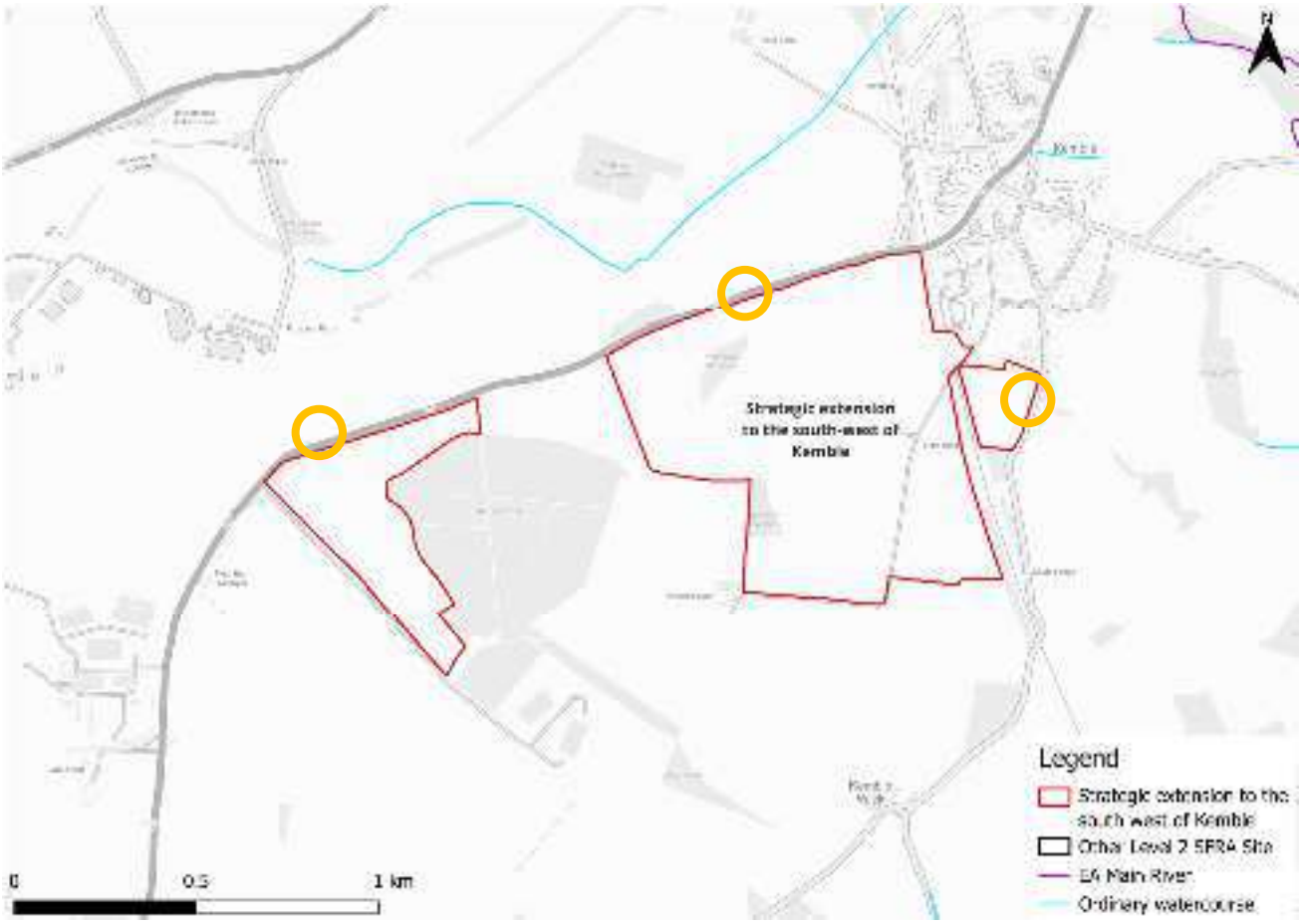

Figure 2-3: Potential access and escape routes

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

- Observations:
  - The site is located wholly within Flood Zone 1 and therefore at low risk of flooding from rivers.
  - The site is not shown to be at increased risk from fluvial flooding in the future, based on the EA's Flood Zones plus Climate Change dataset.
- 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 Figure 3-1. Surface water risk is present across all site parcels as areas of scattered ponding in topographic low spots. There is a greater extent of ponding within the east of the largest site parcel along the hardstanding road through the site.

Greatest surface water flood depths in the 1% AEP event are between 0.6 and 0.9 m within a small area of ponding in the eastern site parcel (Figure 3-2).

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

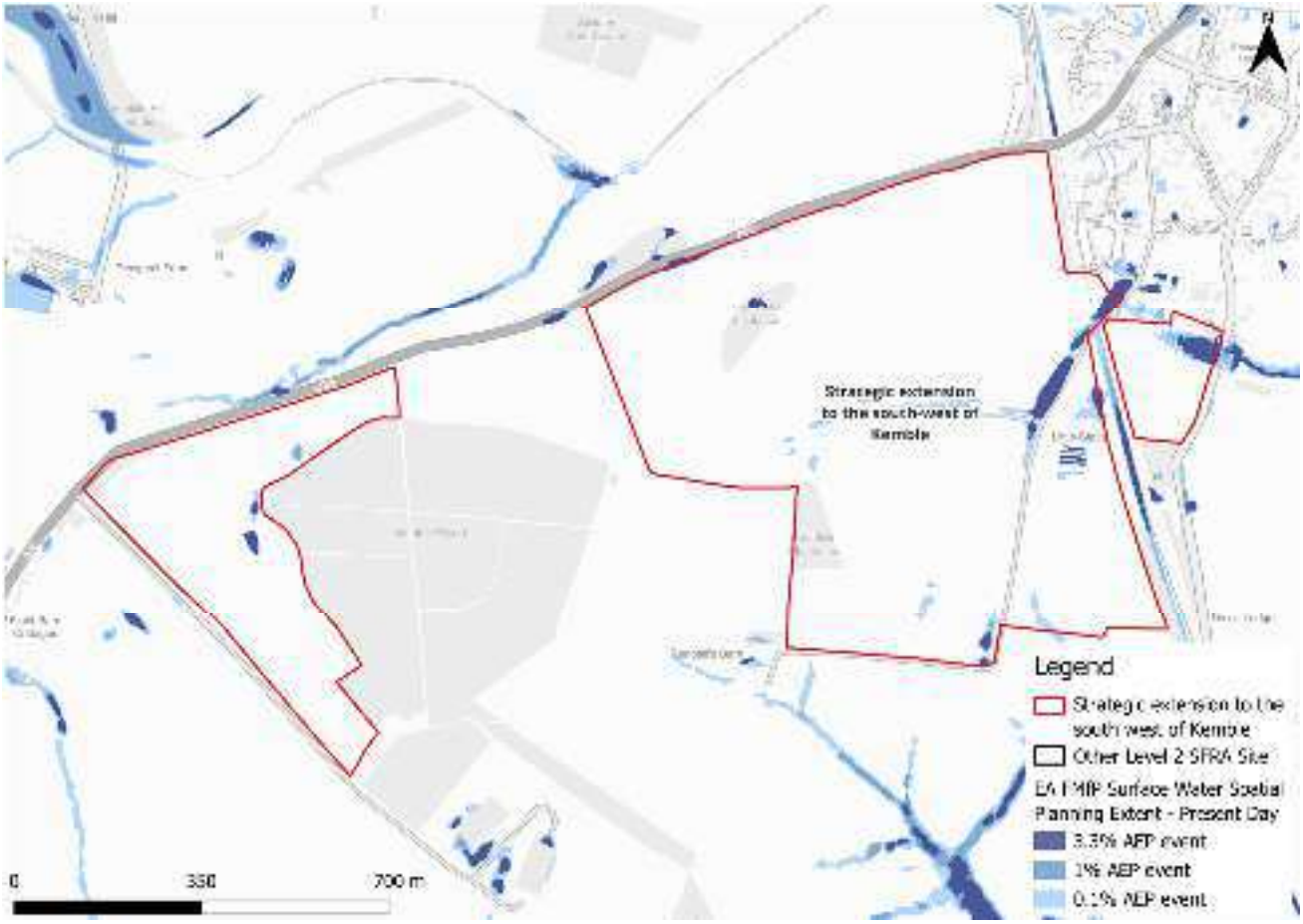

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

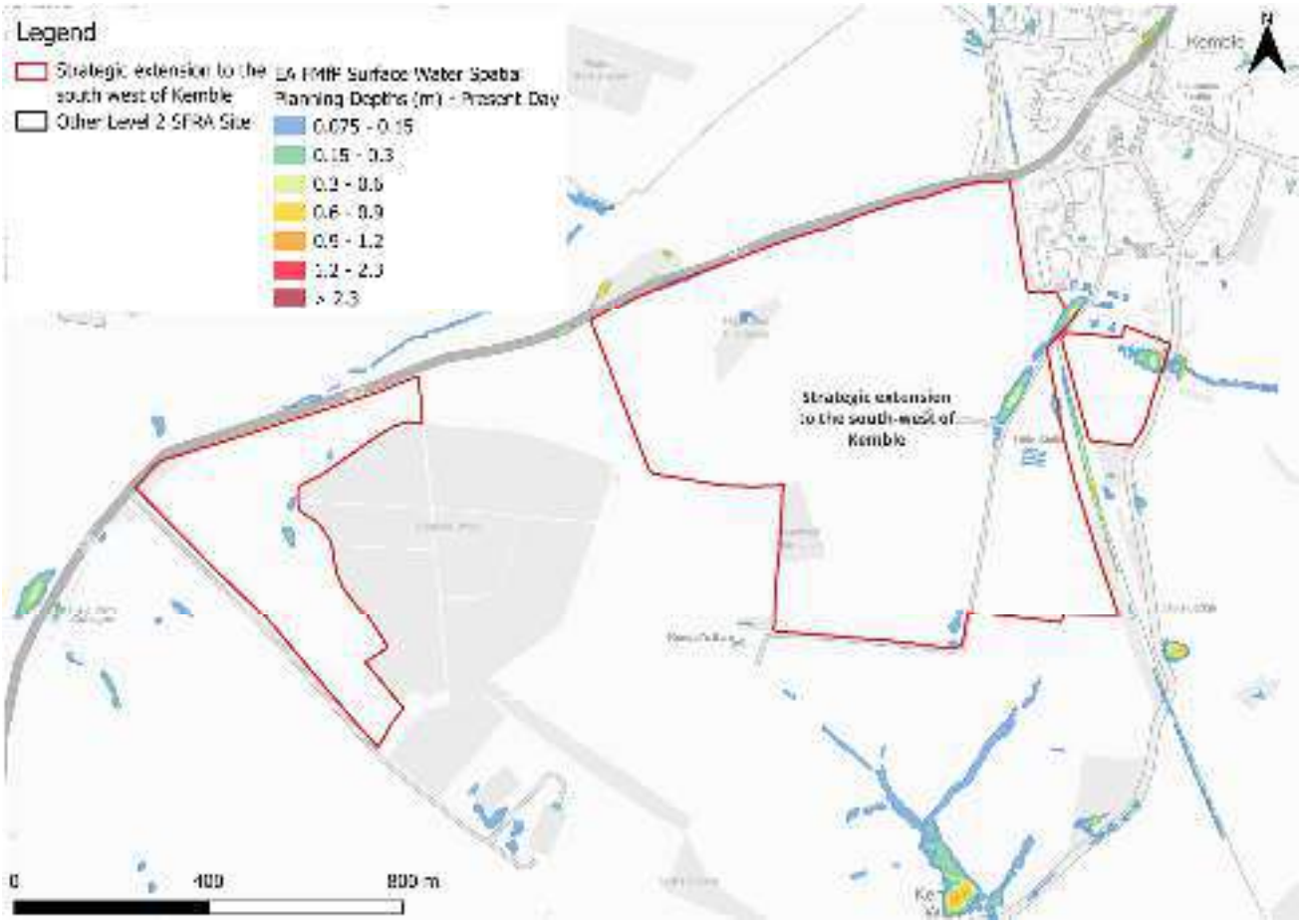

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 1% AEP event surface water flood depths (m)

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 some small areas of 'significant' flood hazard within the eastern site parcel (Figure 3-3). There are some differences between the Flood Map for Planning - Surface Water Spatial Planning map and the third generation RoFSW hazard mapping. 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.

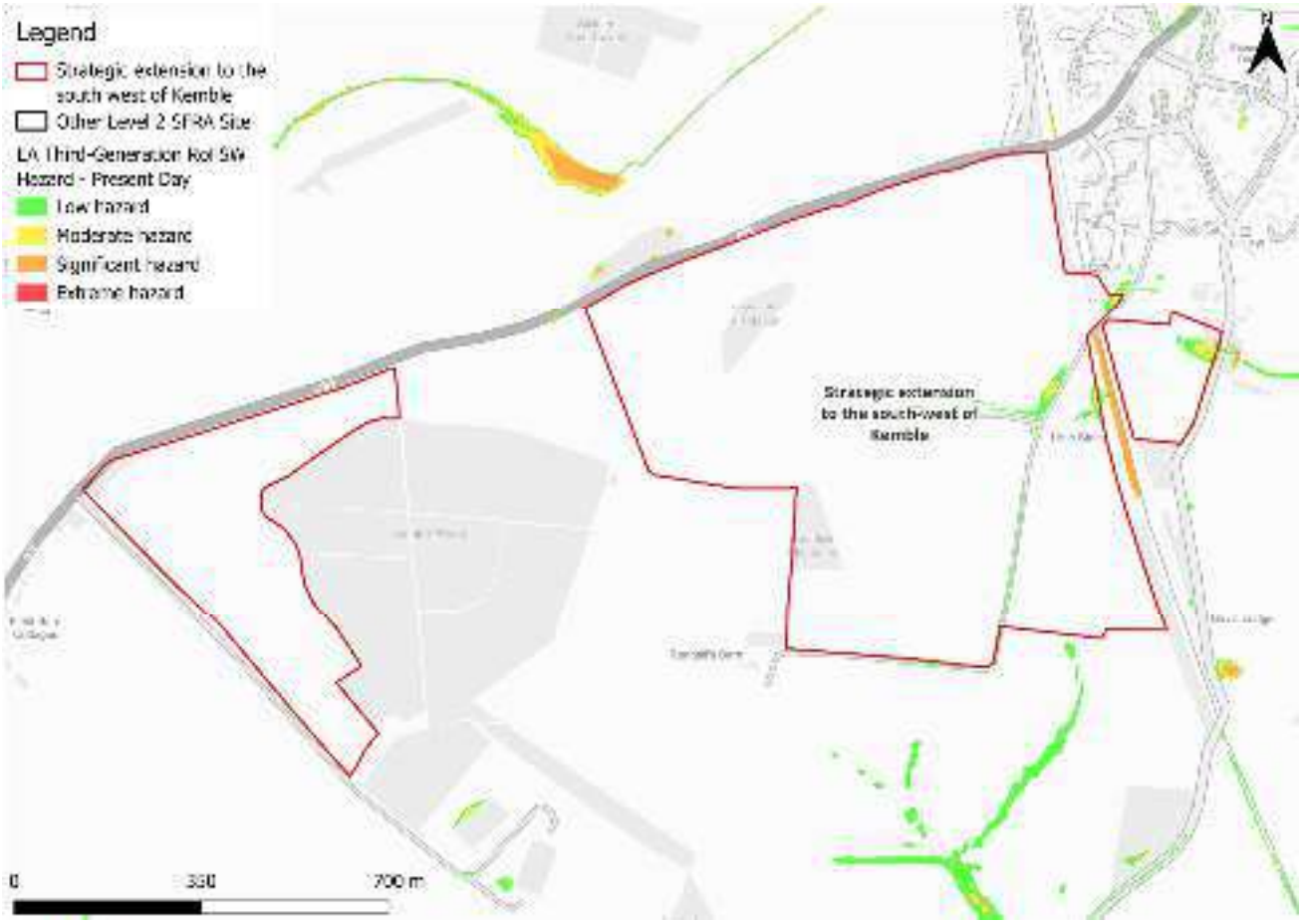

Figure 3-3: Third generation - Risk of Flooding from Surface Water map present day 1% AEP event surface water flood hazard[1]

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 3-1: 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. There is a slightly greater extent of flooding within the areas of ponding onsite in all events. However, surface water flood risk is not shown to increase significantly with climate change. Flood depths in the 1% AEP event are shown to increase to remain at between 0.6 and 0.9 m within the eastern site parcel (Figure 3-5).

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

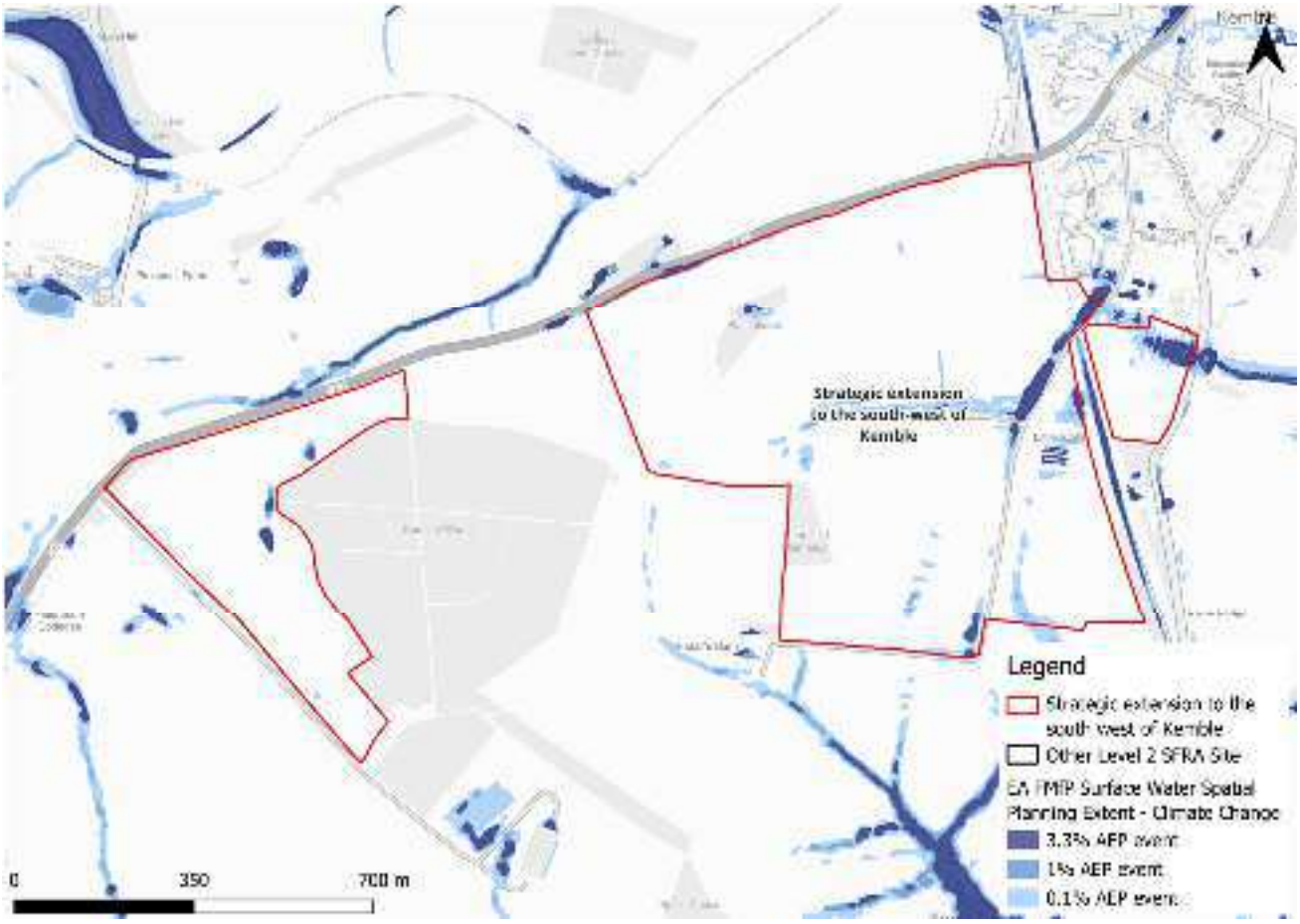

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

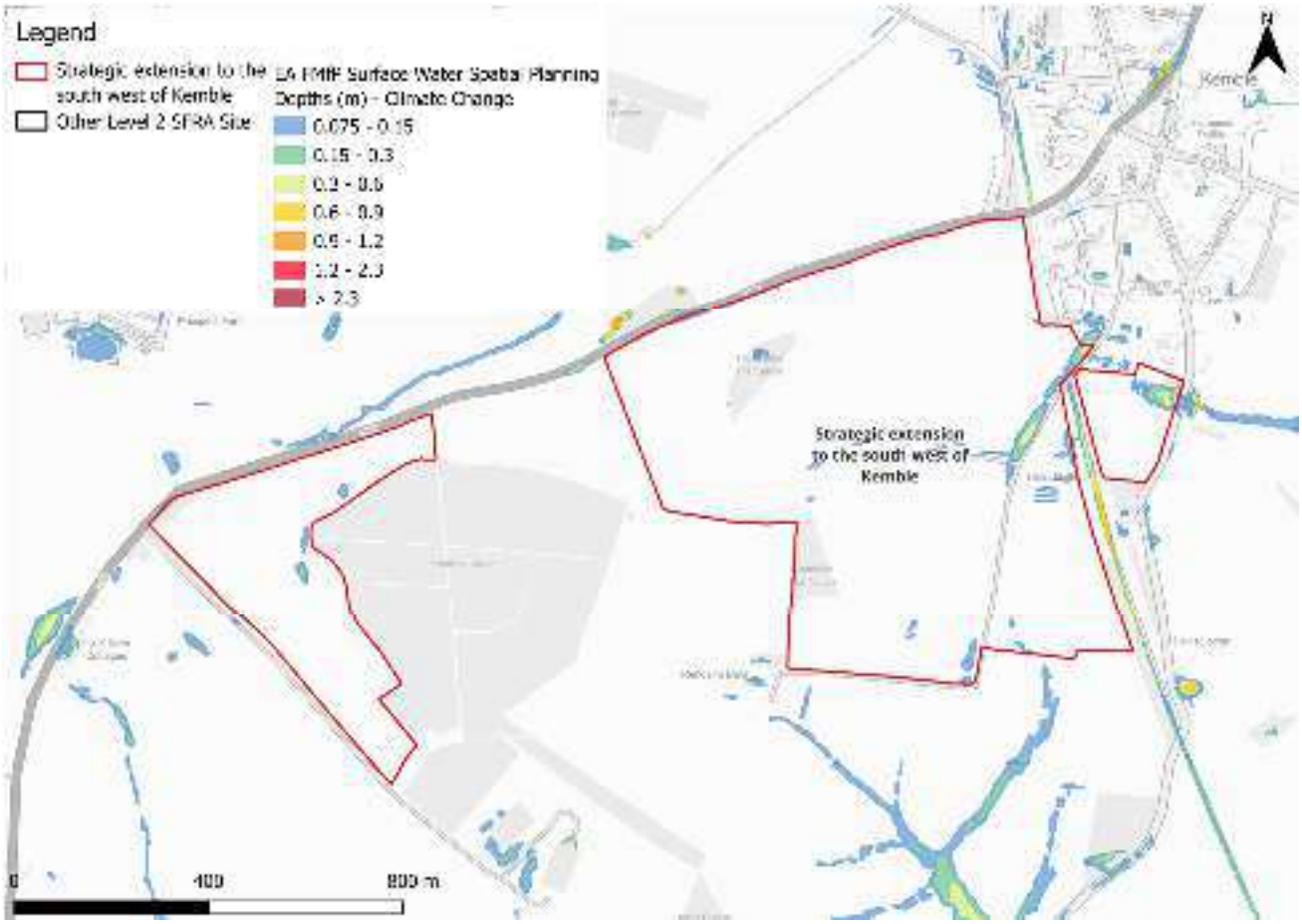

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 1% AEP event surface water flood depths (m)

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 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 'significant' in some areas (Figure 3-6).

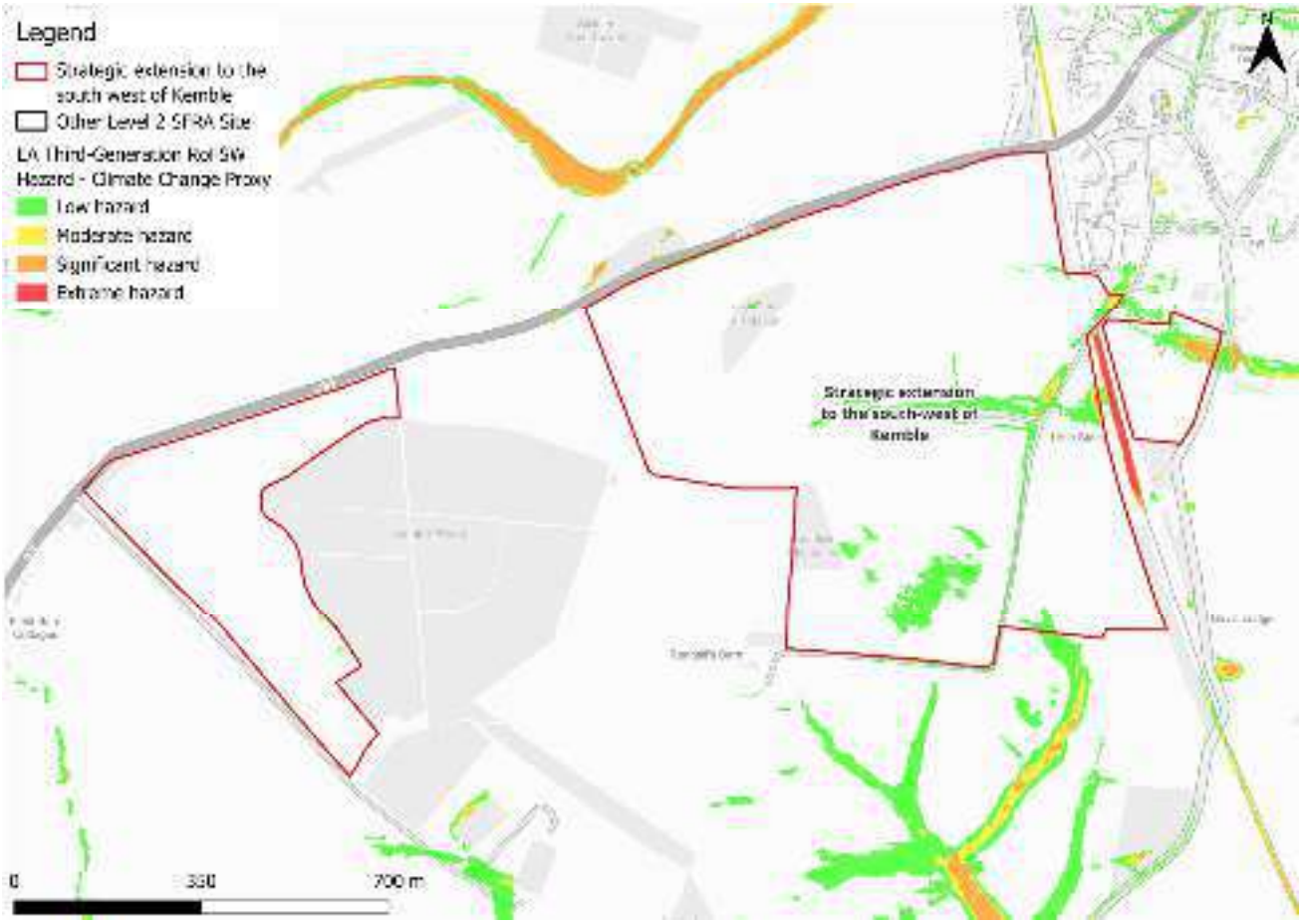

Figure 3-6: Third generation - Risk of Flooding from Surface Water map present day 0.1% AEP event surface water flood hazard as a climate change proxy

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There have been six recorded sewer flooding incidents within the Kemble Ward.

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

- Current risk to the site is predominantly low, with the majority of each site parcel being outside of the 0.1% AEP surface water flood extent. Surface water risk is present as areas of scattered ponding within topographic low spots.
- The areas of ponding should be considered and included in site design and ideally left in place to flood naturally when required.
- Risk to the site parcels is not shown to increase significantly in extent within the site when considering the impact of climate change.
- A drainage strategy must be carried out at each site parcel to 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, two of which are ranked as high sensitivity, and one ranked as low 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 majority of the site parcels are located within an area where there is a risk of groundwater emergence to surface and subsurface assets and there is the possibility of groundwater emerging at the surface locally.

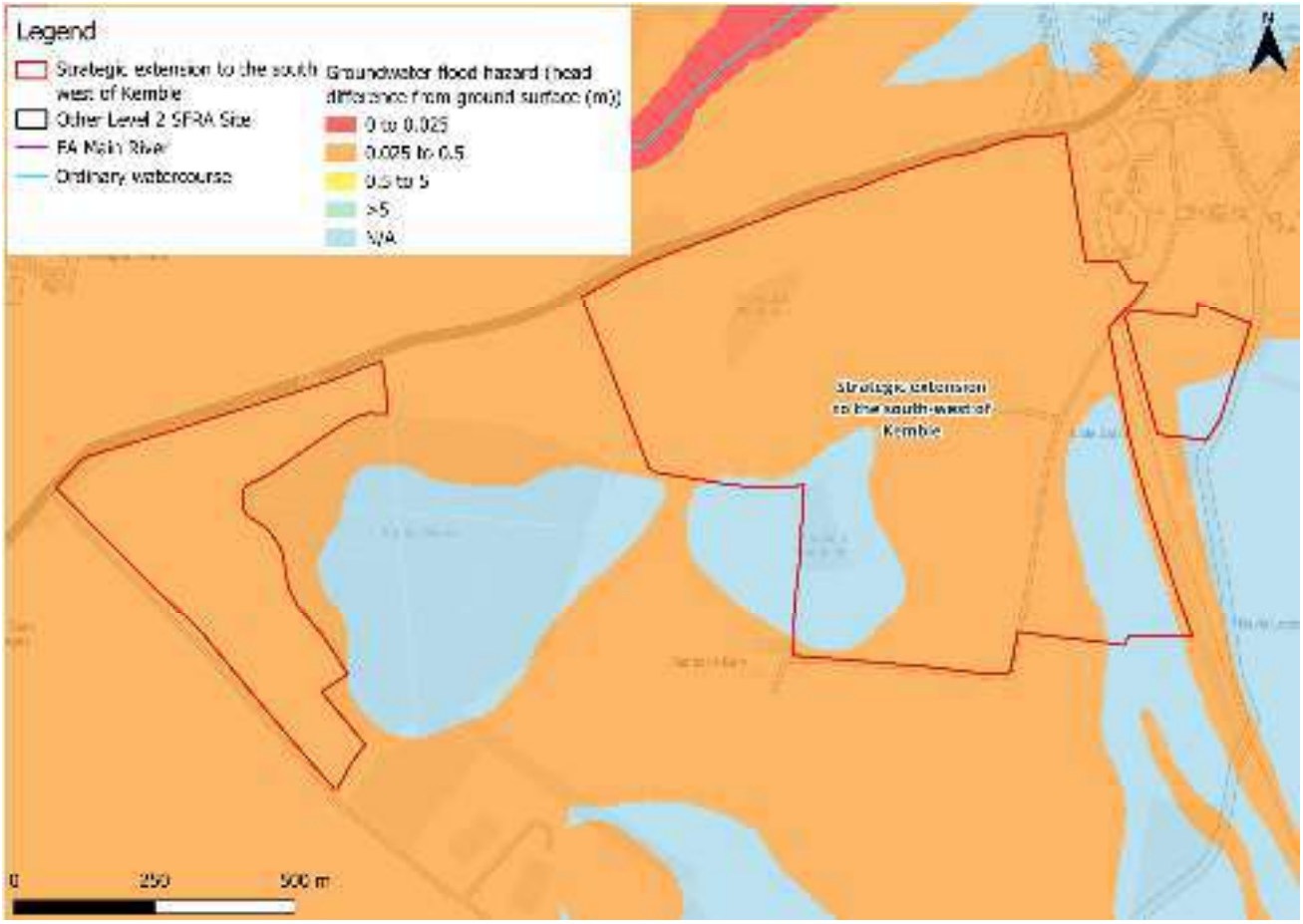

Figure 5-1: JBA 5m Groundwater Emergence Map

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. There is no record of superficial deposits in the area.

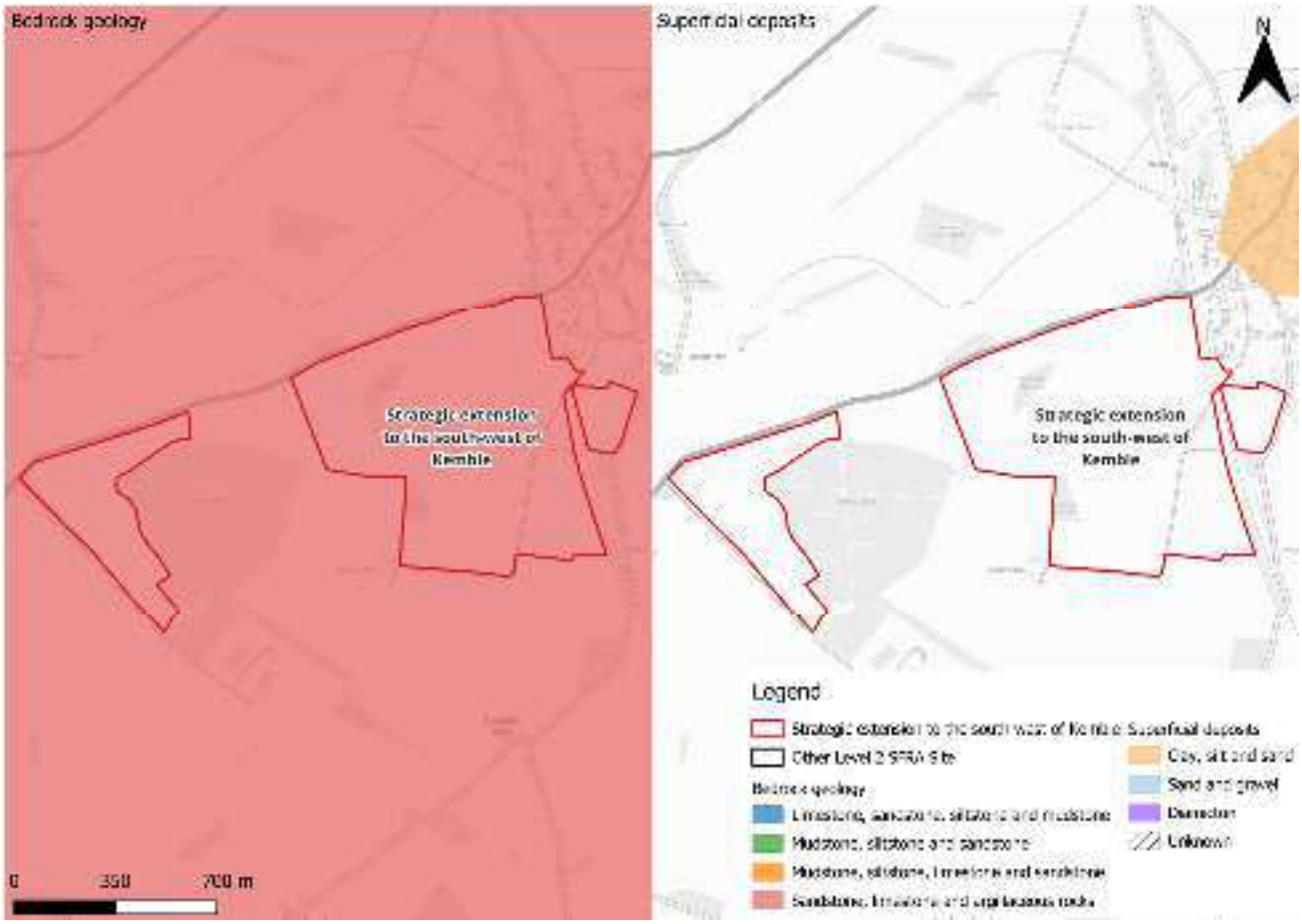

Figure 5-2: BGS Geology - Bedrock and superficial deposits

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 is no potential residual risk to the site.

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:

- It should be appropriate to develop each site parcel for more vulnerable purposes given the location within Flood Zone 1 and nominal surface water flood risk.
- A drainage strategy will be required for each site parcel which 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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Cotswold Level 2 Strategic Flood Risk Assessment Site Summary

Site L33

Draft Report

Prepared for
Cotswold District Council

Date
July 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 Jo Corbett of Cotswold District Council. Laura Thompson-Jones of JBA Consulting carried out this work.

Purpose and Disclaimer

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of Cotswold District Council and its appointed agents in accordance with the Agreement under which our services were performed.

JBA has no liability for any use that is made of this Report except to Cotswold District Council for the purposes for which it was originally commissioned and prepared.

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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 July 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

List of Figures

List of Tables

1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site L33. 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 L33

- Location: Land south of Ferrers Park
- Existing site use: Agricultural
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 10.02
- Watercourse: N/A
- Environment Agency (EA) flood model: N/A
- Summary of requirements from Level 2 SFRA scoping stage:
    - 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: Aerial photography

The topography of the site slopes from west to east towards the floodplain of the River Leach to the southwest of the site (Figure 1-3). There is a large topographic low spot along the western boundary adjacent to Station Road.

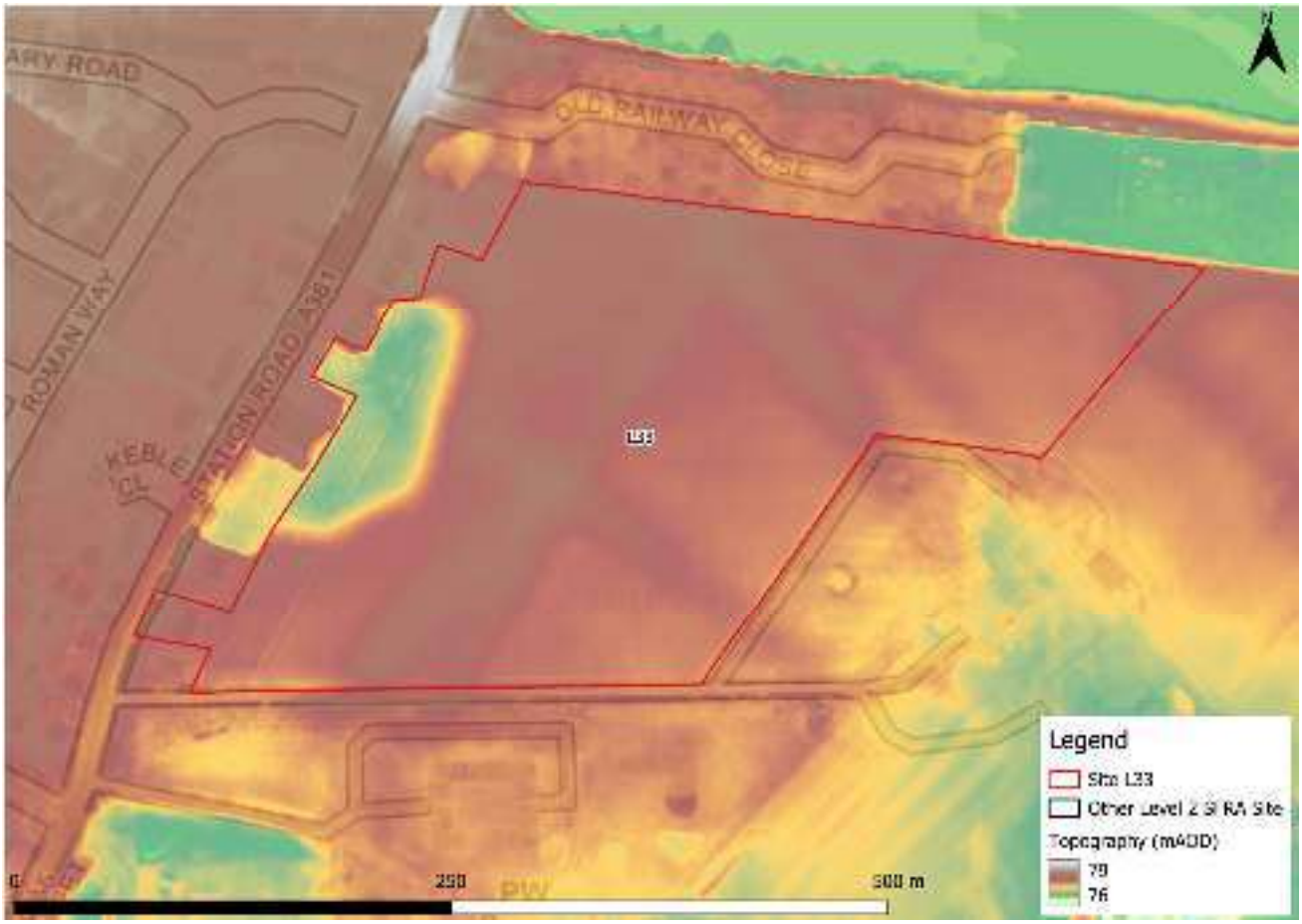

Figure 1-3: Topography

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 site is wholly located within Flood Zone 1 and therefore at low risk of flooding from rivers. 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).

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)
100	0	0	0

Figure 2-1: Present day risk

2.2 Impacts from climate change

2.2.1 Flood Map for Planning - Flood Zones plus Climate Change

Based on the Flood Map for Planning - Flood Zones plus Climate Change dataset, the site is not shown to be at additional risk from 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 are no recorded flood incidents on or near the site.

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 2-2 shows that the almost the entire site, and wider area, could benefit from wider catchment tree planting. Tree planting can help to slow the flow to benefit areas downstream. There are also opportunities for run-off 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.

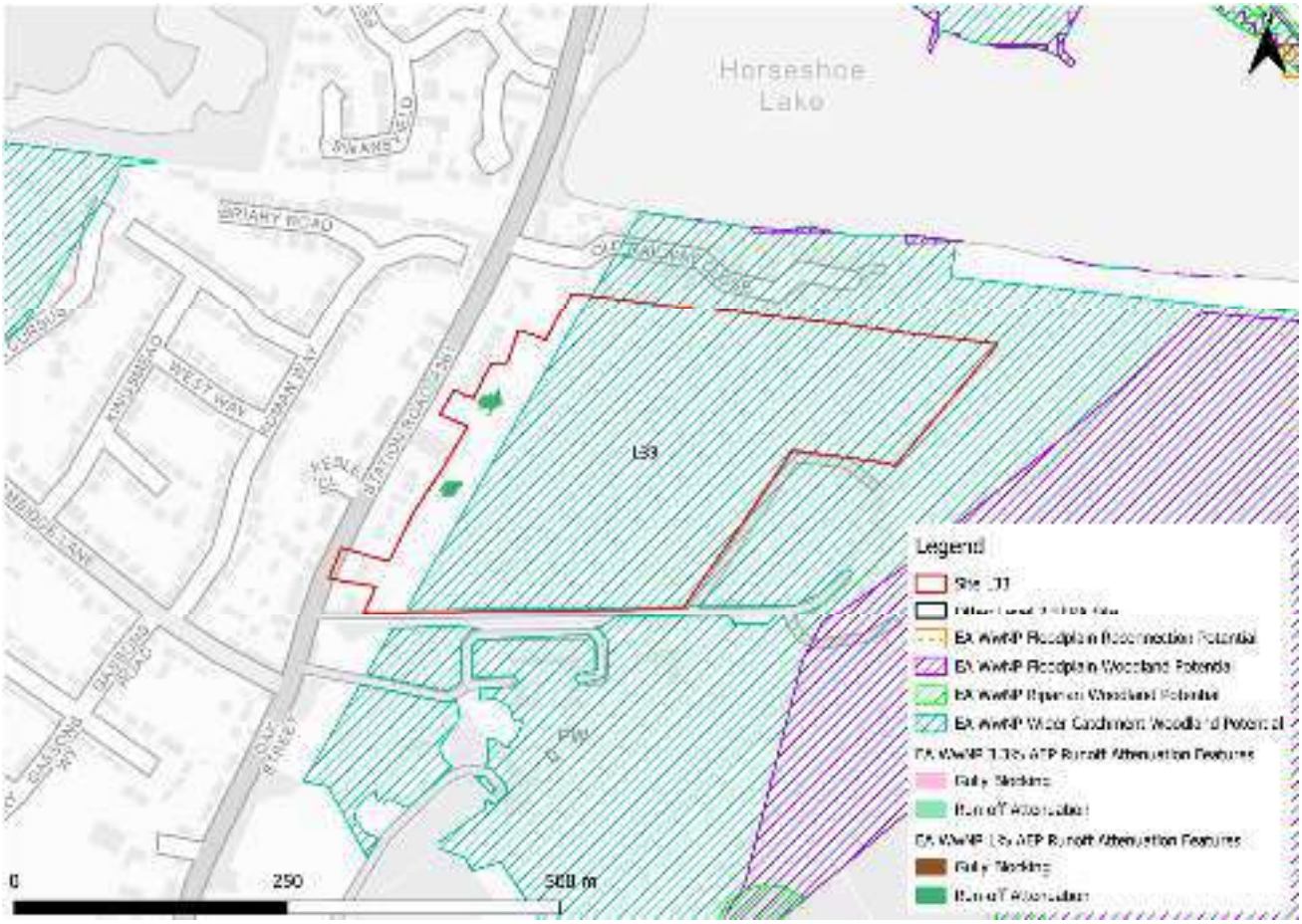

Figure 2-2: Working with Natural Processes

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 is not located within a FAA.

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes are available during a flood event via Station Road to the south of the site (**Error! Reference source not found.**).

Figure 2-3: Potential access and escape routes

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

- Observations:
  - The site is located wholly within Flood Zone 1 and therefore at low risk of flooding from rivers.
  - The site is not shown to be at increased risk from fluvial flooding in the future, based on the EA's Flood Zones plus Climate Change dataset.
- Access and escape:
  - Based on current information, safe access and escape routes are available via Station Road to the southwest 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

Based on the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Extent map (May 2026), the site is at nominal risk of surface water flooding with a few isolated areas of ponding, as shown in Table 3-1 and Figure 3-1. Greatest surface water flood depths in the 1% AEP event are between 0.15 and 0.3 m (Figure 3-2). Safe access and escape routes are achievable via Station Road to the south-east of 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)
96	2	1	1

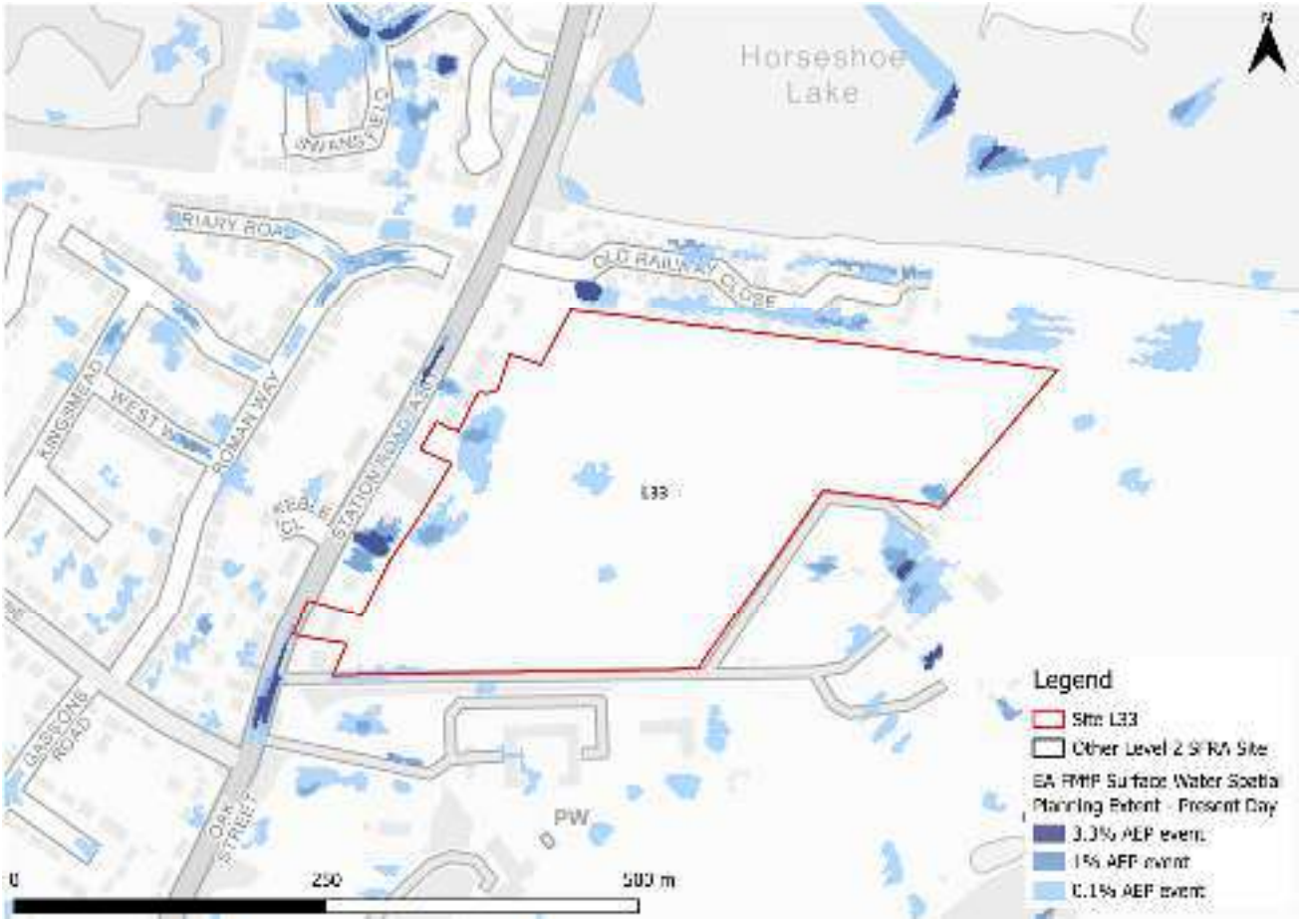

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

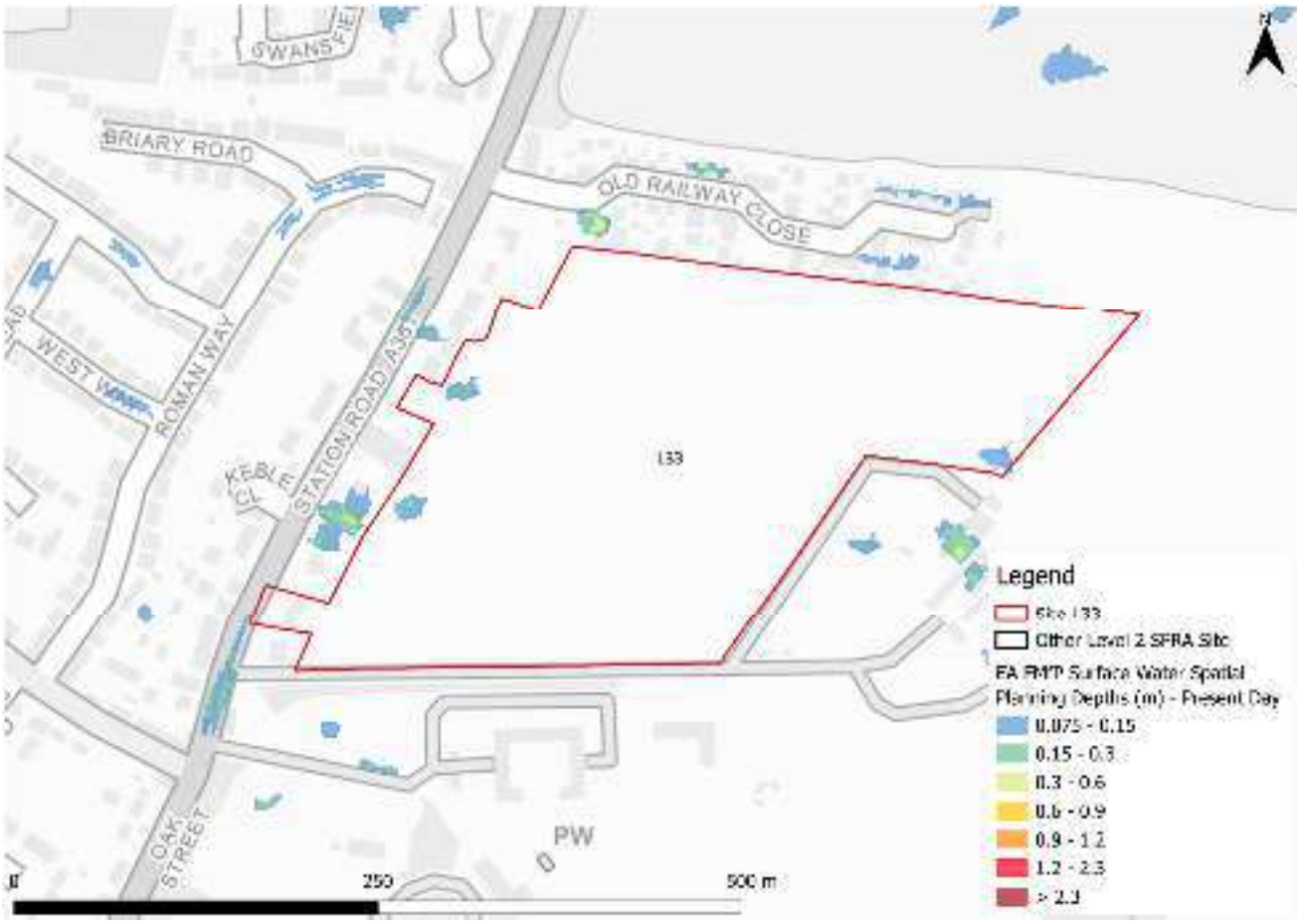

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 1% AEP event surface water flood depths (m)

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 'low' to 'moderate' flood hazard (Figure 3-3). 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.

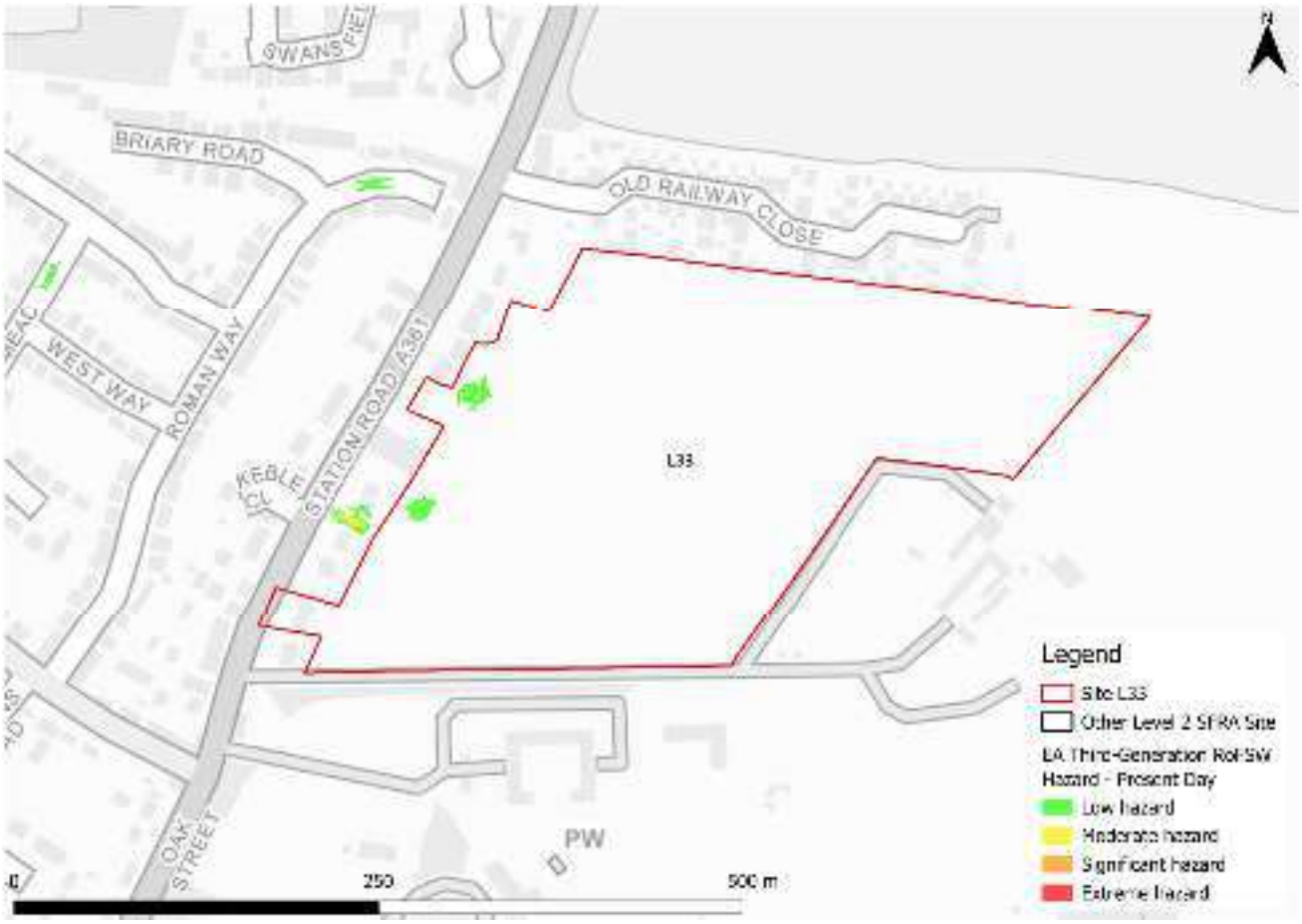

Figure 3-3: Third generation - Risk of Flooding from Surface Water map present day medium risk surface water flood hazard[1]

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 SFRAs 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 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. The topographic low spot of the site becomes more prominent in the 1% AEP and 0.1% AEP events.

Flood depths are shown to reach between 0.3 and 0.6 m (Figure 3-5). Safe access and escape routes would likely remain achievable.

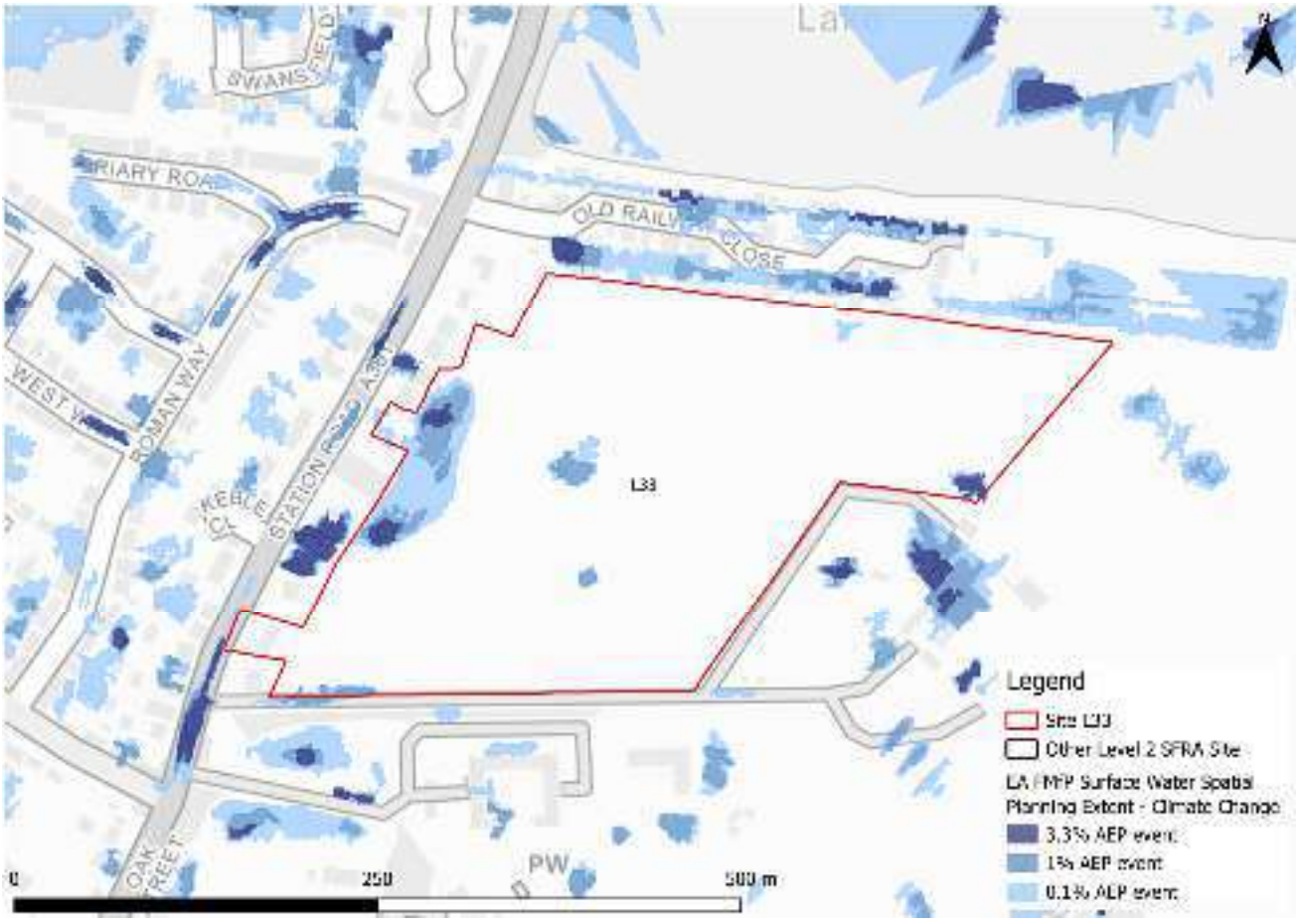

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

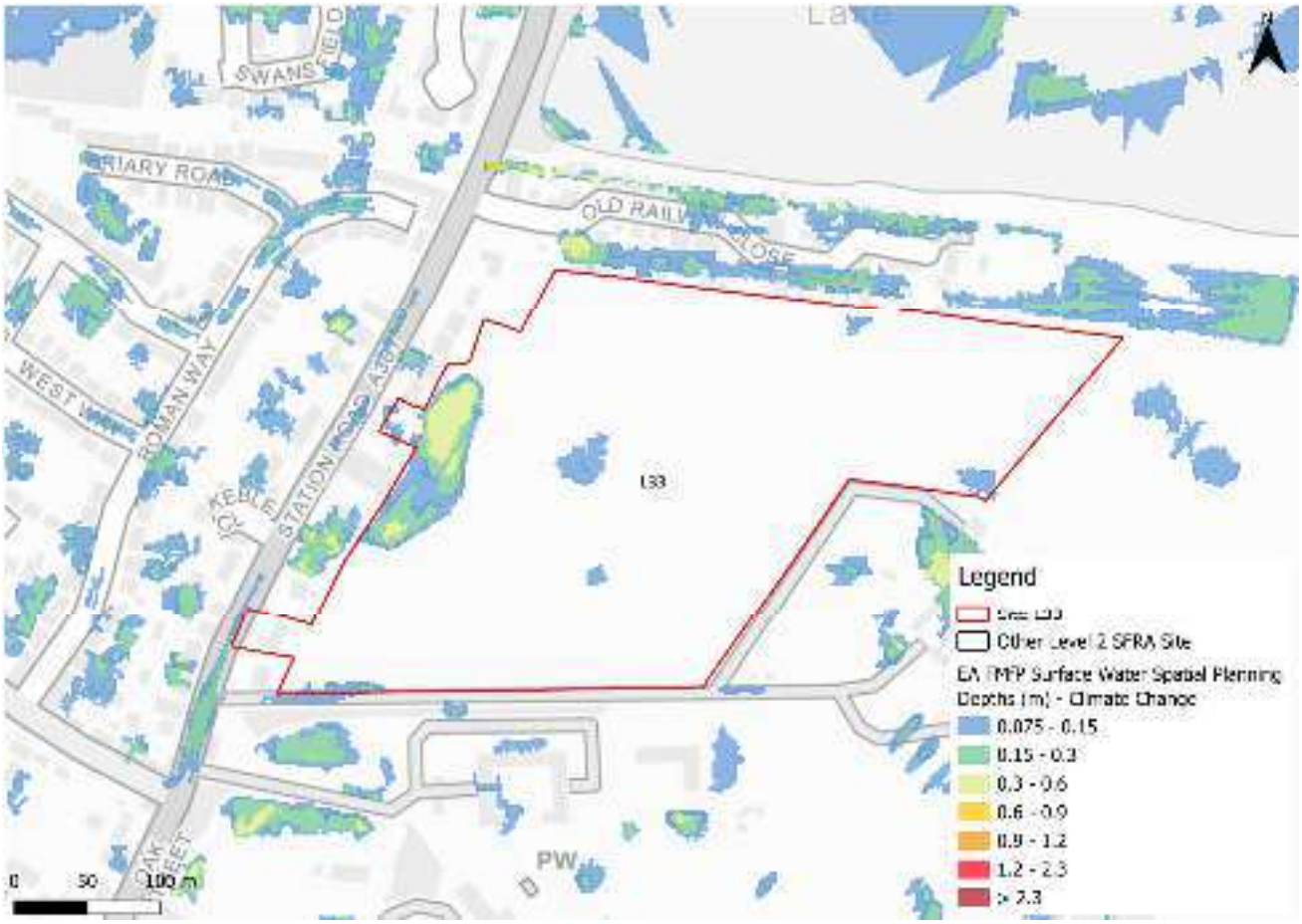

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 0.1% AEP event flood depths (m)

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 mainly categorised as 'moderate' (**Error! Reference source not found.**).

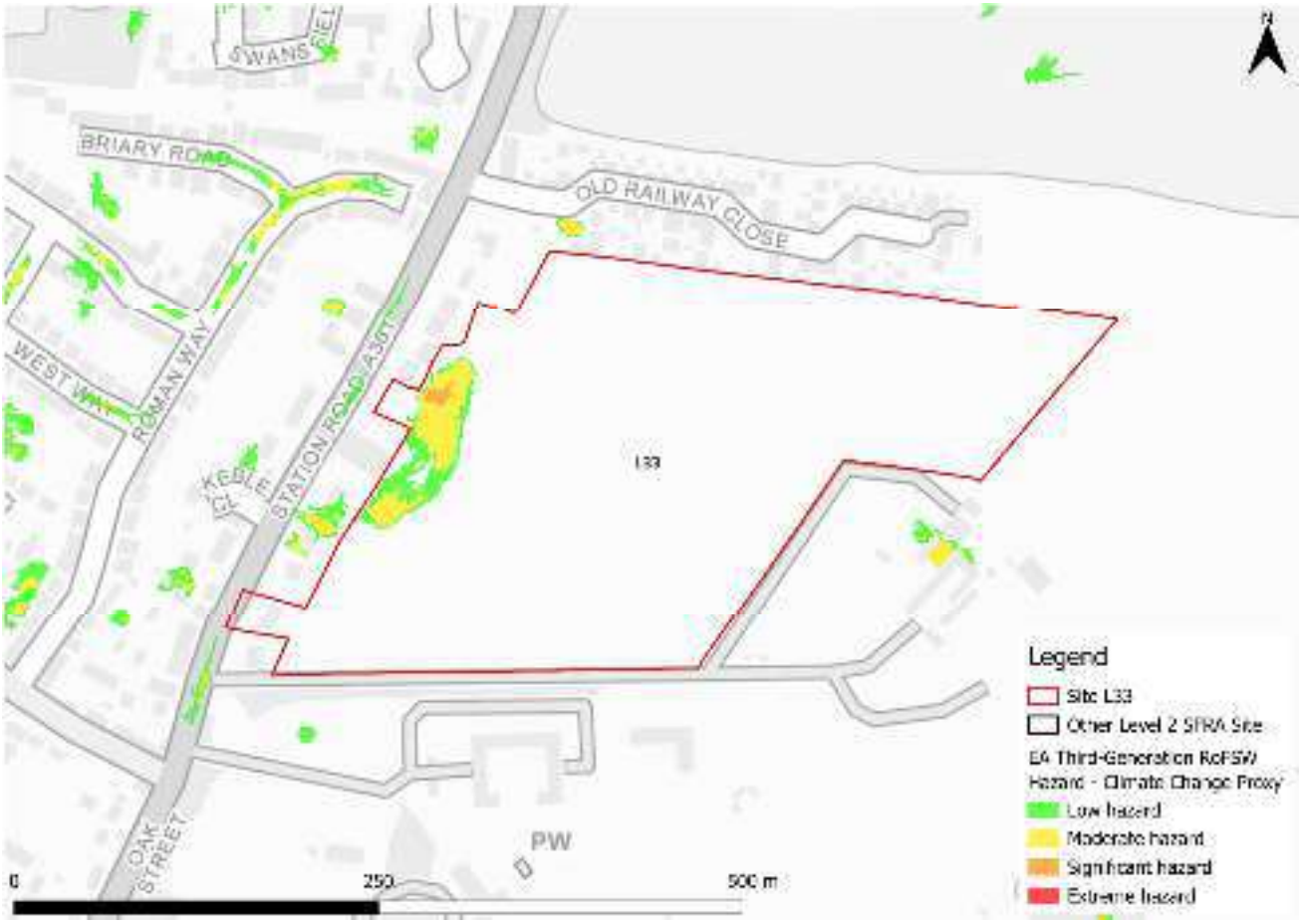

Figure 3-6: Third generation - Risk of Flooding from Surface Water map present day 0.1% AEP event surface water flood hazard[1] as a climate change proxy

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There have been five recorded sewer flooding incidents within the Lechlade, Kempsford & Fairford South Ward.

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

- Current risk to the site is predominantly low, with 96% 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, however depths remain largely shallow.
- The topographic low spot in the west of the site 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 Station Road 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 one catchment, namely, the Blockley Bk - source to conf Knee Bk 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 the site is at risk of groundwater emergence to both surface and subsurface assets where groundwater may emerge at significant rates in this area and has the capacity to flow overland and/or pond within any topographic low spots. Infiltration SuDS are unlikely to be possible at this site. Any drainage strategy should include for detailed investigations into water table levels and ground conditions in both dry and wet conditions

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 levels of porosity. Superficial deposits include sand and gravel which have a high permeability. Infiltration SuDS at this site may not be an option though the drainage strategy for the site should fully investigate.

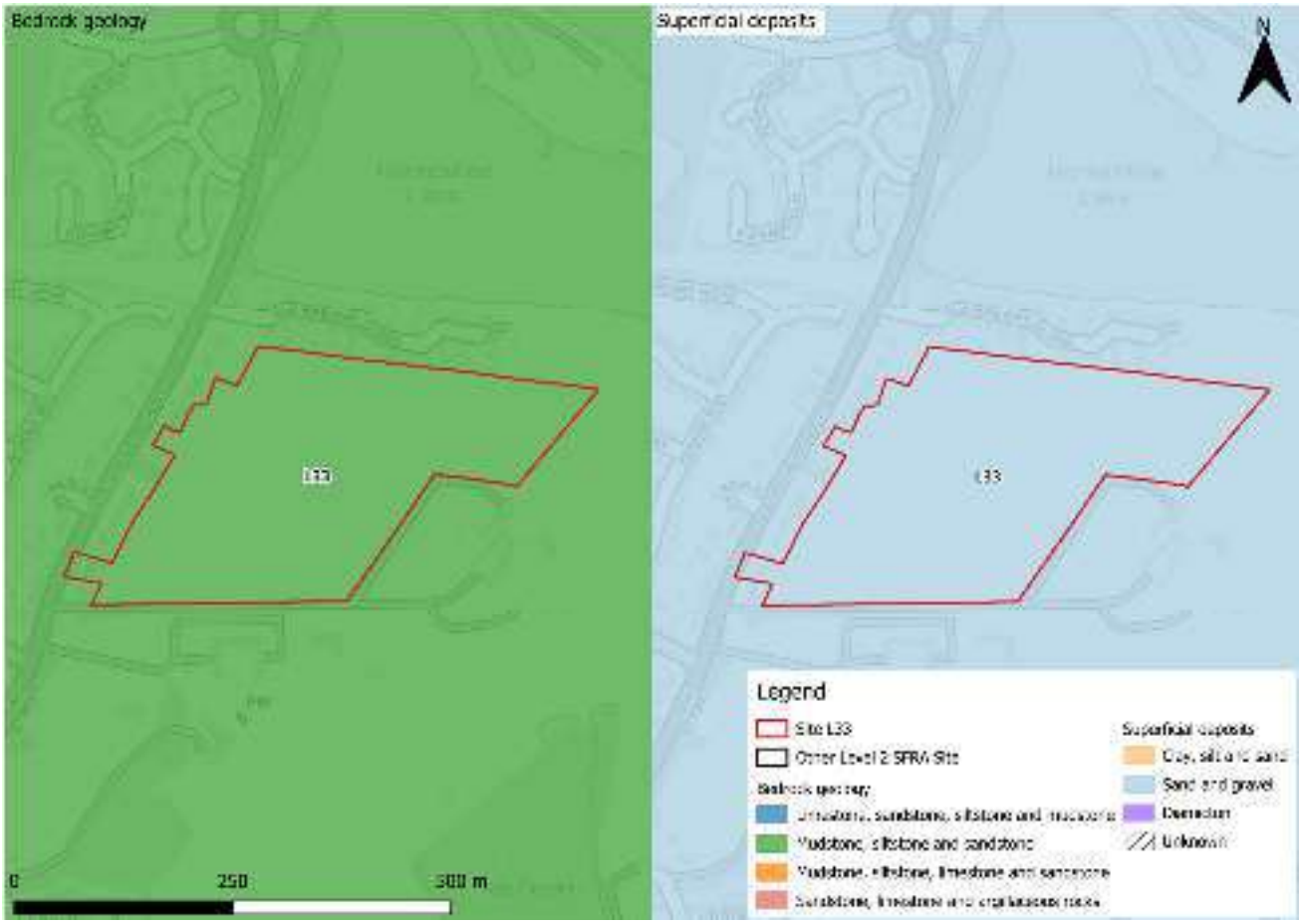

Figure 5-2: BGS Geology - Bedrock and superficial deposits

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 potential residual risk to the site.

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:

- It should be possible to develop this site for residential use given its location within Flood Zone 1 and surface water risk confined to a distinct area of ponding within the west of the site.
- A drainage strategy should ensure there is no increase in surface water flood risk elsewhere as a result of new development. The topographic low area should be included in site design. 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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Cotswold Level 2 Strategic Flood Risk Assessment Site Summary

Site R607

Draft Report

Prepared for	Date
Cotswold District Council	July 2026

COTSWOLD
District Council

Document Status

Issue date	July 2026
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Prepared by	Rosie Holmes BSc MSc Assistant Analyst
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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 Jo Corbett of Cotswold District Council. Laura Thompson-Jones of JBA Consulting carried out this work.

Purpose and Disclaimer

Jeremy Benn Associates Limited ("JBA") has prepared this Report for the sole use of Cotswold District Council and its appointed agents in accordance with the Agreement under which our services were performed.

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JBA disclaims any undertaking or obligation to advise any person of any change in any matter affecting the Report, which may come or be brought to JBA's attention after the date of the Report.

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 July 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.

Copyright

Contents

List of Figures

List of Tables

1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site R607. 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 R607

- Location: Land north of London Road
- Existing site use: Agricultural
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 1.06
- Watercourse: N/A
- Environment Agency (EA) flood model: N/A
- Summary of requirements from Level 2 SFRA scoping stage:
    - 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: Aerial photography

There is a topographic low spot in the centre of the site (**Error! Reference source not found.**).

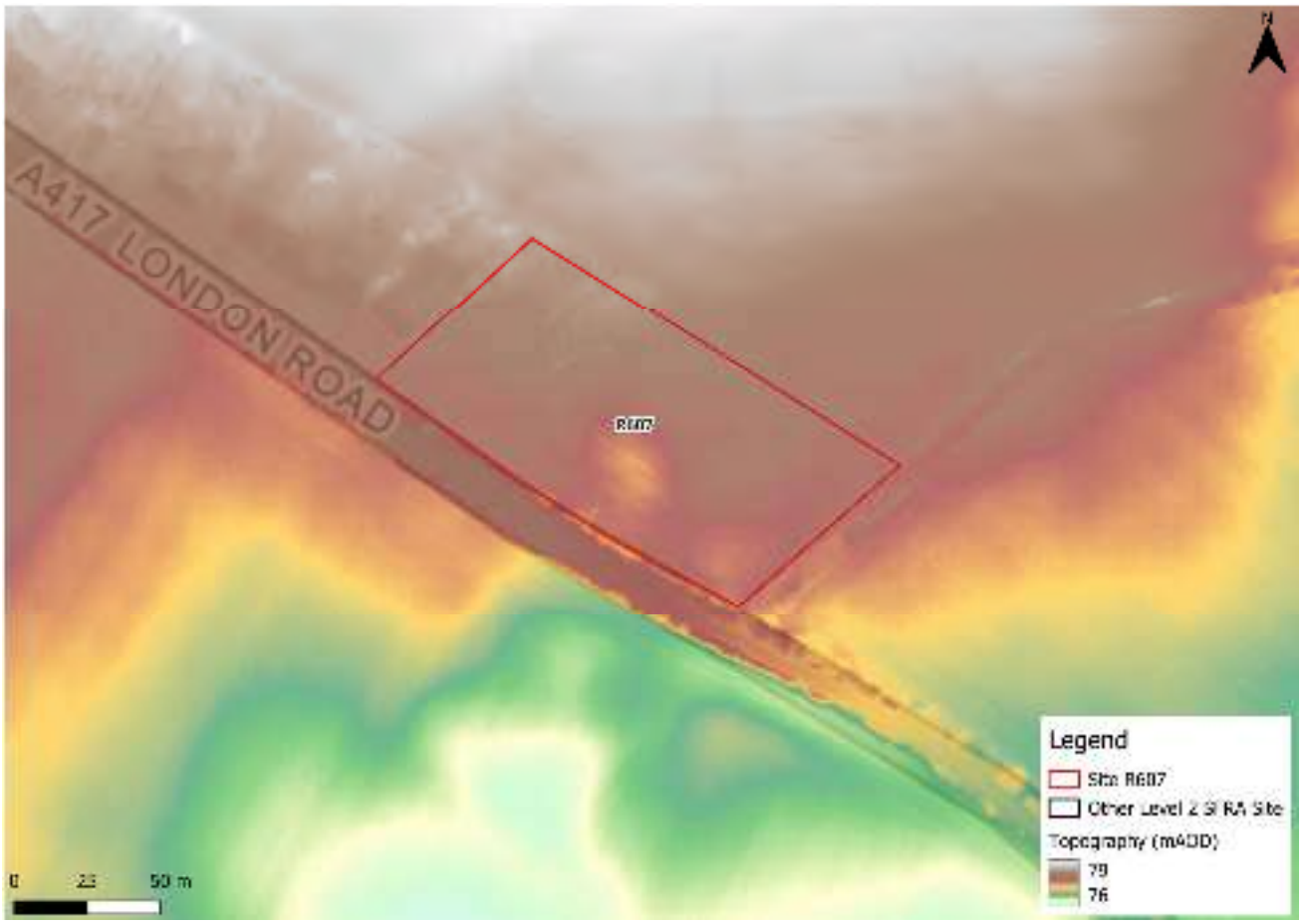

Figure 1-3: Topography

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 0).

The site is wholly located within Flood Zone 1 and therefore at low risk of flooding from rivers.

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)
100	0	0	0

Figure 2-1: Present day risk

2.2 Impacts from climate change

2.2.1 Flood Map for Planning - Flood Zones plus Climate Change

Based on the Flood Map for Planning - Flood Zones plus Climate Change dataset, the site is not shown to be at risk when considering 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. Then dataset shows that the site would not likely benefit from NFM.

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 is not located within a FAA.

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes are available during a flood event via London Road to the southwest of the site (**Error! Reference source not found.**).

Figure 2-2: Potential access and escape routes

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

- Observations:
  - The site is located wholly within Flood Zone 1 and therefore at low risk of flooding from rivers.
  - The site is not shown to be at increased risk from fluvial flooding in the future, based on the EA's Flood Zones plus Climate Change dataset.
- Access and escape:
  - Based on current information, safe access and escape routes are available via London Road to the southwest 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

Based on the EA's national scale Flood Map for Planning - Surface Water Spatial Planning Extent map (May 2026), there is an area of surface water ponding in the centre of the site within the topographic low spot, as shown in Table 3-1 and Figure 3-1. Greatest surface water flood depths in the 1% AEP event are between 0.3 and 0.6 m (Figure 3-2). Safe access and escape routes are achievable via London Road to the south-west of 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)
89	4	1	6

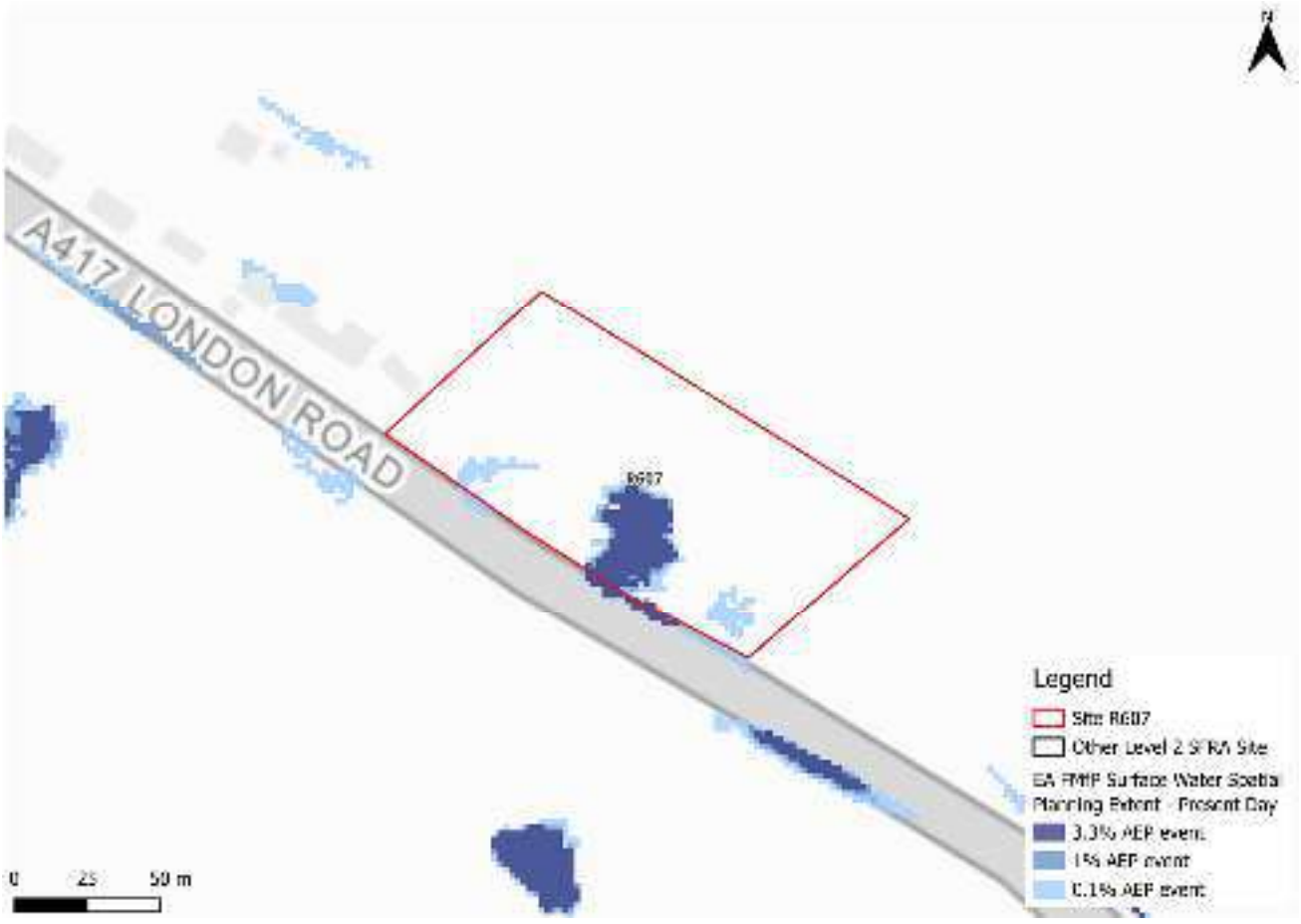

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

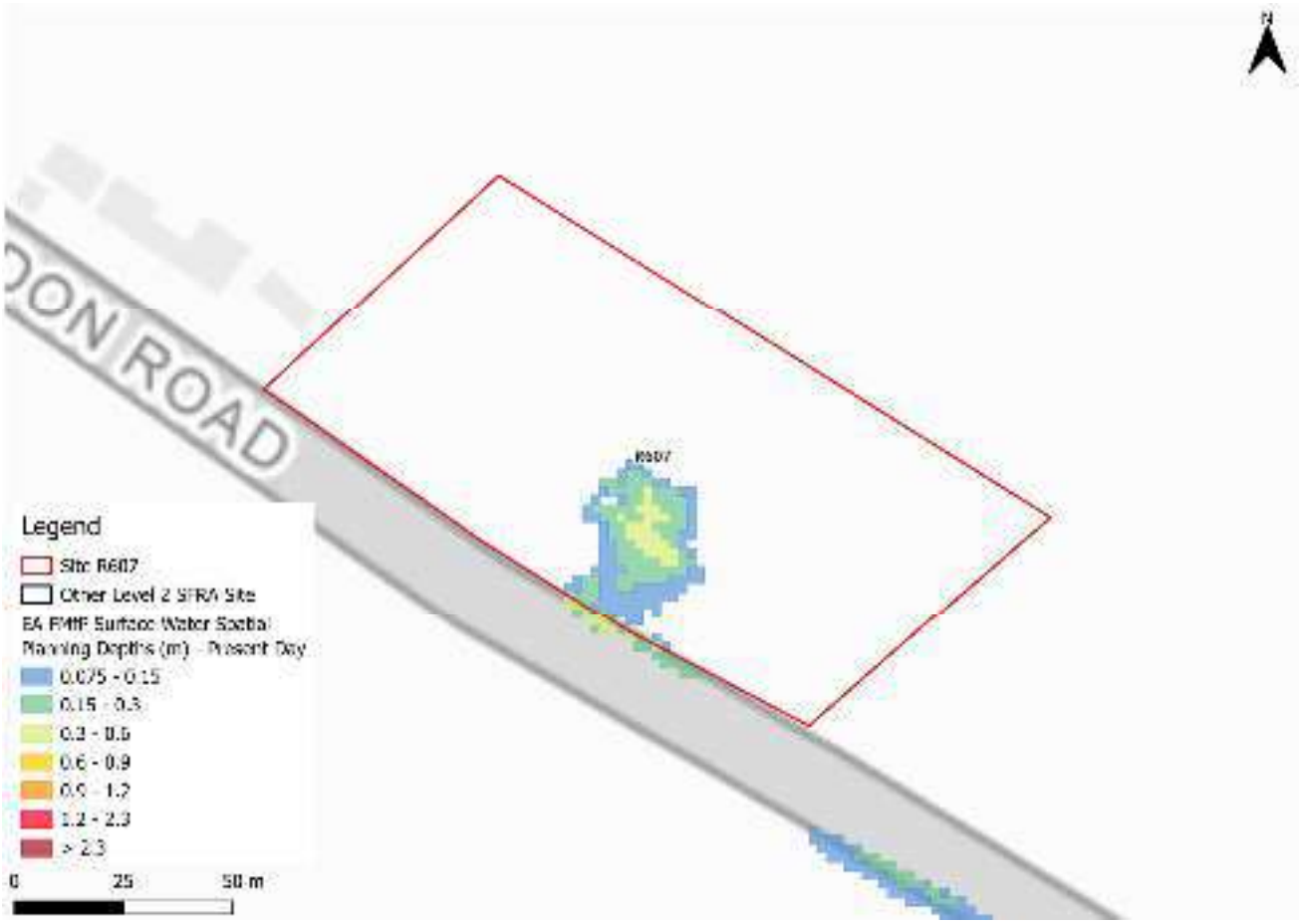

Figure 3-2: Flood Map for Planning - Surface Water Spatial Planning Present Day 1% AEP event surface water flood depths (m)

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 no areas of flood hazards. Therefore, there are clear differences between the Flood Map for Planning - Surface Water Spatial Planning map and the third generation RoFSW hazard mapping. 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.

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 SFRAs 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 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 3-3 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 are shown to remain between 0.3 and 0.6 m (Figure 3-4). Safe access and escape routes would likely remain achievable.

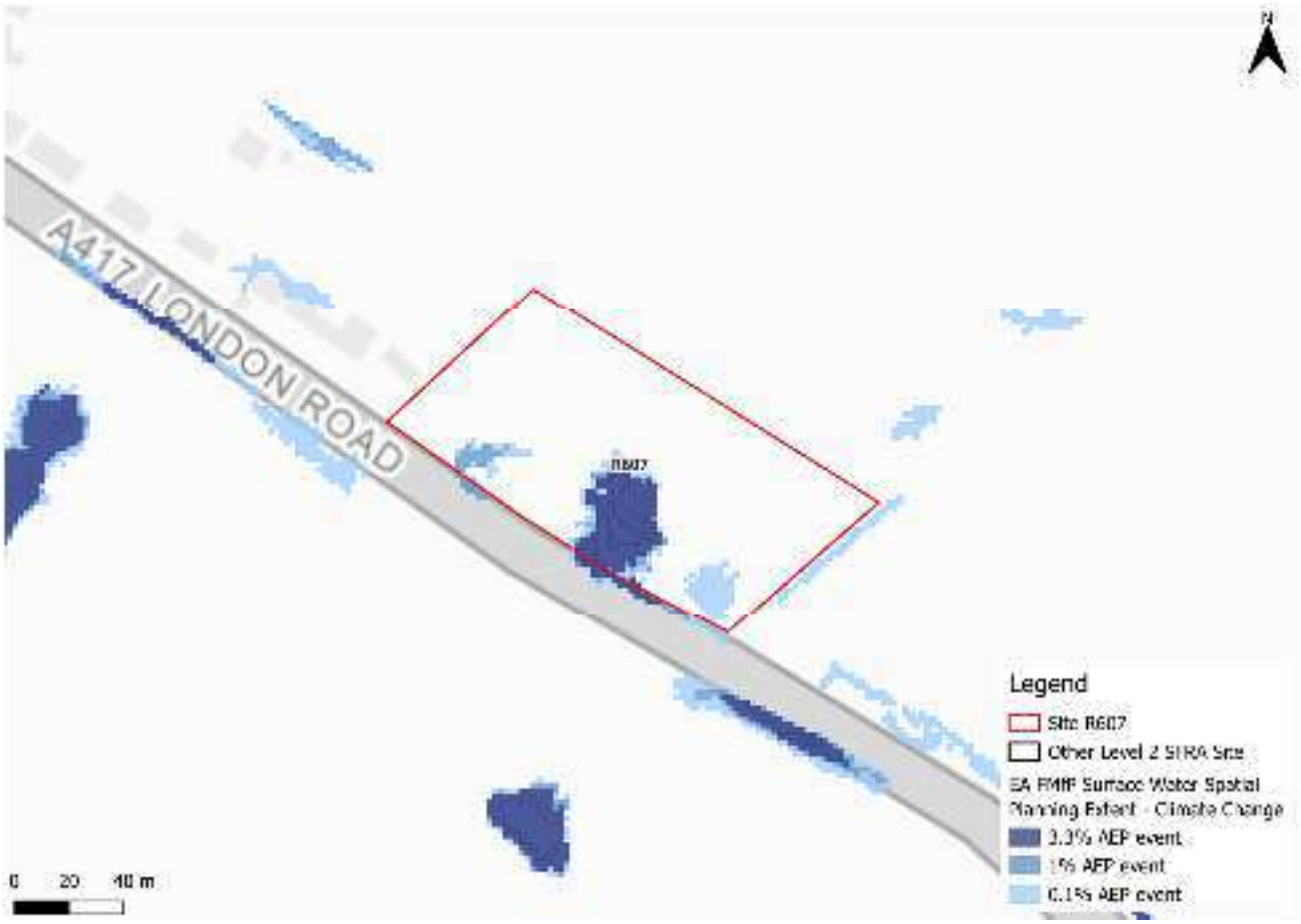

Figure 3-3: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

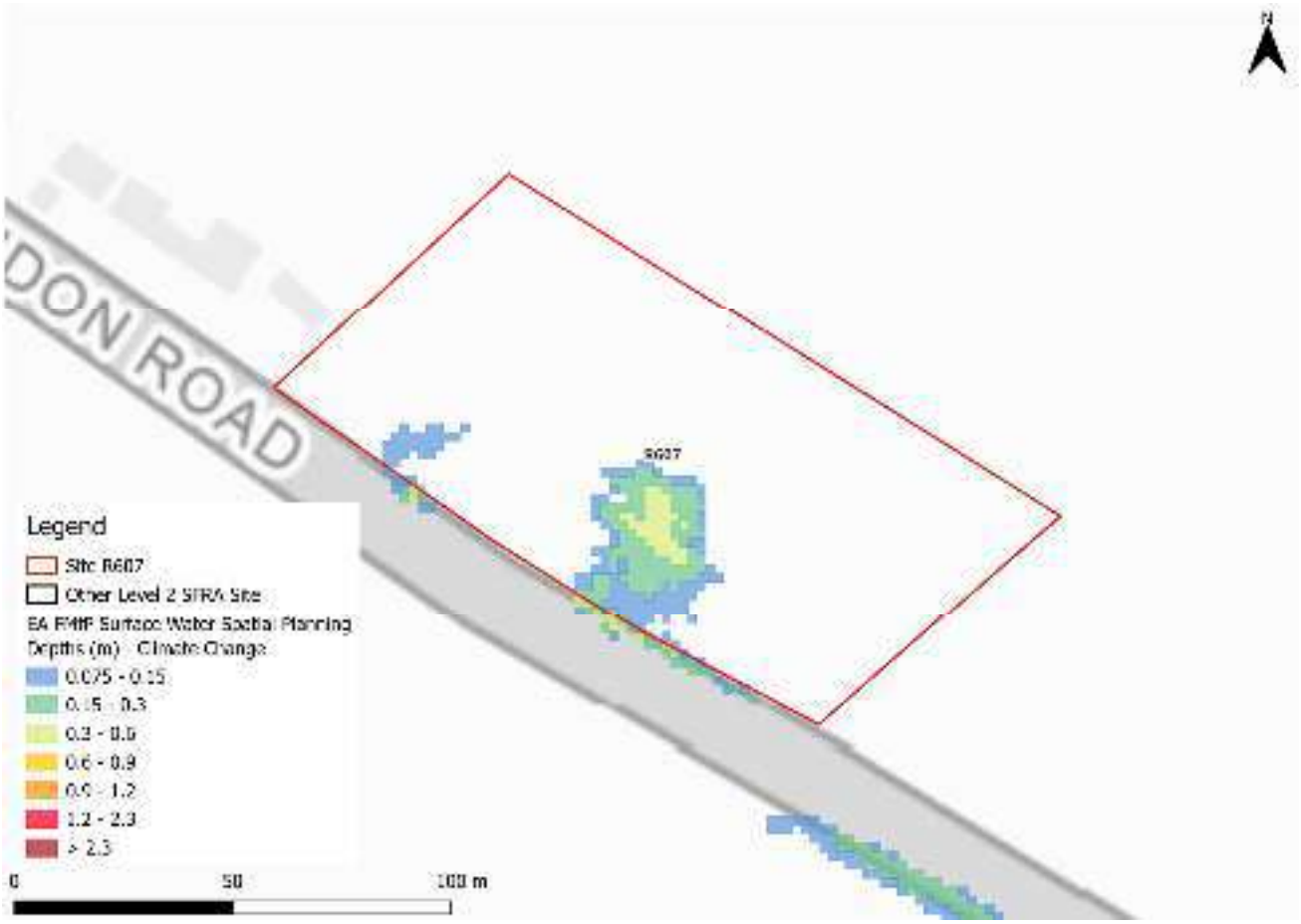

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Climate Change 1% AEP event flood depths (m)

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 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 'moderate' (**Error! Reference source not found.**).

Figure 3-5: Third generation - Risk of Flooding from Surface Water map present day 0.1% AEP event surface water flood hazard[Error! Bookmark not defined.] 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 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 88% of the site being outside of the 0.1% AEP surface water flood extent, but for an area of ponding in the topographic low spot.
- Risk to the site is shown to increase in extent when considering the impact of climate change with two additional areas of ponding, however depths remain largely shallow.
- The 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 London Road 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 one catchment, namely, the Blockley Bk - source to conf Knee Bk 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 the site is at risk of groundwater emergence to both surface and subsurface assets. There is the possibility of groundwater emerging at the surface locally.

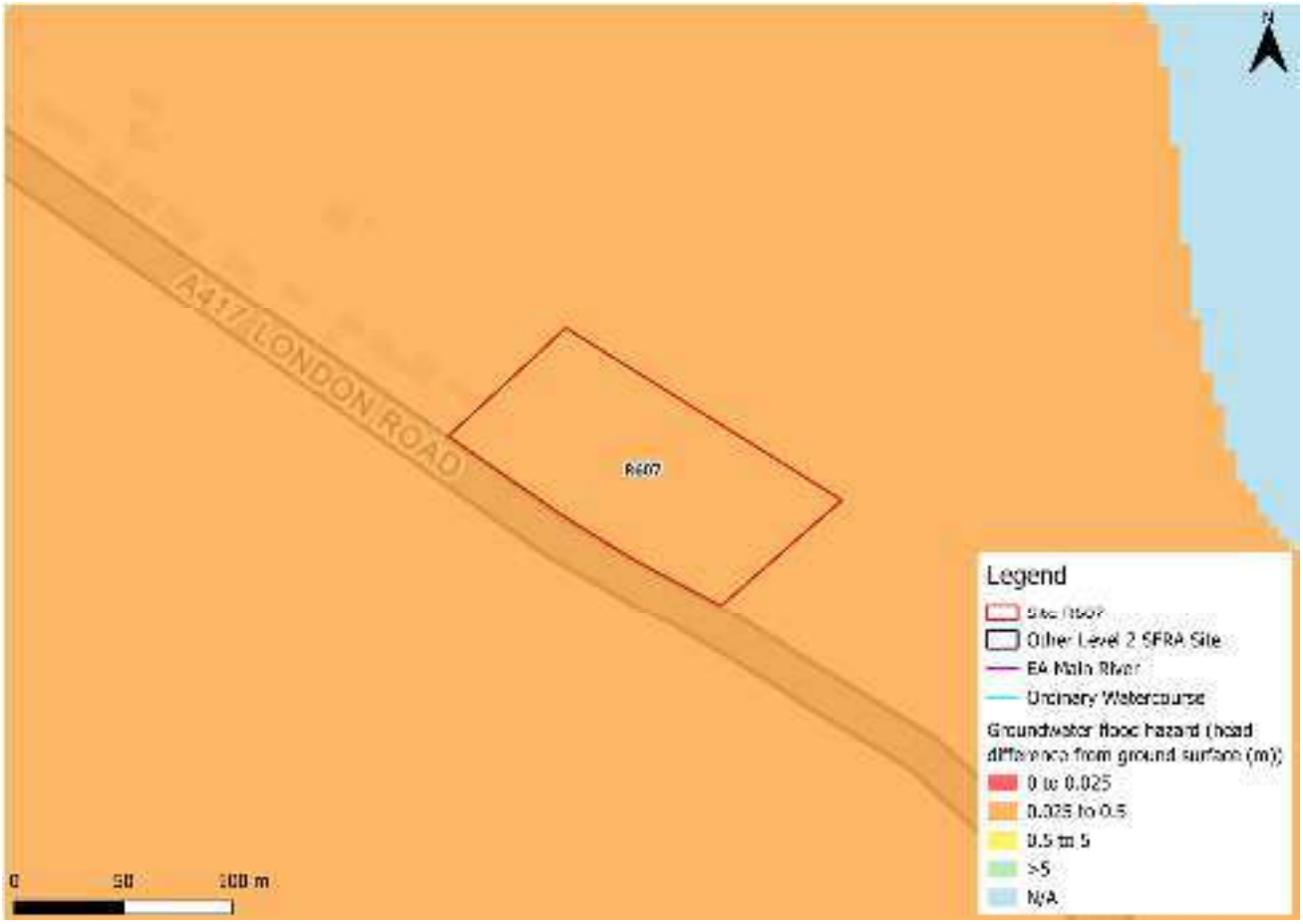

Figure 5-1: JBA 5m Groundwater Emergence Map

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 generally has a high permeability and high levels of porosity, whereas limestone generally has high porosity levels but low permeability. There are no superficial deposits at the site. Infiltration SuDS at this site may not be an option though the drainage strategy for the site should fully investigate water table levels and ground conditions in both dry and wet conditions.

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 is no potential residual risk to the site.

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:

- It should be possible to develop this site for residential use given its location within Flood Zone 1 and surface water risk confined to a distinct area of ponding in the present day and two additional areas potentially in the future.
- A drainage strategy should ensure there is no increase in surface water flood risk elsewhere as a result of new development. The topographic low area should be included in site design. 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.
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Cotswold Level 2 Strategic Flood Risk Assessment Site Summary

Site W4B

Draft Report

Prepared for	Date
Cotswold District Council	July 2026

COTSWOLD
District Council

Document Status

Issue date	July 2026
BIM reference	RNS-JBA-XX-XX-RP-EN-0031
Revision	P01
Prepared by	Rosie Holmes BSc MSc Assistant Analyst
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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Address	Phoenix House, Lakeside Drive, Centre Park, Warrington, WA1 1RX
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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1 Background

This is a Level 2 Strategic Flood Risk Assessment (SFRA) site screening report for Local Plan Site W4B. 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 W4B

- Location: Land between Colin Lane and future Heritage Railway
- Existing site use: Agricultural land
- Existing site use vulnerability: Less vulnerable
- Proposed site use: Residential
- Proposed site use vulnerability: More vulnerable
- Site area (ha): 1.8
- Watercourse: Unnamed ordinary watercourse
- Environment Agency (EA) flood model: No detailed model available
- Summary of requirements from Level 2 SFRA scoping stage:
    - 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

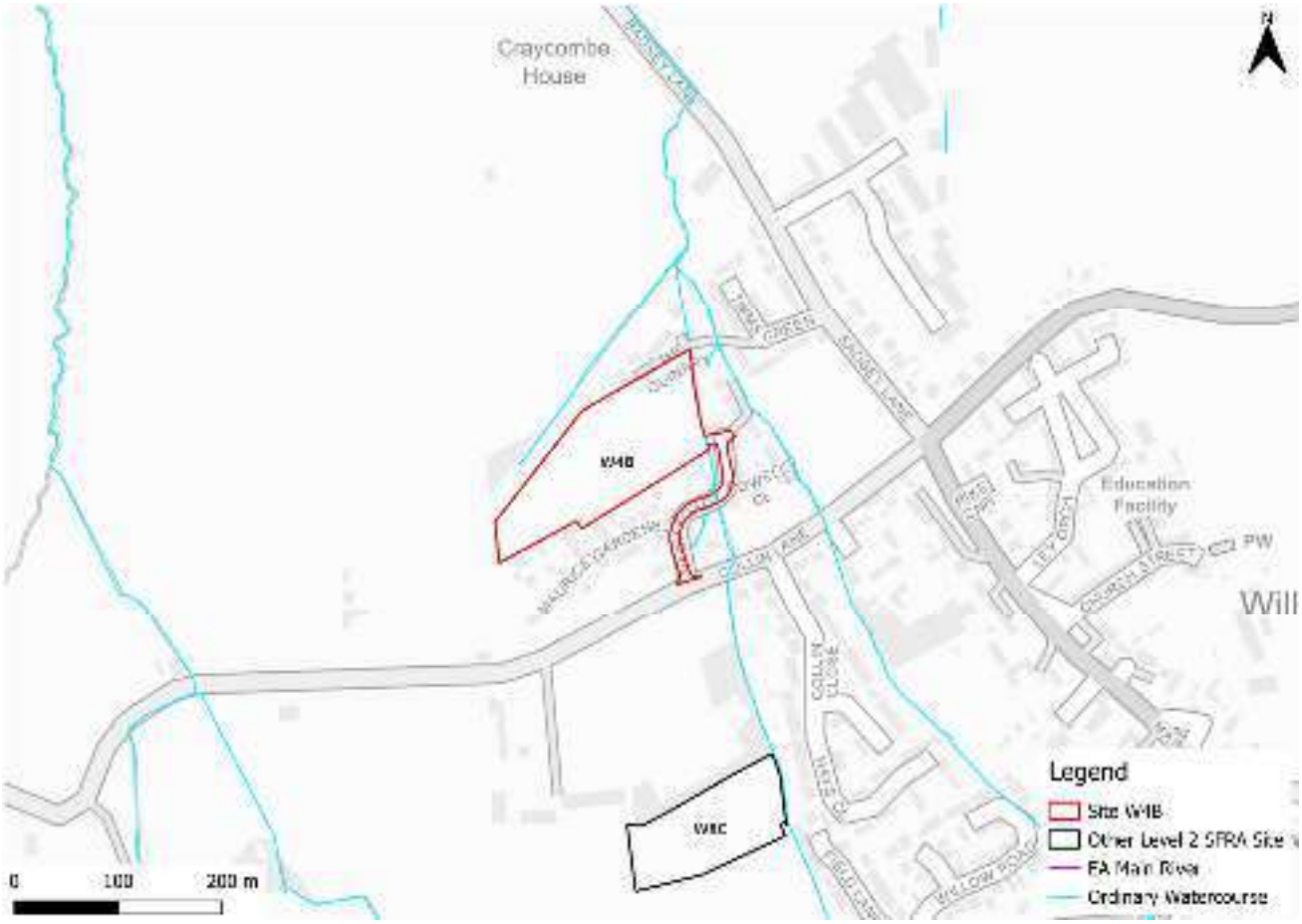

Figure 1-1: Site location boundary

Figure 1-2: Aerial photography

The site is located at a lower elevation than the surrounding areas, with the highest elevation at the south of the site, sloping towards the River Churn floodplain to the west and the Ampney Brook floodplain to the east (Figure 1-3).

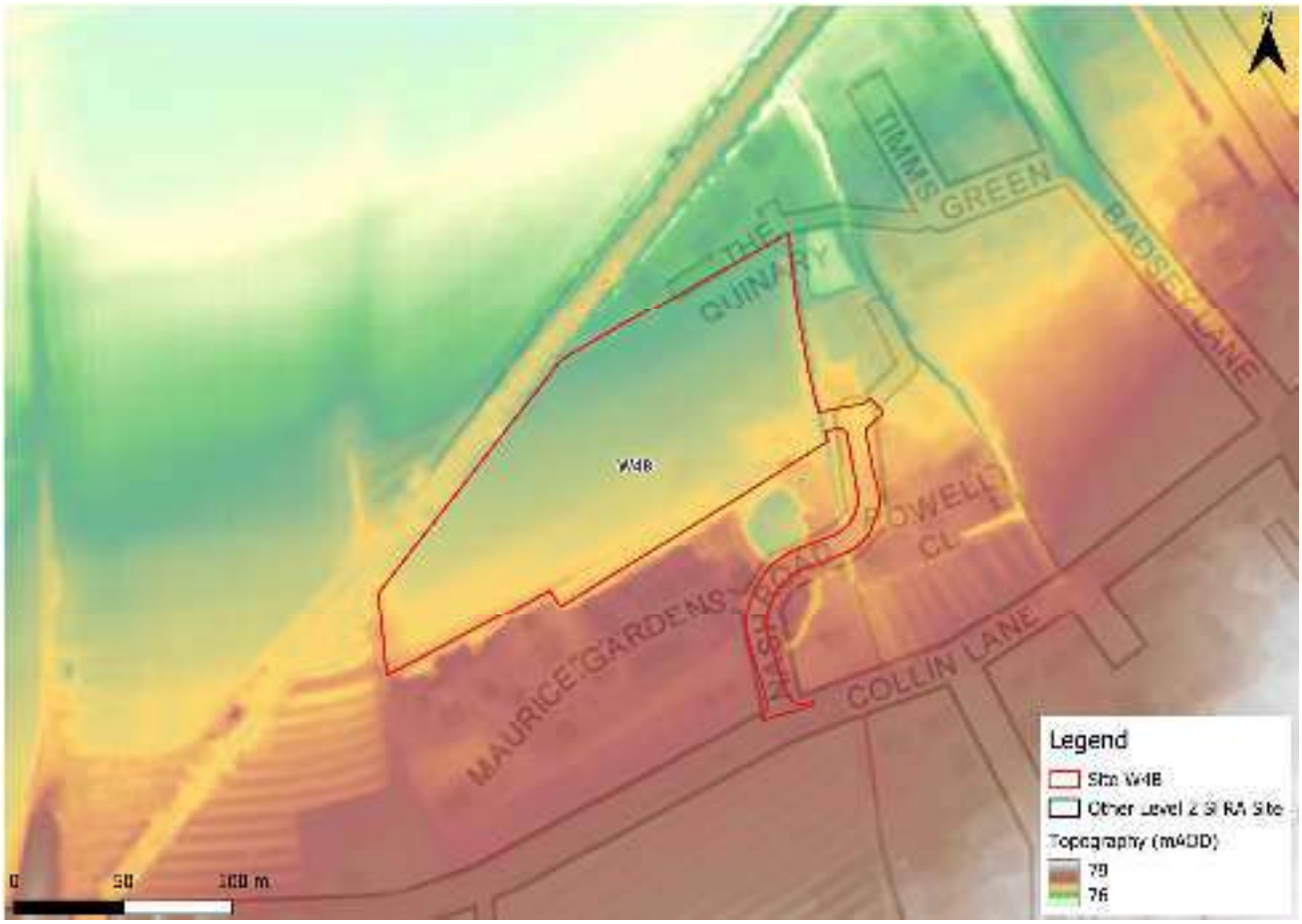

Figure 1-3: Topography

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 site is wholly located within Flood Zone 1 and therefore at low risk of flooding from rivers. The percentage areas of the site within each flood zone are stated in Table 2-1 and can be viewed in Figure 2-1. Please note, the Flood Map for Planning does not consider flood defence infrastructure (Section 2.4).

There are several unnamed, unmodelled ordinary watercourses around the site. The EA's New National Model (NNM) does not cover these watercourses; therefore, the potential fluvial risk posed to the site cannot be assessed. This should be considered as part of a site-specific FRA.

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)
100	0	0	0

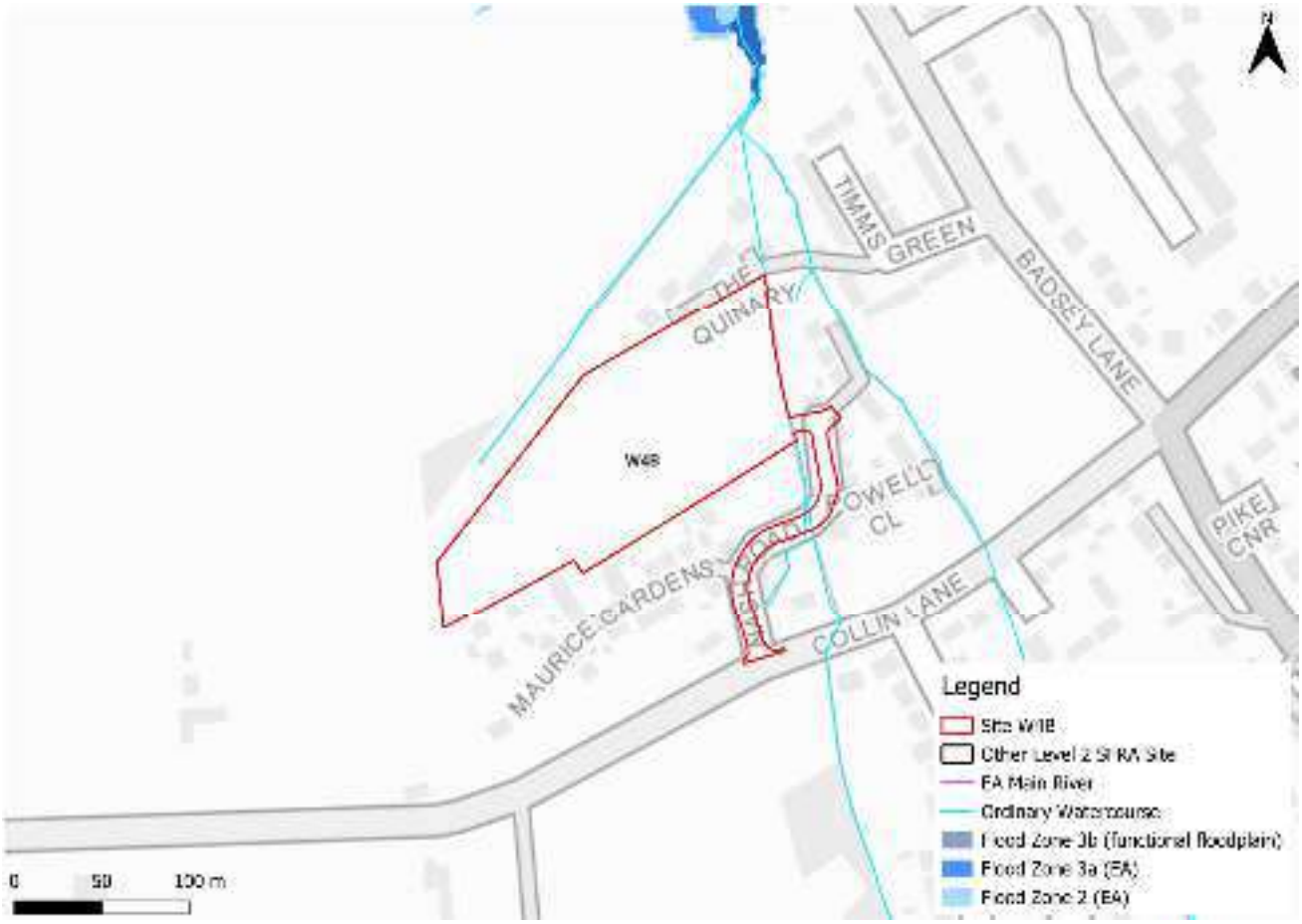

Figure 2-1: Present day risk

2.2 Impacts from climate change

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 Avon Warwickshire Management Catchment. The central allowance within this catchment is 21% on peak flows (Table 2-2). There is no local detailed model for the unnamed watercourses through the site, therefore the required event cannot be assessed.

Table 2-2: Modelled climate change allowances for peak river flows within the Avon Warwickshire Management Catchment

Epoch	Central (%)	Higher (%)	Upper (%)
2020s	7	12	22
2050s	8	14	31
2080s	21	32	59

2.2.1 Flood Map for Planning - Flood Zones plus Climate Change

Based on the EA's Flood Map for Planning - Flood Zones plus Climate Change dataset, the site is not shown to be at increased risk of fluvial flooding when considering 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 ten recorded flooding incidents within the Campden & Vale 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 2-2 shows that the site and wider area could benefit from riparian tree planting. Tree planting can help to slow the flow to benefit areas downstream. There are also opportunities for run-off 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.

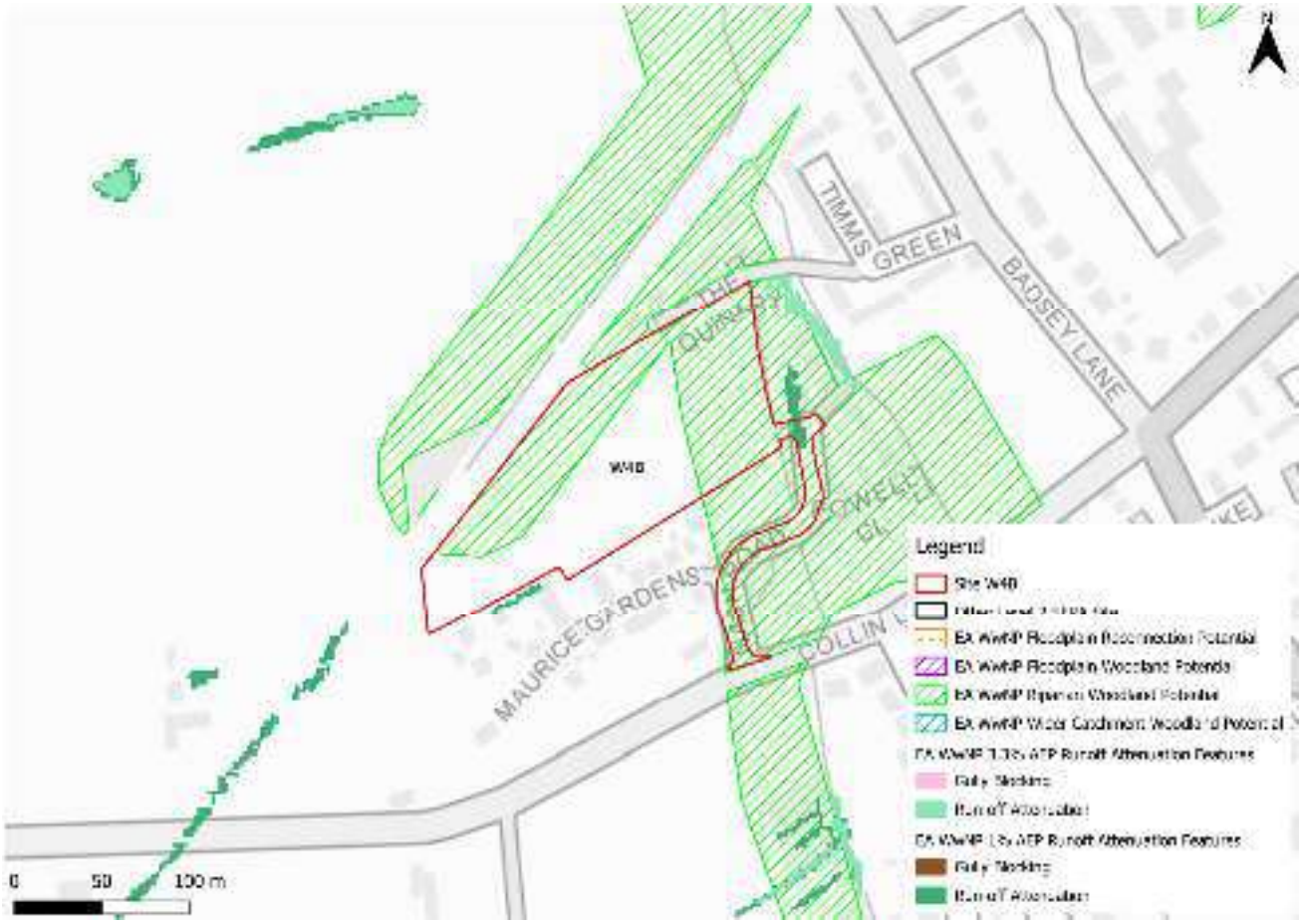

Figure 2-2: Working with Natural Processes

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 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 is not located within a FAA.

2.5.2 Access and escape routes

Based on the Flood Map for Planning, safe access and escape routes are available during a flood event via Nash Road and Collin Lane to the south of the site, and via The Quinary to the north of the site (Figure 2-3). However, risk from the ordinary watercourses must be quantified.

Figure 2-3: Potential access and escape routes

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

- Observations:
  - The site is located wholly within Flood Zone 1 and therefore at low risk of flooding from rivers.
  - The site is not shown to be at increased risk from fluvial flooding in the future, based on the EA's Flood Zones plus Climate Change dataset.
- Mitigation:
  - The potential fluvial risk posed by the ordinary watercourses cannot be assessed given no modelling is available. This should be considered as part of a site-specific FRA.
- Access and escape:
  - Based on current information, safe access and escape routes appear achievable via Nash Road, Collin Lane and The Quinary.

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), there is surface water risk across the site, as shown in Table 3-1 and Figure 3-1.

There are several flow paths across the site. There is also a surface water flow path along the eastern boundary of the site, which is confined to the channel of the unnamed ordinary watercourse.

Greatest surface water flood depths in the 1% AEP event are shallow, at between 0.3 and 0.6 m (Figure 3-2). Safe access and escape routes may be challenging to achieve and should be assessed in detail at the FRA stage.

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)
64	24	4	8

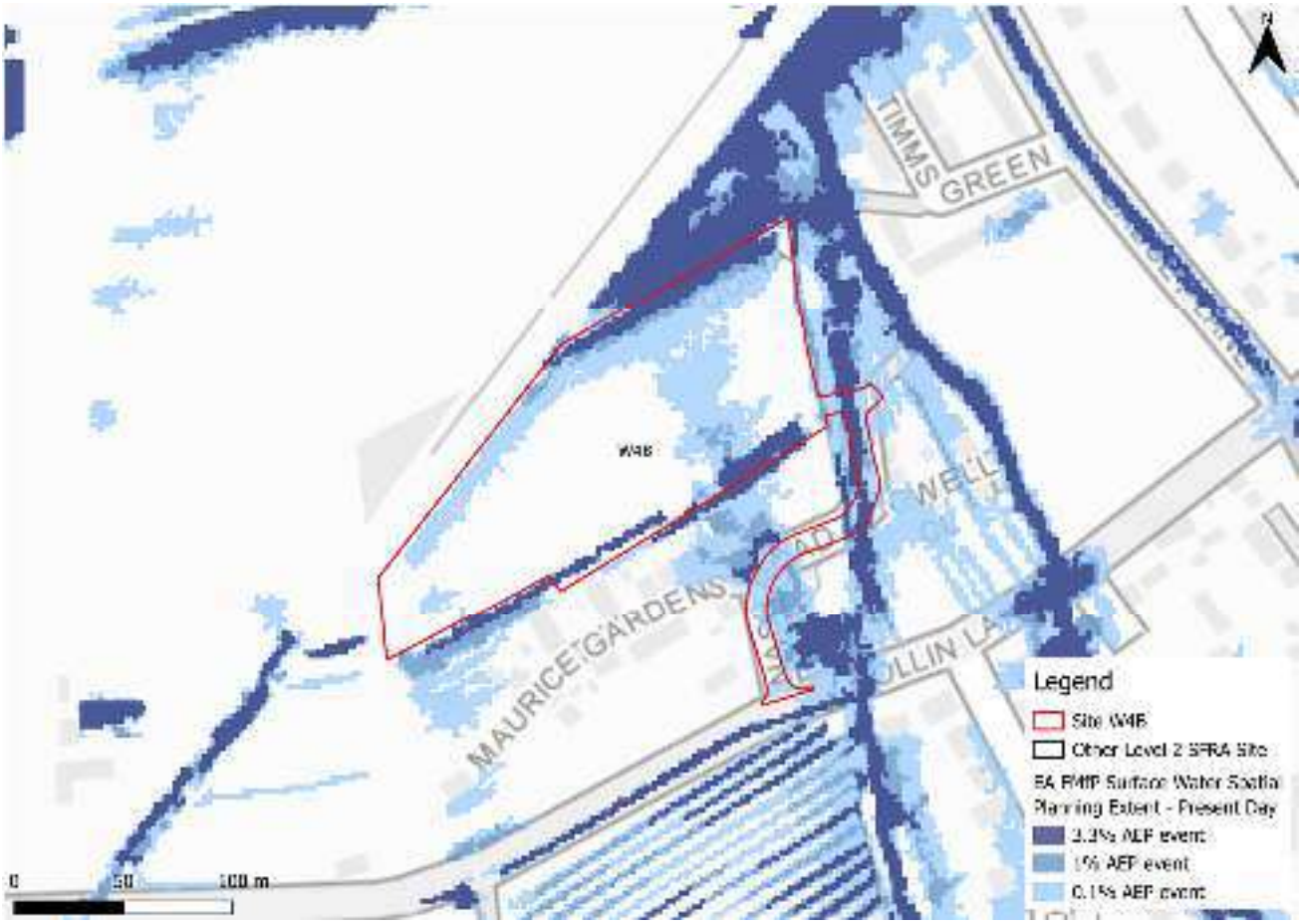

Figure 3-1: Flood Map for Planning - Surface Water Spatial Planning Extents Present Day

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 flood hazard to be 'low' to 'moderate' (Figure 3-3) though the RoFSW does not represent the same risk as the Flood Map for Planning - Surface Water Spatial Planning map whereby the RoFSW shows a much smaller 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 Avon Warwickshire 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 Avon Warwickshire 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. Surface water risk is shown to increase in extent across the site when considering climate change, particularly within the 0.1% AEP event. Flood depths, however, are shown to remain mainly shallow at between 0.3 and 0.6 m (Figure 3-5). Safe access and escape routes will be challenging to achieve.

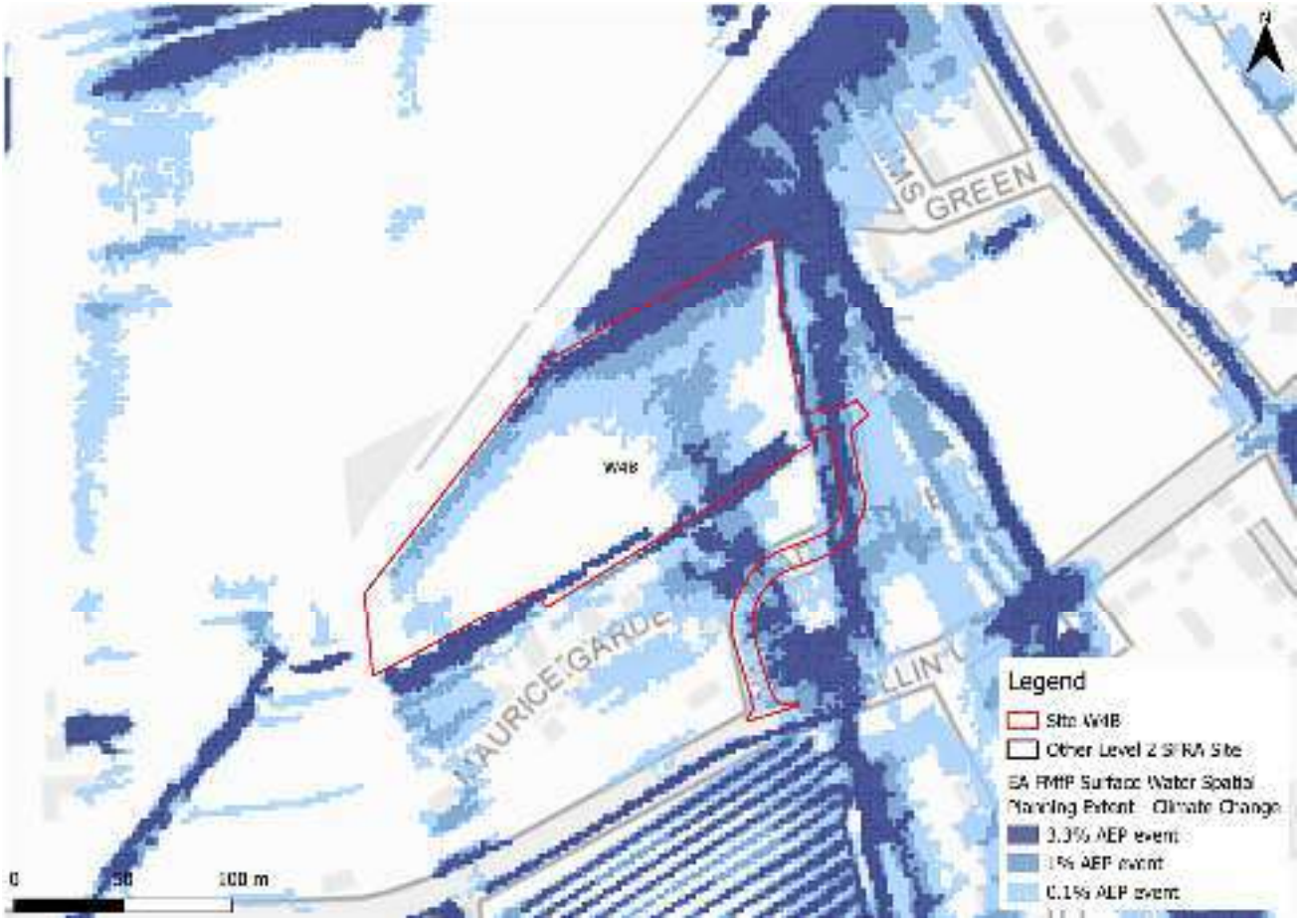

Figure 3-4: Flood Map for Planning - Surface Water Spatial Planning Extents Climate Change

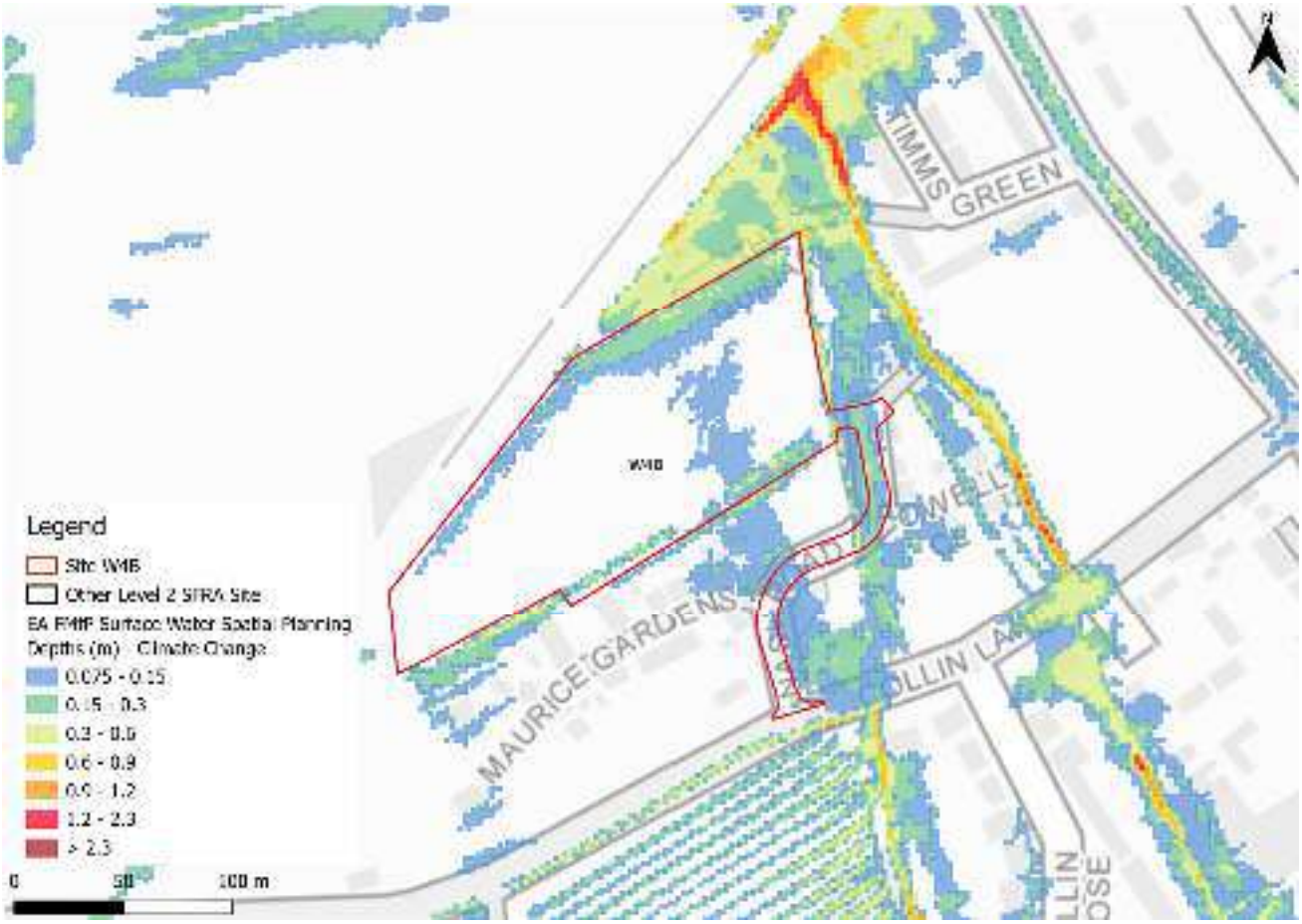

Figure 3-5: Flood Map for Planning - Surface Water Spatial Planning Climate Change 1% AEP event surface water flood depths (m)

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 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 mainly categorised as 'low' (Figure 3-6).

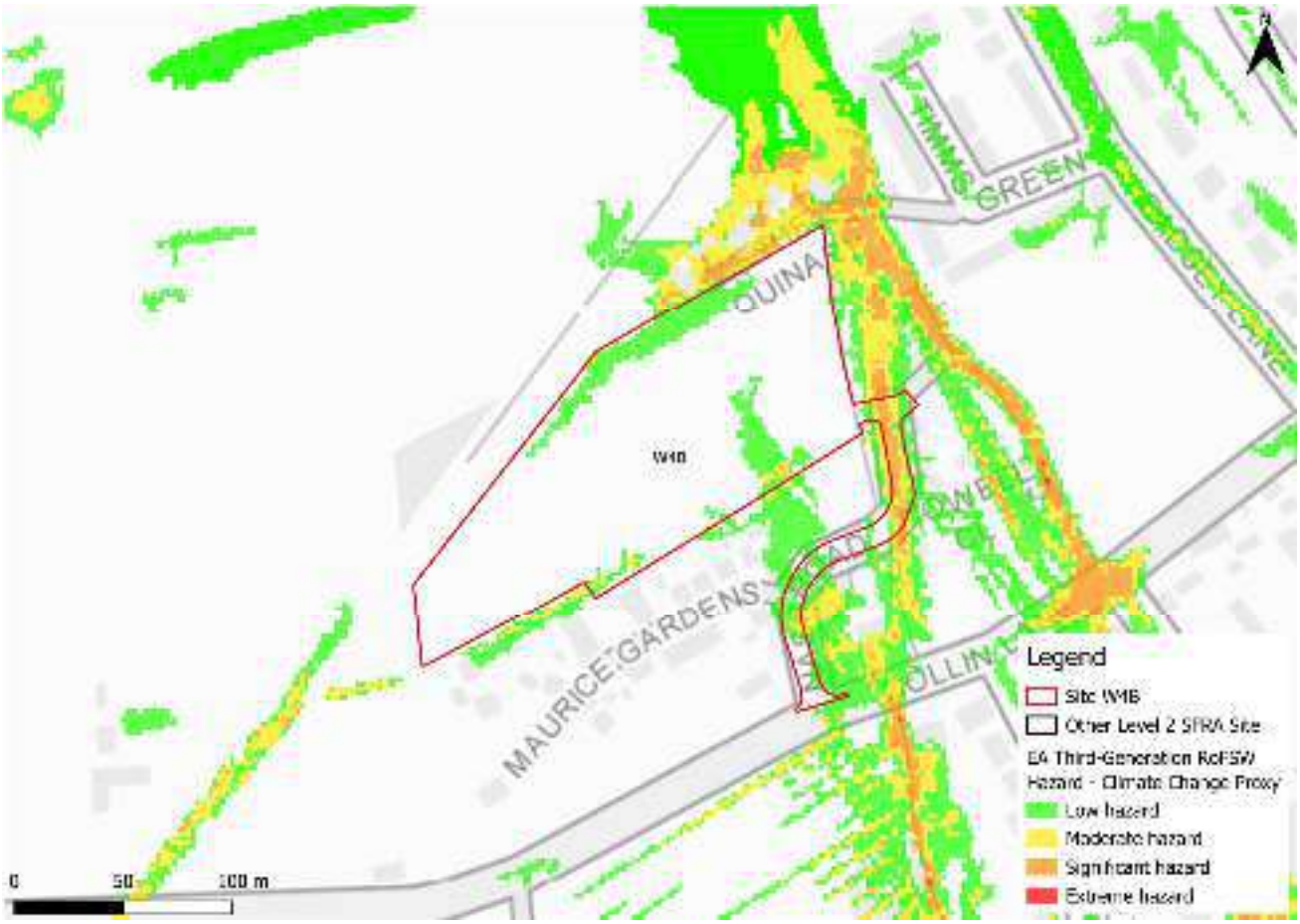

Figure 3-6: Third generation - Risk of Flooding from Surface Water map present day 0.1% AEP event surface water flood hazard as a climate change proxy

3.3 Sewer flood risk

The water companies provided their historic risk registers which were aggregated by ward. There have been 22 recorded sewer flooding incidents within the Campden & Vale Ward.

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

- Current risk to the site is widespread across the site, with over a third of the site at risk.
- Risk to the site is shown to increase in extent within the site when considering the impact of climate change.
- However, depths are mainly shallow and therefore it may be possible to mitigate surface water flood risk onsite. Ideally, the flow paths would be left in place to flood naturally. However, this would likely limit the number of plots available on the site.
- A 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 may be challenging to achieve and should be investigated at the FRA stage.

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 a high sensitivity catchment, namely Bretforton Bk - source to conf Broadway-Badsey Bk catchment. 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 entire site is located within an area where there is no risk of groundwater emergence. Infiltration SuDS should therefore be possible at this site.

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, limestone and sandstone (Figure 5-2). Mudstone and siltstone generally have a low permeability and low level of porosity, reducing infiltration rates. There is no record of superficial deposits in the area.

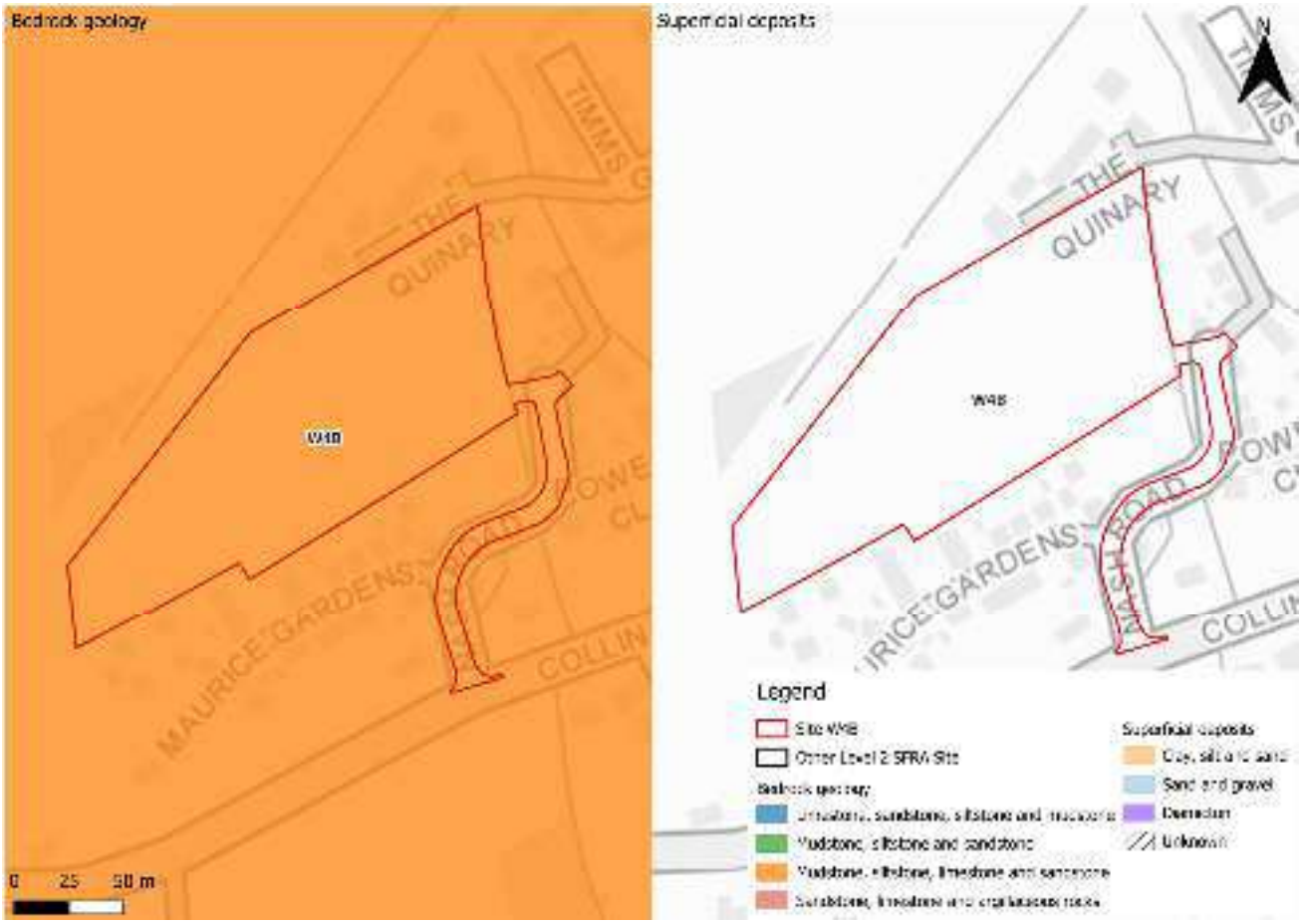

Figure 5-2: BGS Geology - Bedrock and superficial deposits

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. Residual risk at this site comes from the potential blockage or structural failure of the culverts beneath the field in the south of the site.

6.1 Potential blockage

A blockage or structural failure of the culverted section of the ordinary watercourses may cause water in the channel to back up and cause flooding to the site, depending on the severity of the blockage and magnitude of the flood event. Culvert course, capacity and condition surveys may be required, including for consultation with the culvert owner.

Figure 6-1 indicates the location of the primary culvert. The potential residual risk to the site following a blockage of this asset should be assessed through the site-specific FRA.

Figure 6-1: Potential blockage location

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. 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:

- It should be possible to develop this site for residential uses based on fluvial flood risk.
- Modelling of the ordinary watercourses will be required to robustly define potential risk to the site for both present day and with climate change.
- However, surface water risk is prevalent across the site with safe access and escape routes appearing challenging to achieve. A drainage strategy will be required to ensure there is no increase in surface water flood risk elsewhere as a result of new development. Plot number may be limited by the surface water risk. 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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Cotswold Level 2 Strategic Flood Risk Assessment Main Report

Draft Report

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Cotswold District Council	July 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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JBA Project Code	2025s1921

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

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Acknowledgements

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Contents

List of Tables

Abbreviations

AEP	Annual Exceedance Probability
BGS	British Geological Survey
CDC	Cotswold District Council
DTM	Digital Terrain Model
EA	Environment Agency
FRA	Flood Risk Assessment
FRCC-PPG	Flood Risk and Coastal Change Planning Practice Guidance
HFM	Historic Flood Map
LLFA	Lead Local Flood Authority
NFM	Natural Flood Management
NPPF	National Planning Policy Framework
RBD	River Basin District
RFM	Reservoir Flood Map
RFO	Recorded Flood Outlines
RoFSW	Risk of Flooding from Surface Water
SFRA	Strategic Flood Risk Assessment
WWNP	Working with Natural Processes

1 Introduction

A Level 2 Strategic Flood Risk Assessment (SFRA) is required by Cotswold District Council (CDC) as all identified potential development sites cannot be allocated outside the areas of medium and high fluvial and / or surface water flood risk, as identified through the Level 1 SFRA (2026).

The Level 1 SFRA entailed the flood risk screening of 173 potential development site allocations across the Cotswold authority area. Of these, 34 were shown to be at medium or high flood risk from fluvial and or surface water sources yet considered important to the Council's new Local Plan. A Level 2 SFRA scoping study was undertaken in June 2026. As part of the scoping study, 22 sites were identified to require a detailed Level 2 SFRA assessment, with the remaining 12 sites identified to be at nominal risk. For these sites, a brief assessment of risk has been undertaken and included in a nominal risk report.

This Level 2 SFRA consists of the following documents:

- This main report introducing and summarising the Level 2 SFRA processes and methodologies,
- 22 detailed site assessment reports,
- A nominal risk report covering the 12 sites shown to be at nominal risk of flooding.

This Level 2 SFRA has been prepared with full consideration of the latest government and Environment Agency (EA) guidance on flood risk and planning policy, namely:

- National Planning Policy Framework (NPPF) 2025,
- Flood Risk and Coastal Change Planning Practice Guidance (FRCC-PPG) 2025,
- How to Prepare a Strategic Flood Risk Assessment guidance 2026,
- Strategic Flood Risk Assessments A Good Practice Guide 2021, and
- Flood Risk Assessments: Climate Change Allowances 2022.

1.1 SFRA future proofing

At the time of writing, this Level 2 SFRA has assessed and considered flood risk in the Cotswold authority area using available data at a specific point in time. The Level 2 SFRA has been future proofed as far as possible, though the reader should always confirm with the source organisation (CDC) that the latest information is being used when decisions concerning development and flood risk are being considered.

At the time of writing, the proposed reforms and further changes to the NPPF are ongoing. The consultation window closed on 10 March 2026. The draft consultation version contains amendments to the structure of the NPPF, in addition to additional changes to reflect the recent updates to the Flood Risk and Coastal Change Planning Practice Guidance (FRCC-PPG). The FRCC-PPG (September 2025), alongside the NPPF (February 2025), is referred

to throughout this SFRA, being the current primary development and flood risk policy and guidance available at the time of finalisation of this SFRA.

The EA's SFRA guidance states a review of an SFRA should be carried out when there are changes to:

- The predicted impacts of climate change on flood risk,
- Detailed flood modelling - such as from the EA or Lead Local Flood Authority (LLFA),
- The local plan or relevant local development documents,
- Local flood management schemes,
- Local flood risk management strategies, and
- National planning policy or guidance.

The SFRA should also be reviewed after a significant flood event. It is in an authority's interest to keep the SFRA as up to date as possible. Ideally, the SFRA should be kept as a 'live' entity and continually updated when new information becomes available. The EA requests for reports and maps to be published online and be easily updatable, when required.

2 Level 2 SFRA requirements

The aim of a Level 2 SFRA is to build on the findings of a Level 1 SFRA, focussing on identified sites or communities at high and medium flood risk that are considered important to Local Plan development. This allows the SFRA process to be time efficient using detailed modelling techniques only where they are required in the Level 2 assessment. These locations usually include significant development and / or regeneration areas that are at medium or high risk of flooding from main rivers, ordinary watercourses, the sea, or surface water whilst also accounting for the impacts of climate change. Flood risk data such as modelled flood extents, depths, velocities and hazards are used to assess the suitability of these areas for development. Appropriate mitigation techniques and sustainable site layouts can then be informed.

This detailed information should support further application of the sequential test, the sequential approach to development management, inform on whether sites can pass the exception test, where applicable, and allow for flood risk indicators to be produced for use in the Sustainability Appraisal of the Local Plan.

EA guidance states a Level 2 SFRA should:

- *"Be detailed enough for you to identify which development allocation sites have the least risk of flooding,*
- *Contain the information needed to apply the exception test, if relevant,*
- *Enable you to decide if development can be made safe without increasing flood risk elsewhere."*

It should allow the local planning authority to:

- *"Apply the sequential test by identifying the severity and variation in risk within medium and high flood risk areas,*
- *Establish whether proposed allocations or windfall sites, on which your local plan will rely, are capable of being made safe throughout their lifetime without increasing flood risk elsewhere,*
- *Apply the exception test, where relevant."*

A site-specific flood risk assessment (FRA) will be required at the planning application stage which will assess risk to each site in greater detail than this Level 2 SFRA. The Level 2 SFRA is a strategic assessment that is not intended to replace the requirements of a site-specific FRA.

2.1 Objectives

In accordance with the latest national planning policy and flood risk guidance, the requirements of CDC, and with consideration of the limitations stated in Chapter 5, the key objectives of this Level 2 SFRA are to:

- Assess present day flood risk from all sources (fluvial, surface water, groundwater, sewers, canals, and reservoirs),

- Assess the impacts of climate change on fluvial and surface water flood risk,
- Document residual risk, including locations potential defence breaches and culvert blockages, where applicable,
- Assess detailed modelled outputs including flood depths, velocities, and hazards, where information is available,
- Assess existing flood warnings and alerts and advise on required emergency planning procedures and safety of potential site access and escape routes in times of flood,
- Account for the potential cumulative impacts of development,
- Provide site-specific advice on mitigation options i.e. developable / non-developable areas; blue / green infrastructure and open spaces; maintenance of fluvial and / or surface water flow routes and topographic depressions; land raising and compensatory storage; advice on minimum finished floor levels; and appropriate SuDS techniques,
- Assess any catchment-wide or strategic solutions, e.g. upstream opportunity areas for flood management (storage solutions) to mitigate against the risk of flooding downstream and elsewhere using Natural Flood Management (NFM) and Working with Natural Processes (WwNP) datasets,
- Demonstrate whether the second part of the exception test (part b) can be passed for the potential development site allocations, where applicable,
- Provide recommendations for additional and future work requirements following on from or to supplement the Level 2 SFRA i.e. further fluvial or surface water modelling including for climate change, modelling of site layout / design options including provisions for safe access and escape routes, development optioneering (land raising, compensatory storage, flow routes / rates), groundwater assessments, drainage strategies, site-specific FRA requirements.

3 Available data and information

The data and information described in this chapter has been used in the Level 2 SFRA to assess the risk to each site.

3.1 EA models

The following local detailed EA flood models have been used within this assessment:

- Daglingworth 2016 model
- Thames (MRL to St Johns) 2014 model
- Churn (Baunton to Siddington) 2011 model

3.2 EA open data

Additional to the EA modelling information, the following datasets available from the EA's Open Data have been considered in the Level 2 SFRA:

- Most recent LIDAR digital terrain model (DTM) data
- Flood Map for Planning Flood Zones 2 and 3
- Flood Map for Planning Water Storage Areas (note: the potential storage areas at Baunton and Abbey Way and South of Abbey Way Bridge have been removed from the Cotswold Local Plan. However, these areas remain within the functional floodplain).
- Flood Map for Planning - Surface Water Spatial Planning Flood Extents for 3.3%, 1%, 0.1% and 1% Annual Exceedance Probability (AEP) present day events
- Flood Map for Planning - Surface Water Spatial Planning Flood Depths for 3.3%, 1%, 0.1% and 1% Annual Exceedance Probability (AEP) present day events
- Flood Map for Planning - Surface Water Spatial Planning Flood Extents for 3.3%, 1%, 0.1% and 1% Annual Exceedance Probability (AEP) climate change (2070s 'Upper End' allowance) events
- Flood Map for Planning - Surface Water Spatial Planning Flood Depths for 3.3%, 1%, 0.1% and 1% Annual Exceedance Probability (AEP) climate change (2070s 'Upper End' allowance) events
- Third generation Risk of Flooding from Surface Water (RoFSW) hazards for 3.3%, 1% and 0.1% AEP events
- Spatial Flood Defences
- Historic Flood Map
- Recorded Flood Outlines
- Flood Warning Areas
- Flood Alert Areas
- Reservoir Flood Map
- Working with Natural Processes:
    - Riparian Woodland Potential

- Wider Catchment Woodland Potential
- Floodplain Woodland Potential
- Floodplain Reconnection Potential
- Runoff Attenuation Features 3.3% AEP
- Runoff Attenuation Features 1% AEP.

3.3 Other datasets

Other datasets and information used include:

- JBA 5m Groundwater Emergence Map,
- Functional floodplain dataset - as updated through the Level 1 SFRA (2026),
- OS MasterMap Water Network
- OS OpenMap Local base mapping
- LLFA flood incident records
- Thames Water historic flood incidents record
- Severn Trent Water historic flood incidents record
- British Geological Survey (BGS) Geology 625k dataset

4 Methodology

This chapter presents the methodology used in each stage of the Level 2 SFRA. The site-specific reports contain further information.

4.1 Assessing fluvial flood risk

Flood risk from fluvial sources is assessed using the most recent version of the EA's Flood Map for Planning (downloaded May 2026), and the EA's detailed local models, namely the Daglingworth 2016, Thames (MRL to St Johns) 2014, and Churn (Baunton to Siddington) 2011 models.

4.1.1 Functional floodplain

The functional floodplain was updated through the Level 1 SFRA and is assessed at each site, where applicable. Note: the potential storage areas at Baunton and Abbey Way and South of Abbey Way Bridge have been removed from the Cotswold Local Plan. However, these areas remain within the functional floodplain.

4.1.2 Climate change

EA SFRA guidance states that the SFRA should assess the effects of climate change on all sources of flooding, including the functional floodplain, to help inform the sequential approach to development. For rivers, the central allowance for the 2080s is recommended for assessment in SFRAs, as stated in the EA's Climate Change Allowance Guidance.

Each EA model domain is located within the Gloucestershire and the Vale management catchment. The percentage uplift on peak flows for the central allowance (2080s) in this catchment is 26%. However, the modelled climate change allowance in each model includes for a 30% uplift for the 1% AEP event, which reflects the required uplift for the Cotswold management catchment. The modelled climate change outputs may therefore be underestimating future risk.

Table 4-1 lists the peak river flow allowances for each management catchment within Cotswold district. The modelled fluvial climate change outputs have been assessed against each potential site allocation, where applicable.

The potential impacts of climate change on the functional floodplain have also been assessed to produce a 'future functional floodplain' flood extent, as updated through the Level 1 SFRA.

Table 4-1: Peak river flow allowances for the management catchments within Cotswold district

Management Catchment	Allowance category	Total potential change (%) anticipated for '2020s' (2015 to 2039)	Total potential change (%) anticipated for '2050s' (2040 to 2069)	Total potential change (%) anticipated for '2080s' (2070 to 2125)
Cotswolds	Upper end	31	43	82
Cotswolds	Higher Central	17	21	43
Cotswolds	Central	11	13	30
Gloucestershire and the Vale	Upper end	33	43	84
Gloucestershire and the Vale	Higher Central	17	19	41
Gloucestershire and the Vale	Central	11	11	26
Avon Warwickshire	Upper end	22	31	59
Avon Warwickshire	Higher Central	12	14	32
Avon Warwickshire	Central	7	8	21
Severn Vale	Upper end	34	52	94
Severn Vale	Higher Central	20	28	53
Severn Vale	Central	14	19	37
Avon Bristol and North Somerset Streams	Upper end	27	38	71
Avon Bristol and North Somerset Streams	Higher Central	15	19	39
Avon Bristol and North Somerset Streams	Central	10	12	26

4.2 Assessing surface water flood risk

4.2.1 Extents

Surface water flood extents have been assessed using the EA's Flood Map for Planning Surface Water Spatial Planning Extents, published May 2026.

4.2.2 Depths and hazards

The Flood Map for Planning - Surface Water Spatial Planning Present Day Depths dataset has been used to assess surface water flood depths. Surface water flood hazards have been assessed using the EA's third generation RoFSW mapping, as no suitable hazard data was available at the time of undertaking this Level 2 SFRA.

4.2.3 Climate change

EA climate change guidance states that for SFRAs, the upper end allowance on peak rainfall for the 2070s should be modelled for the 3.3% and 1% AEP events. For Cotswold district, this entails the allowances as shown in Table 4-2

Table 4-2: Peak rainfall allowances for the management catchments within Cotswold district

Management Catchment	Allowance category	Total potential change (%) anticipated for '2070s' (2061 to 2125) 3.3% AEP	Total potential change (%) anticipated for '2070s' (2061 to 2125) 1% AEP
Cotswolds	Upper end	35	40
Gloucestershire	Upper end	35	40
Avon Warwickshire	Upper end	35	40
Severn Vale	Upper end	35	40
Avon Bristol and North Somerset Streams	Upper end	40	45

The EA released the Flood Map for Planning - Surface Water Spatial Planning Climate Change Extent and Depths datasets in May 2026, which includes the modelled 2070s upper end peak rainfall intensity allowances. This dataset has been used to assess the impact of climate change on surface water flooding to each site. The allowance for the 0.1% AEP event is not stated by the EA.

4.3 Residual risk

Paragraph 004 of the FRCC-PPG states the requirement in plan making to account for residual flood risks from flood risk management infrastructure. For this Level 2 SFRA, this involves the consideration of potential defence breach locations and blockage or failure of drainage assets, such as culverts.

For sites shown to be at residual risk, the FRCC-PPG includes the following information:

- Areas of residual risk should be included in the sequential approach to risk avoidance when sequential testing or through development management,
- Where avoidance is not shown to be feasible through appropriate sequential testing, flood resistance and resilience measures should be in place, including for

finished floor levels to be place above the design flood level plus a minimum of 600mm,

- Adequate flood warning and emergency plans should be available to site users. Residual risks will need to be safely managed to ensure people are not exposed to hazardous flooding. This includes the ability of residents and site users to safely access and escape a building during the design flood and to evacuate before an extreme flood event which is defined as the 0.1% AEP event with an allowance for climate change this event is not available in the EA models),
- The likelihood of defences keeping pace with climate change should be considered e.g. is funding available and what are the funding options (e.g. Community Infrastructure Levy, planning obligations / S106 agreements, or Partnership Funding). This should inform the nature of residual risk to be considered and whether new development can remain safe for its lifetime,
- Local planning authorities should use information on identified residual risk to state in strategic policies their preferred mitigation strategy for ensuring development will be safe throughout its lifetime in relation to urban form, risk management and where flood mitigation measures are likely to have wider sustainable design implications,
- A site-specific FRA will be required for all sites modelled to be at residual risk. the FRAs would need to show that appropriate emergency plans, evacuation procedures and flood response infrastructure are in place to manage the residual risk associated with an extreme flood event.

4.4 Assessing flood risk from reservoirs

The EA's SFRA guidance requests for the assessment of risk from reservoir dam failure using the EA's Reservoir Flood Map (RFM). This Level 2 SFRA assess potential reservoir flood risk in both a 'dry day' and 'wet day' scenario. The 'dry day' scenario shows the flood extents if a reservoir were to fail and release the water held when local rivers are at normal levels, whereas the 'wet day' assumes the local rivers have already overflowed their banks.

The RFM shows the credible worst-case scenarios from dam failure. If a site is shown to be at risk, the SFRA should assess if the design or maintenance of the reservoir would need improving. This will require contacting the reservoir owner(s) to ascertain the flood risk in more detail and whether the proposed development could affect the reservoir's risk designation, it's design category or how it is operated.

CDC may be required, as category 1 responders, to access more detailed information about reservoir risk and reservoir owners using the online Resilience Direct System.

4.5 Assessing flood risk from canals

The Thames and Severn Canal flows past several potential site allocations. Given canals are controlled and managed features, the risk of flooding from a canal is considered low. The recommendation therefore is for any sites located near to the Thames and Severn Canal and situated at a lower elevation, as identified in the site reports, to be subject to a

more detailed assessment at the FRA stage in consultation with the canal owner, the Cotswold Canals Trust.

4.6 Assessing risk from groundwater emergence

Susceptibility of areas to groundwater emergence is appraised using JBA's national 5m Groundwater Flood Map which is more robust than the BGS dataset. In creating this map, modelling was carried out to show how and where groundwater levels would rise following prolonged periods of rainfall, considering factors such as topography, groundwater recharge volumes and spatial variations in aquifer storage and transmission properties. The model outputs were validated against recorded groundwater levels for past flood events and checked against areas historically affected by groundwater flooding. The high-resolution maps make it easier for users to pinpoint and report risks from groundwater emergence.

4.7 Assessing risk from sewers

Thames Water provided their historic flood event register at the postcode district level. Severn Trent Water provided theirs at the unit postcode level. The site reports flag where a sewer flooding incident has occurred within the postcode district or unit. Developers should contact the relevant wastewater undertaker directly for more specific details at the FRA stage.

4.8 Assessing historic flood risk

The EA's Historic Flood Map (HFM) and Recorded Flood Outlines (RFO) datasets have been considered. Gloucestershire County Council LLFA historic flood records have also been considered. Details on historic flooding have been documented within the site-specific reports where applicable.

4.9 Access and escape routes and emergency planning

The EA's Flood Warning Areas and Flood Alert Areas have been reviewed and mapped against each potential site allocation. Potential access and escape routes have been documented for each site, identified where they are modelled to stay dry or experience non-hazardous to life flooding. Liaison with emergency planners and the local resilience forum may be required at the site-specific FRA stage.

4.10 Cumulative impacts

A joined-up approach should be adopted between developers at the FRA stage for any clusters of sites to ensure possible flood risk mitigation at one site does not increase risk to a neighbouring or downstream site as a result of loss of floodplain storage, the deflection or constriction of flood flow routes, or through inadequate management of surface water. Paragraph 049 of the FRCC-PPG states that site-specific flood risk assessments should assess cumulative impacts and demonstrate how mitigation measures have addressed

them. The site-specific reports recommend for any clusters of sites at significant risk to be combined into a wider drainage strategy and masterplanning process.

4.11 Working with Natural Processes

The EA's national Working with Natural Processes mapping dataset has been assessed as to whether there is any potential for NFM measures that could benefit potential site allocations. This includes for tree planting, enhancing floodplain connectivity and attenuation of runoff through gully blocking and other runoff attenuation features.

5 Limitations

This Level 2 SFRA has been prepared under limitations associated within the availability and quality of data. These limitations have been subject to consultation with Council officers, the EA, and the LLFA whereby alternative approaches have been agreed to enable the Level 2 SFRA to be prepared using available existing information. The limitations include the following:

- The latest available EA flood models are not up to date with the latest hydrology. Therefore, they may not be fully representative of current hydrological conditions. Model survey and digital terrain model data will also not be based on the latest information, given updates to the national LIDAR datasets in June 2026. The EA models used in the assessment are listed in Section 3.1. Any future SFRA update may look to update the EA models with the latest information that is available at the time, including up to date hydrology inputs, channel and bank survey, LIDAR terrain data, and using the latest modelling software to update and run the models. The local plan timetable and budget constraints meant the models could not be updated through this SFRA.
- The EA models do not include for the latest climate change allowances associated with the Gloucestershire and the Vale management catchment. Therefore, there may be a small underestimation in future risk in the modelled locations. The local plan timetable and budget constraints meant the models could not be updated through this SFRA.
- Several sites being assessed are at risk of flooding from rivers though a local detailed EA model is not available for a more robust assessment of the risk. Therefore, flood risk can only be assessed using the Flood Map for Planning which is based on the New National Model. Depth, hazard and velocity information is unavailable for assessment in these areas.
- The recently published Flood Map for Planning Surface Water Spatial Planning dataset does not include useable flood hazard information. Therefore, the third generation Risk of Flooding from Surface Water hazard mapping has been used as the best available information.

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