| Valley Park |
| --- |
| • It must be demonstrated that safe, dry access and egress will be available during a severe flood event.<br>• Opportunities for enhancing the amenity value of the Flood Zone area.<br>• Drainage strategy should be submitted at an early stage to cover mitigation of any surface water risk and reduce impact downstream through site design and SUDS methods.<br>• Thames Water should be consulted at an early stage to ensure that there will be sufficient capacity in the wastewater system and any upgrades are carried out where necessary. |

## B.3 Vale of White Horse - main towns

### B.3.6 Abingdon

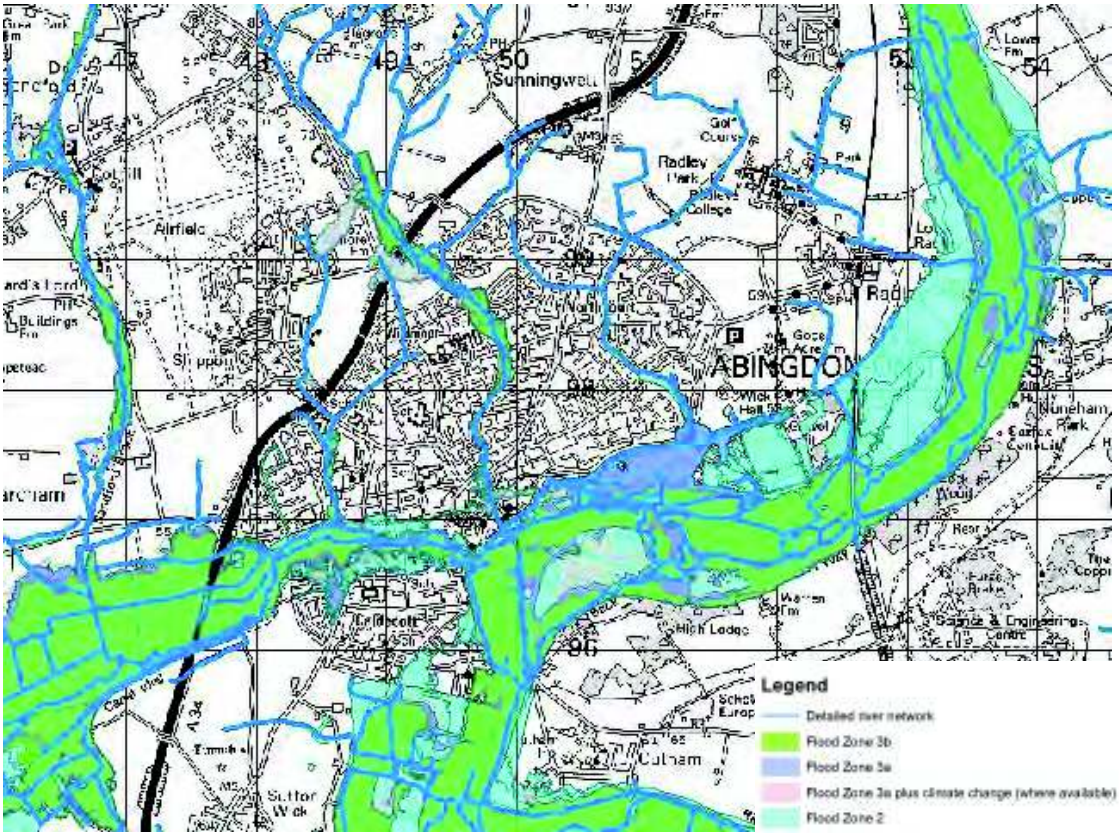
**Summary of flood risk to Abingdon**

**Fluvial**

There is extensive flood risk to the town centre and other areas from the River Thames, River Ock, River Stert and their tributaries. The Historic Flood Map (HFM) shows several event outlines, mainly within Flood Zone 3 on the Ock, but also extensive areas in Zone 2 for Thames. There is a well documented history of flooding on the Stert (see Frank Graham report and July 2007 historic outline). There were 412 properties that claimed flood grants in July 2007, mostly on the Stert, Ock and Radley Park Ditch. There are several minor watercourses that are not included in the Flood Zones.

There are no formal flood defences along the River Thames in AIMS, although there are a number of bank protection measures and non-flood defence structures noted, in addition to a private raised bank along Audlett Drive. There are two flood storage areas with raised banks on the River Stert at Tilsley Park. The Council is currently carrying out work on Farm Road Abingdon Flood Alleviation Scheme (due June 2013). There are several long culverts, including the River Stert through the town centre.

**Flood Zone map**






**Flood hazard mapping**

Hazard mapping of the River Stert was undertaken for the 2007 SFRA, and shown in Map 10-13. The flooding mechanism here is overland flow when excess flows are unable to enter the Stert culvert, and surcharging from Stert manholes. The maps show that for all return periods modelled, the vast majority of the inundated area is classed as 'Dangerous for Some' (e.g. children). The overland flow is likely to be fast flowing but relatively shallow. More detail is given in Chapter 5.

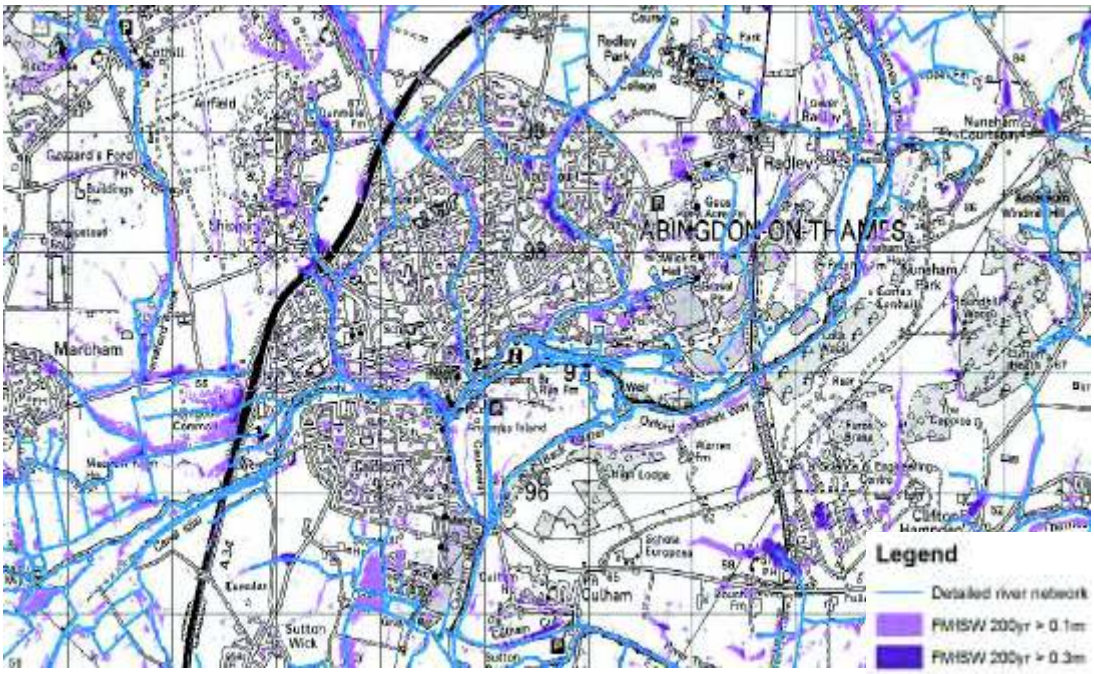
**Surface water**

The FMfSW shows significant flow routes along the Radley Park Ditch (which is not included in the fluvial Flood Zones) and Wildmoor Ditch, and other isolated potential areas of ponding. Many of the properties affected in 2007 were flooded by surface water outside of the Flood

## Summary of flood risk to Abingdon

Zones.

### Flood Map for Surface Water (200 year)






### Groundwater

The AStGWF map suggests the north west of Abingdon is at relatively low risk of groundwater flood emergence, with risk increasing to the highest risk category towards the River Thames, associated with the Thames fluvial gravels. One incident was recorded by the Environment Agency in 2008, within the Flood Zone close to the bridge.

### Sewer

There are 17 properties on the Thames Water sewer flooding register within the four postcodes covering Abingdon (OX14 1, 2, 3 and 5), six of which have been flooded internally. No other evidence found of sewer flooding.

### Reservoir

Abingdon is within the flood risk envelope in the event of a failure at Farmoor Reservoir. For more information see the Environment Agency website under Risk of Flooding from Reservoirs[11].

### Effects of climate change

Climate change is likely to increase the fluvial flood extent and severity of the River Ock in the Caldecott area, and the River Stert and Thames in the town centre.

Increased rainfall intensity in the future may exacerbate flooding from surface water and small watercourses.

Wetter winters may increase groundwater flood risk.

### Available survey/detailed modelling

The following detailed models have been used in the Flood Map:

- River Thames Sandford to Whitchurch (Environment Agency, 2000)
- River Ock A34 to Thames Confluence (Environment Agency, 2009)
- River Ock Frilford to A34 (Environment Agency, 2007)
- River Stert (JBA, 2009)

The following models are available for use in FRAs but have not been used for mapping due

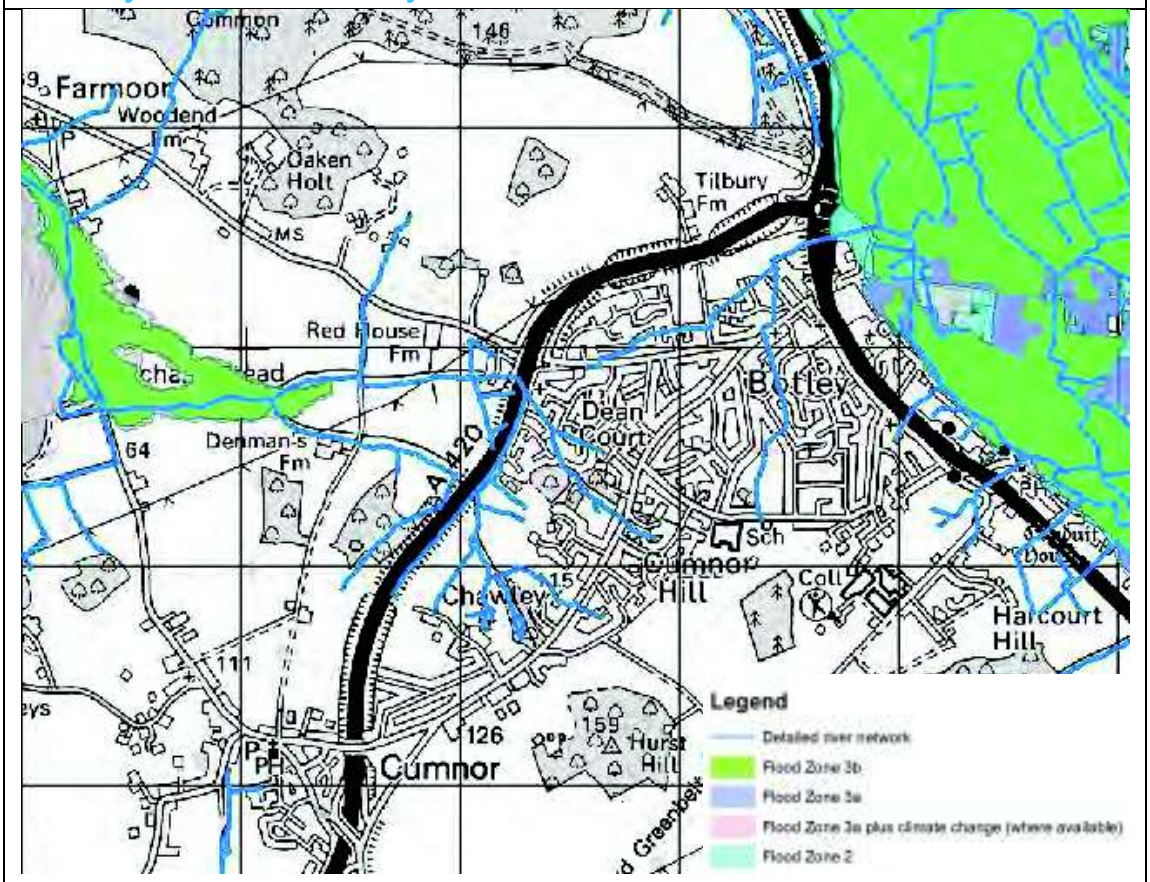
[11] Environment Agency - Risk of flooding from Reservoirs map available at http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=reservoir

| Summary of flood risk to Abingdon |
|---|
| to lack of LIDAR data:<br>• Wildmoor Brook/Larkhill Stream (JBA, 2007) |
| **Implications for development**<br>• Development allocations should be sequentially located away from Flood Zone 2 and 3.<br>• Development should also avoid proximity to the smaller watercourses such as Radley Park Ditch, Wildmoor Ditch and Larkhill Stream, where there is low confidence in the Flood Zones, and surface water flow paths are shown in the FMfSW. If development is proposed in proximity to them, a FRA should be undertaken to ascertain the flood risk in the absence of a Flood Zone.<br>• Redevelopment which is continuing in the Town Centre should be planned sequentially taking into account flood hazard from the River Stert and River Ock.<br>• Thames Water should be consulted at an early stage to ensure that there will be sufficient capacity in the wastewater system and any upgrades are carried out where necessary. |
| **Implications for the Abingdon Southern Bypass road**<br>The Local Plan has earmarked land for safeguarding for future transport schemes, including land to the south and west of Abingdon for a future bypass route. This potential route is not likely to be taken forward within the life of the current Local Plan (to 2029).<br>It should be noted that the safeguarded route crosses areas of significant flood risk: approximately 1.4km of the River Thames floodplain to the south and 0.6km of the River Ock floodplain to the west.<br>This has implications for the design of the route in terms of flood risk (to the route itself and elsewhere) and environmental impact, both during the construction stage and the built life of the project. The Environment Agency should be consulted at an early stage if these plans are to be taken further. |

### B.3.7 Botley

| Summary of flood risk to Botley |
|---|
| **Fluvial**<br>Botley borders the edge of the Thames floodplain to the east, and there is an area at risk from Filchampstead Brook to the east. There are several minor watercourses within Botley that are not included in the Flood Map. Past flooding from the Thames is shown on the HFM. Eleven properties claimed flood grants in 2007, most withint the River Thames Flood Zones.<br>There are no formal flood defences recorded.<br>**Flood Zone Map** |

## Summary of flood risk to Botley

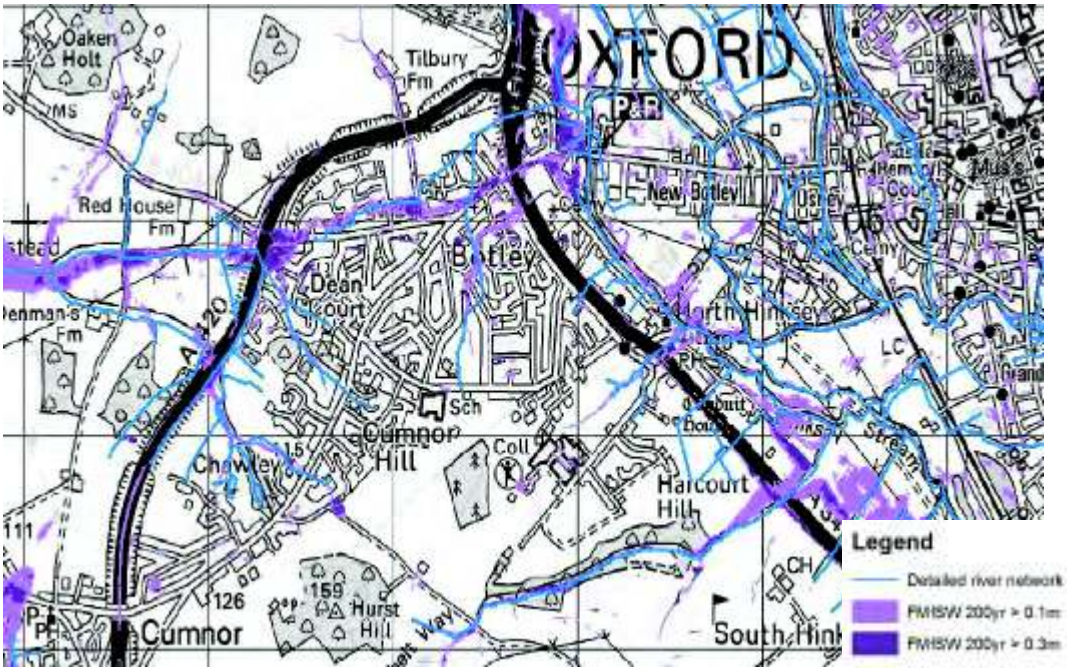





## Surface water

The FMfSW shows significant flow routes along the small watercourses through Botley. There are 45 records on the VOWH Flood Database, mainly citing reasons of flooding from ditches and gully blockages.

## Flood Map for Surface Water (200 year)



| Summary of flood risk to Botley |
|---|
| **Groundwater**<br>The AStGWF map suggests that the majority of Botley is at relatively low risk from groundwater emergence, with risk increasing to medium towards the Thames floodplain.<br>No incidents mapped in Defra report for 2000/1 and 2002/3 events.<br>High occurrence of springs which are intercepted into surface water sewers and with some emergence at ground level (Peter Dela, VOWH, 2007).<br>Two incidents of groundwater flooding on Environment Agency records in 2001 and 2002, both on the southern edge of Botley. |
| **Sewer**<br>Botley has a history of sewer flooding problems, in combination with fluvial and surface water flooding. There are several properties recorded as flooding due to overloaded or blocked sewers in the VOWH Flood Database, mainly in the Thames floodplain and along Botley Road. Thames Water put in a scheme which was completed in December 2012[12], which was crucial to allowing development to go ahead in Botley. However the area experienced sewer/surface water flooding at end of November 2012, for which Thames Water blamed 'operational reasons'.<br>There are 26 properties on the Thames Water sewer flooding register for the OX2 9 postcode, 16 of which have been flooded internally. |
| **Reservoir**<br>Botley is within the flood risk envelope in the event of a failure at Farmoor Reservoir, which covers roughly the same area as the Flood Zones. For more information see the Environment Agency website under Risk of Flooding from Reservoirs[13]. |
| **Effects of climate change**<br>Climate change is unlikely to increase the Thames flood extents very much (the floodplain is well contained and there is little difference between the Flood Zones), but frequency and severity of flooding will increase.<br>Increased rainfall intensity in the future may exacerbate flooding from sewers, surface water and small watercourses.<br>Wetter winters will exacerbate groundwater flooding problems. |
| **Available survey/detailed modelling**<br>The following detailed models have been used in the Flood Map:<br>• River Thames Wolvercote to Kennington (Environment Agency, 2006)<br>The Filchampstead Brook Flood Zone is based on national broad-scale mapping and should be treated with lower confidence. |
| **Implications for development**<br>• Development allocations should be sequentially located away from Flood Zone 2 and 3.<br>• Development should be sequentially located away from smaller watercourses such as Filchampstead Brook and the drains. If development is proposed in proximity to them, a FRA should be undertaken to ascertain the flood risk where there is little confidence in the Flood Zone, or no Flood Zone present.<br>• Development must not impact on existing sewer and surface water flood risk.<br>• Thames Water should be consulted at an early stage to ensure that there will be sufficient capacity in the wastewater system and any upgrades are carried out where necessary. |

[12] http://www.ukwaterprojects.com/case_studies/2012/Thames_Botley_2012.pdf

[13] Environment Agency - Risk of flooding from Reservoirs map available at http://maps.environment-agency.gov.uk/wiyby/wiybyController?x=357683.0&y=355134.0&scale=1&layerGroups=default&ep=map&textonly=off&lang=_e&topic=reservoir

## B.4 Vale of White Horse - larger villages

### B.4.8 Blewbury

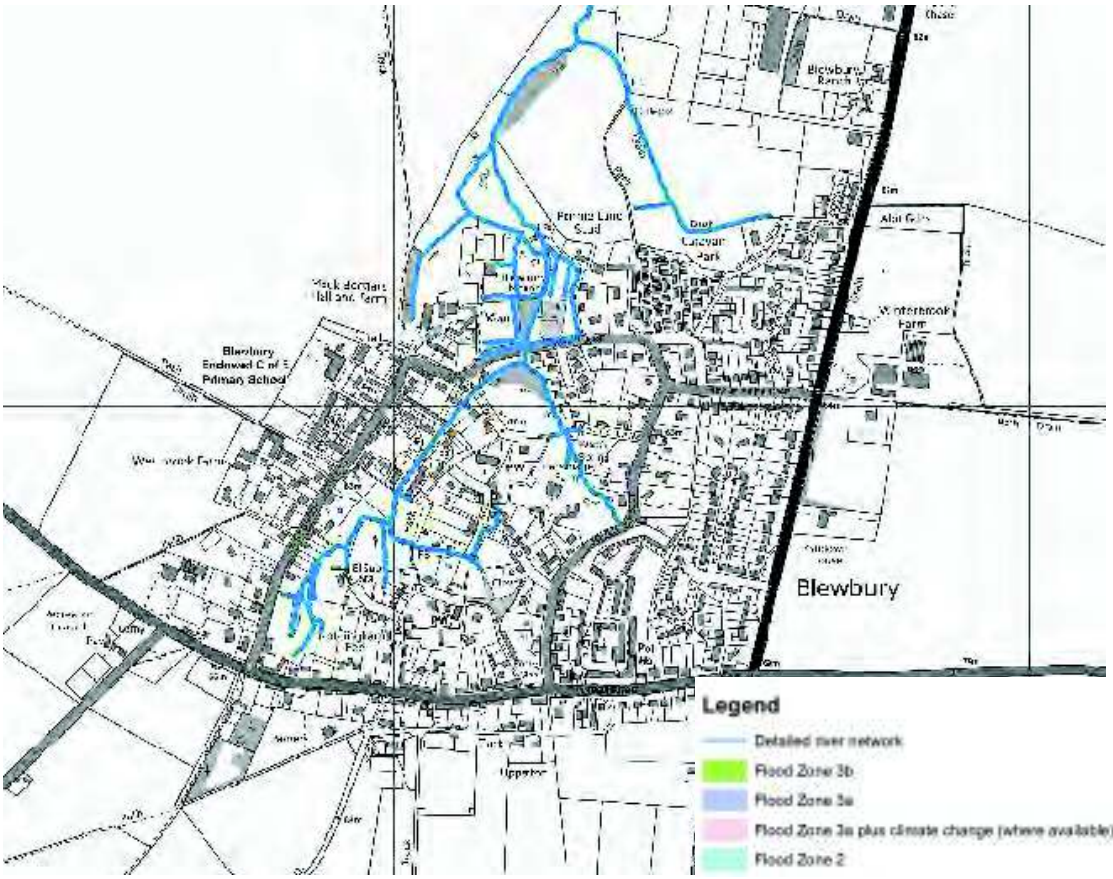
**Summary of flood risk to Blewbury**

**Fluvial**

Blewbury is situated at the head of the Mill Brook. There are two small tributaries that run through the village, including The Cleve. They are not included in the Flood Map.

There are no formal flood defences.

**Flood Zone Map**



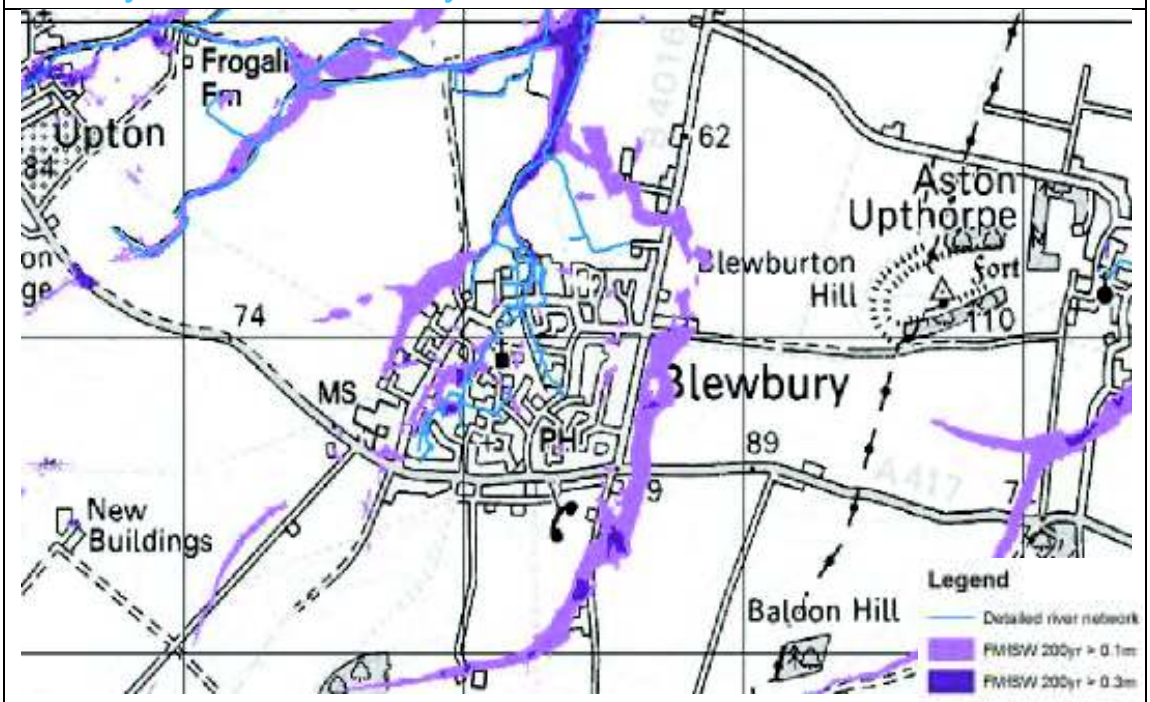



**Surface water**

The FMfSW shows flow routes to the east and west of the village, and along parts of the small watercourses in the village itself. The VOWH Flood Database has two incidents recorded associated with small ditches. One property claimed a flood grant in 2007 - the source of flooding likely to be surface water.

**Flood Map for Surface Water (200 year)**

**Summary of flood risk to Blewbury**






**Groundwater**

The AStGWF map suggests that all Blewbury is at medium risk of groundwater emergence apart the south-west of the village where the risk is low.

However local evidence suggests that the risk is higher. Blewbury is close to the edge of the chalk aquifer, where numerous springs flow and feed the watercourses. Extraction from the aquifer here ceased in 2007. Due to the exceptionally high groundwater levels in 2012-2013 spring heads were observed higher up the valleys at Blewbury and groundwater could be seen seeping out of the ground over a wide area, including at Hagbourne around the A417.

The Environment Agency recorded one reported groundwater flooding incident in January 2013.

**Sewer**

The VOWH Flood Database has two incidents recorded as caused by 'blocked sewer'. There are 13 properties on the Thames Water sewer flooding register for the OX11 9 postcode within the VOWH boundary, 5 of them have been flooded internally.

**Effects of climate change**

Increased rainfall intensity in the future may exacerbate flooding from surface water and small watercourses.

Wetter winters will increase the risk of groundwater flooding.

**Available survey/detailed modelling**

No detailed models available

**Implications for development**

- FRAs should be requested to include a detailed assessment of the risk from springs and high groundwater levels in the chalk.
- Development should be sequentially located away from the springs, small watercourses and ditches, but if development is proposed in proximity to them, a FRA should be undertaken to ascertain the flood risk in the absence of a Flood Zone.
- Development must not impact on existing surface water flood risk or flow paths.
- Thames Water should be consulted at an early stage to ensure that there will be sufficient capacity in the wastewater system and any upgrades are carried out where necessary.

### B.4.9 Cumnor

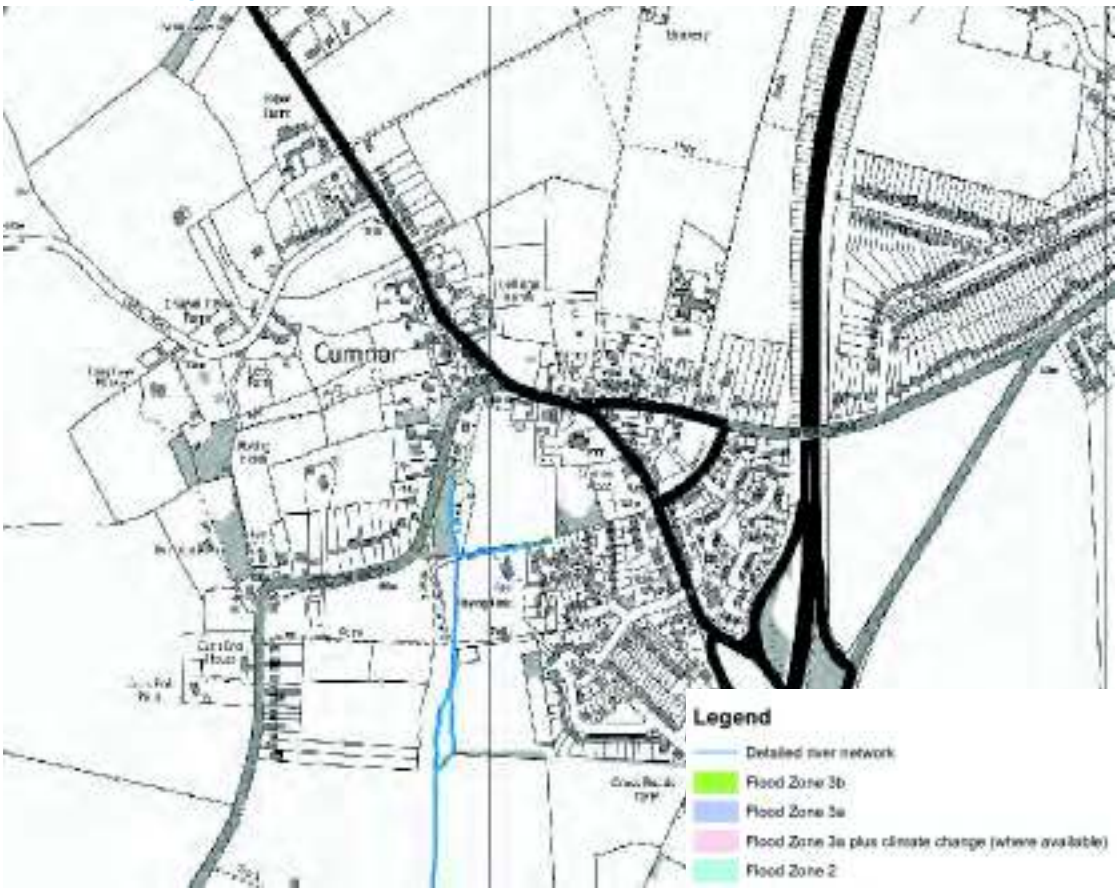
**Summary of flood risk to Cumnor**

## Summary of flood risk to Cumnor

### Fluvial

There is a small watercourse that runs south of the village on open field. The catchment area is too small to be included in the Flood Zones.

### Flood Zone Map



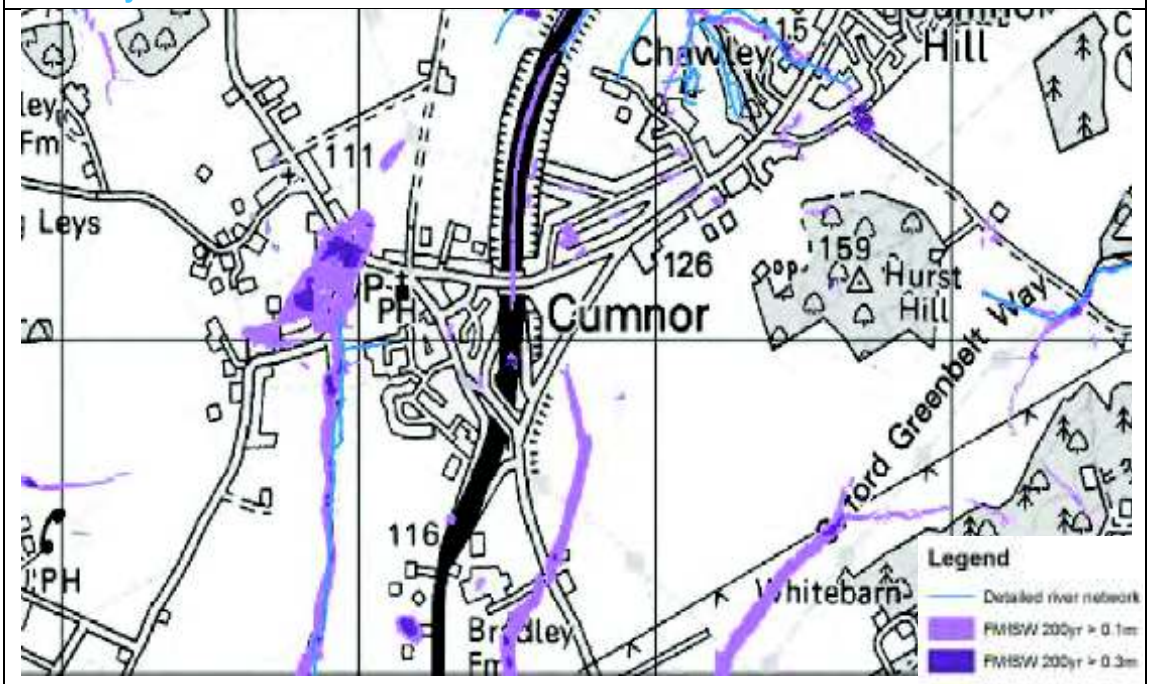



### Surface water

The FMfSW shows a large area of potential ponding at the head of the watercourse. The VOWH Flood Database has four incidents associated with ditches, gullies and roads. One property claimed a flood grant in 2007, with flooding likely to have been caused by surface water.

### Flood Map for Surface Water (200 year)

**Summary of flood risk to Cumnor**






**Groundwater**

The AStGWF map suggests that all Cumnor is at the very low risk of groundwater emergence.

The Environment Agency recorded one report of possible groundwater flooding in June 2002, although the actual cause is questioned.

**Sewer**

There are 26 properties on the Thames Water sewer flooding register for the OX2 9 postcode, 16 of which have been flooded internally. Note that this postcode also includes Botley.

**Effects of climate change**

Increased rainfall intensity in the future may exacerbate flooding from surface water and small watercourses.

**Available survey/detailed modelling**

No detailed models available.

**Implications for development**

- Development should be sequentially located away from small watercourses, but if development is proposed in proximity to them, a FRA should be undertaken to ascertain the flood risk in the absence of a Flood Zone.
- Development must not impact on existing surface water flood risk or flow paths.
- Thames Water should be consulted at an early stage to ensure that there will be sufficient capacity in the wastewater system and any upgrades are carried out where necessary.

### B.4.10 Drayton

**Summary of flood risk to Drayton**

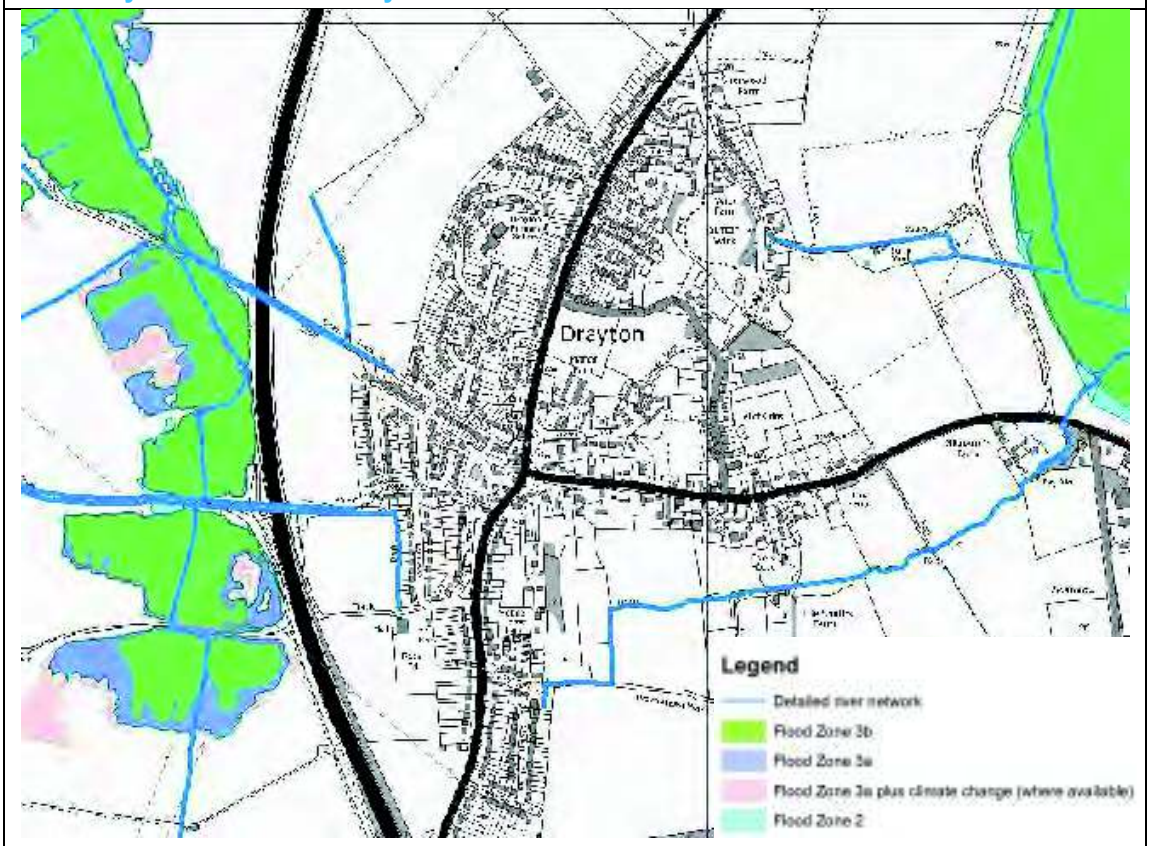
**Fluvial**

There are no Flood Zones in Drayton, although there are several small ditches which are not included in the Flood Map on the edges of the village. Future development will also be constrained to the east by the River Thames floodplain, to the south by the Ginge Brook and to the west by the Mere Dyke.

There are no formal flood defences.

**Flood Zone Map**

## Summary of flood risk to Drayton

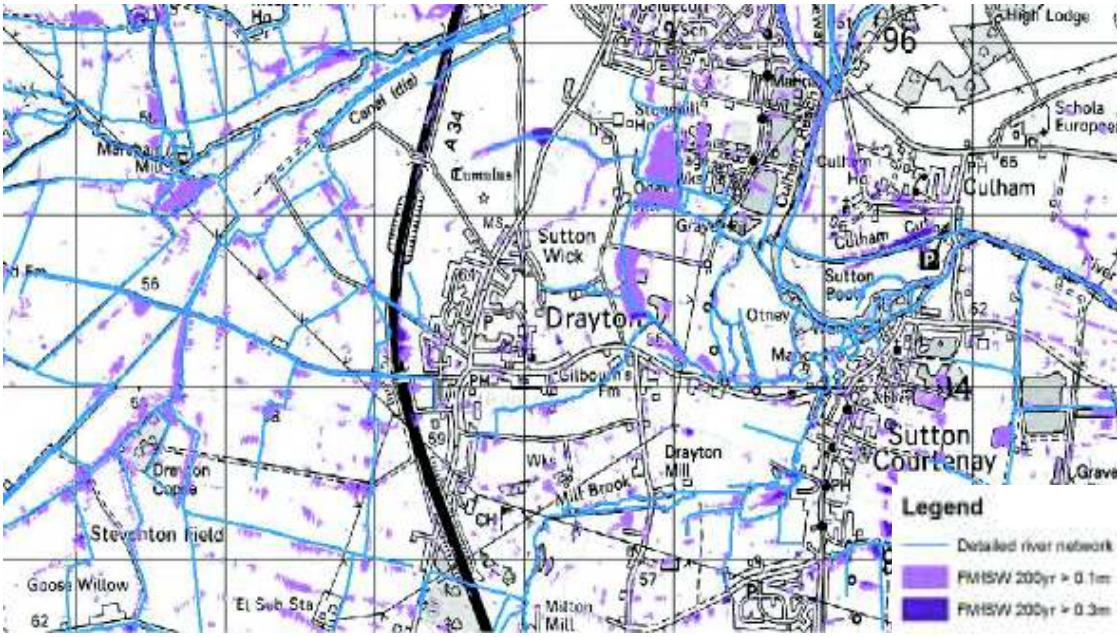





### Surface water

The FMfSW shows small areas of ponding across the village. The VOWH Flood Database has seven incidents. Four properties claimed flood grants in 2007, with flooding likely to have been caused by surface water.

### Flood Map for Surface Water (200 year)






### Groundwater

The AStGWF map suggests that Drayton is at the low risk of groundwater emergence.

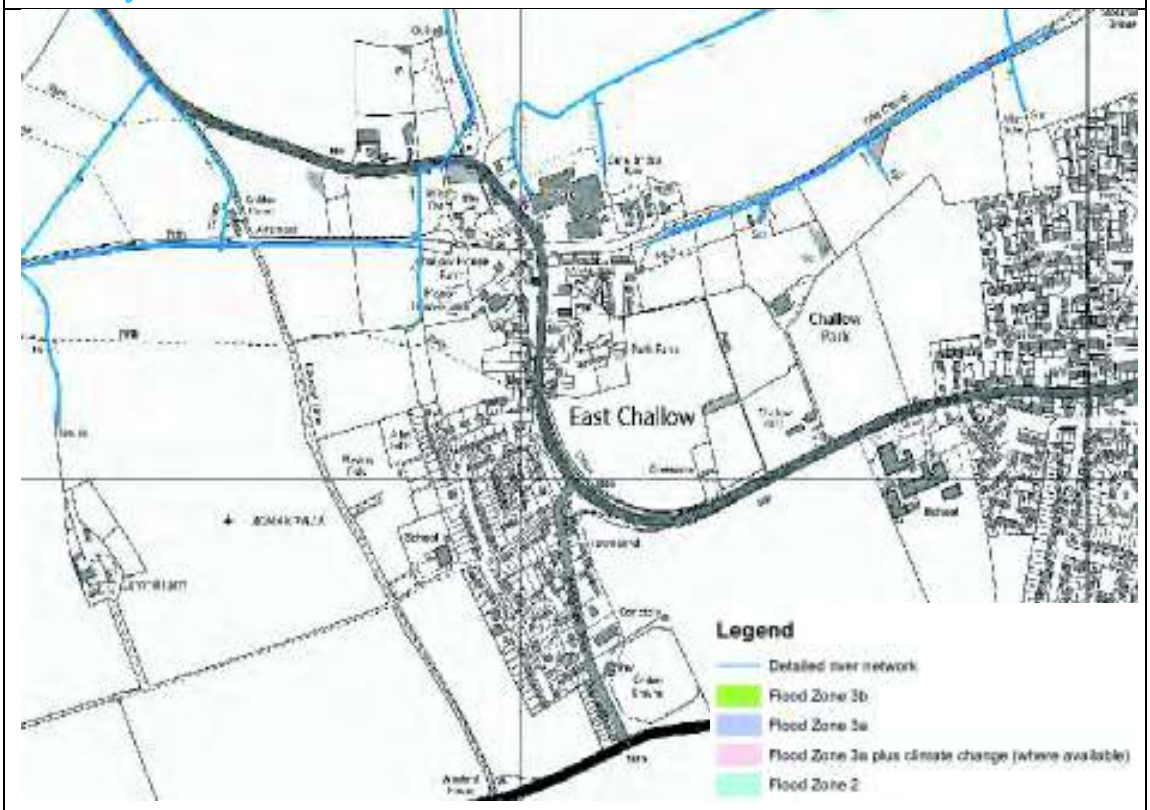
No incidents mapped in Defra report for 2000/1 and 2002/3 events. One incident recorded by Environment Agency in January 2003 in the centre of the village, noted as caused by the thin

| Summary of flood risk to Drayton |
|---|
| gravel aquifer overlaying Ampthill Clays being unable to cope with exceptional rainfall. |
| **Sewer**<br>There is one property on the Thames Water sewer flooding register for the OX14 4 postcode within the VOWH boundary, which was flooded externally. |
| **Effects of climate change**<br>Climate change is likely to increase the fluvial flood extent and severity of flooding from the Thames, Ginge Brook and Mere Dyke.<br>Increased rainfall intensity in the future may exacerbate flooding from surface water and small watercourses. |
| **Available survey/detailed modelling**<br>The following detailed models have been used in the Flood Map:<br>• River Ock (Frilford to A34), 2007<br>• River Thames (Sandford to Whitchurch), 2000<br>Flood Zones on the Ginge Brook at Drayton are based on national broadscale mapping and therefore have lower confidence (the model of Ginge Brook/Moor Ditch does not cover this area). |
| **Implications for development**<br>• Development should be sequentially located away from small watercourses, but if development is proposed in proximity to them, a FRA should be undertaken to ascertain the flood risk in the absence of a Flood Zone.<br>• Development must not impact on existing surface water flood risk or flow paths.<br>• Risk of groundwater flooding from the thin gravel aquifer should be investigated with a FRA.<br>• Thames Water should be consulted at an early stage to ensure that there will be sufficient capacity in the wastewater system and any upgrades are carried out where necessary. |

### B.4.11 East Challow

| Summary of flood risk to East Challow |
|---|
| **Fluvial**<br>There are no Flood Zones in East Challow, although there are several small ditches which are not included in the Flood Map on the edges of the village.<br>There are no formal flood defences.<br>**Flood Zone Map** |

## Summary of flood risk to East Challow

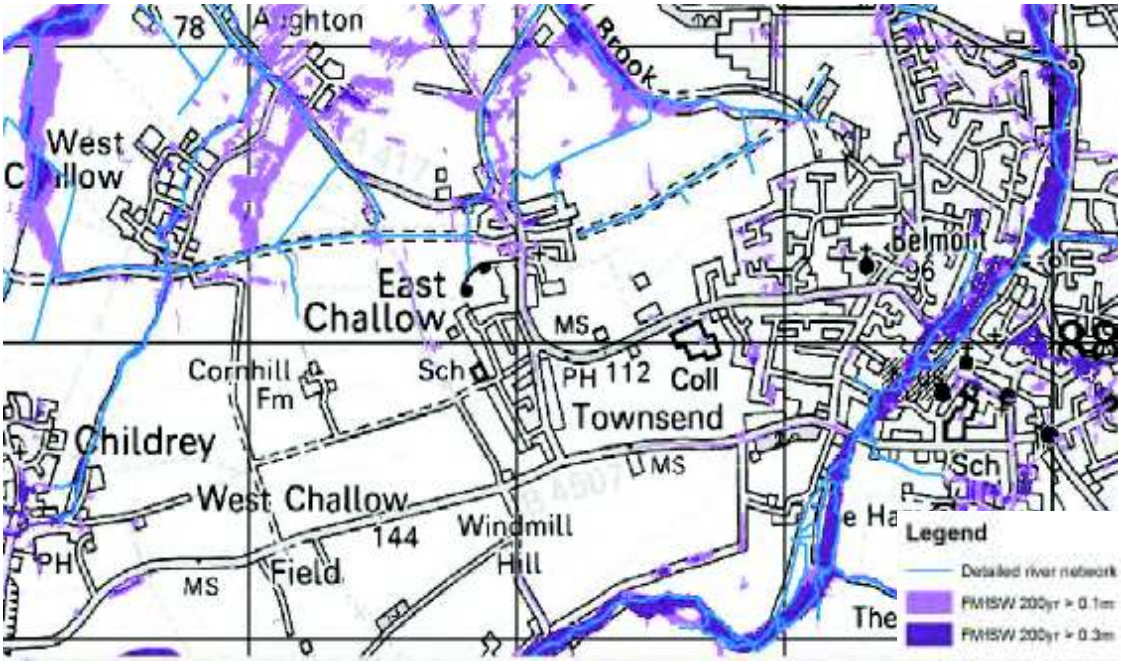





### Surface water

The FMfSW shows flow routes along some of the small watercourses. Two properties claimed a flood grant in 2007, with flooding likely to have been caused by surface water.

### Flood Map for Surface Water (200 year)






### Groundwater

The AStGWF map suggests that all East Challow is at the lowest risk of groundwater emergence.

No incidents of groundwater flooding recorded by the Environment Agency.