Cambourne Growth Strategy Programme

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025

Contents

1. Introduction

This document provides a high-level review of the Strategic Flood Risk Assessment (SFRA) for the Greater Cambridge area to help inform the Cambourne Growth Strategy Programme project. The following document has been reviewed with key outcomes outlines in subsequent sections.

- 'Greater Cambridge Integrated Water Management Study, Level 1 Strategic Flood Risk Assessment' Project Ref: 48444/4005 | Rev: C | Date: July 2021'

Images of the several of the flood risk maps from the SFRA have been included in the sections of this document for illustrative purposes only. Readers should refer to the original document for more detailed technical or site-specific information. Most of the images are for layouts covering the town of Cambourne which is shown on sheet 11 of 37 of the drawing sets. Figure 1 shows an aerial image of the approximate study area for the project.

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025
Revision	02

Figure 1 - Cambourne and surrounding study area

2. Flood risk summary

2.1 Flood risk from rivers and seas

The information in the document provides flood maps relating to the Environment Agency (EA) Flood Zones for Planning. The majority of the areas around Cambourne are classed as Flood Zone 1 and therefore have a less than 1 in 1,000 (0.1%) annual probability of river or sea flooding in any year, see Figure 2. This is the lowest risk category. The exception to this is areas around some of the natural water courses where there is a higher chance of flooding which is to be expected due to the water courses and naturally low-lying ground around them, these areas are not significant and therefore should not pose a major obstacle to development at a strategic level.

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025
Revision	02

There are areas of higher flood risk in the wider area especially to the far west of Cambourne, however this is outside of the extent of the SFRA as well as the target area for this study.

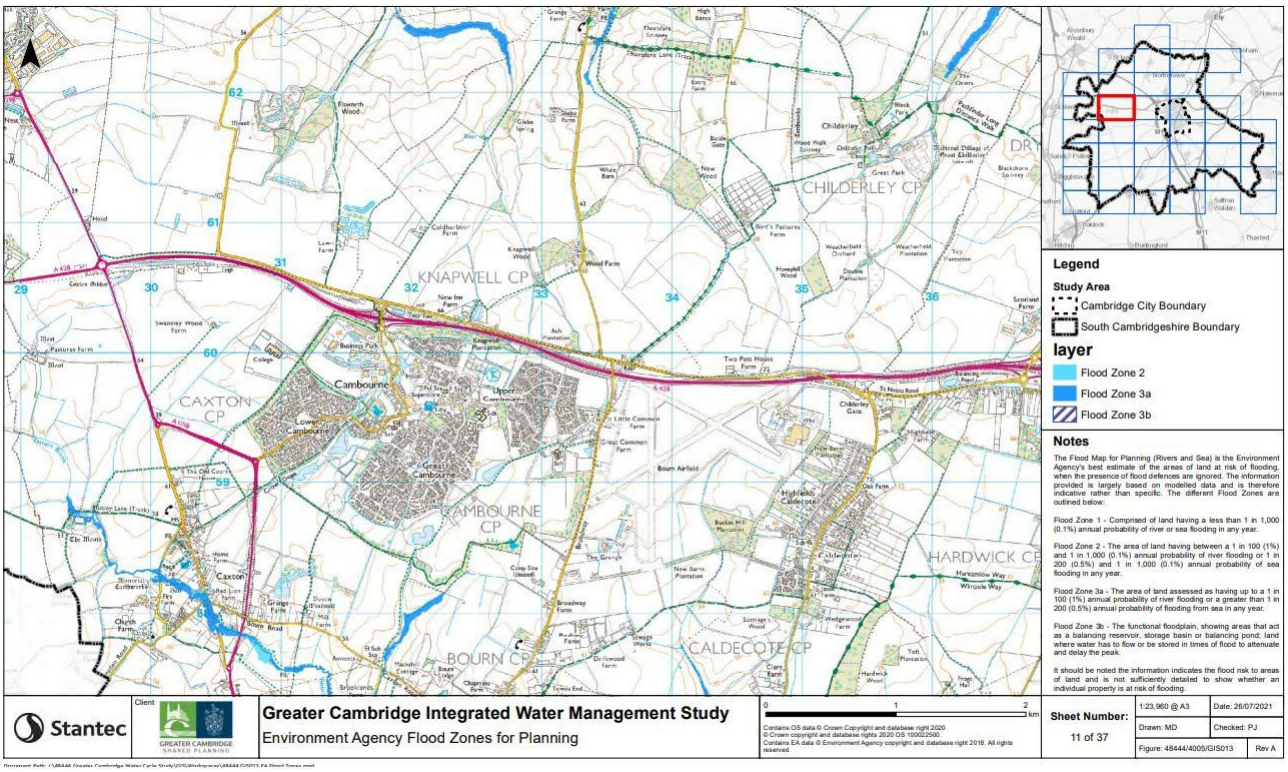


Figure 2 - Image from Fluvial Flood Risk Map

Since the publication of the SFRA, the EA released updated flood risk mapping as part of the new National Flood Risk Assessment (NaFRA2) in March 2025.The updated EA's Flood Zones map for the study area in Figure 3 shows that, similar to the SFRA, Cambourne and surrounding area remains in Flood Zone 1, indicating a very low chance of flooding from rivers or the sea, with an annual probability of less than 0.1%.

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025
Revision	02

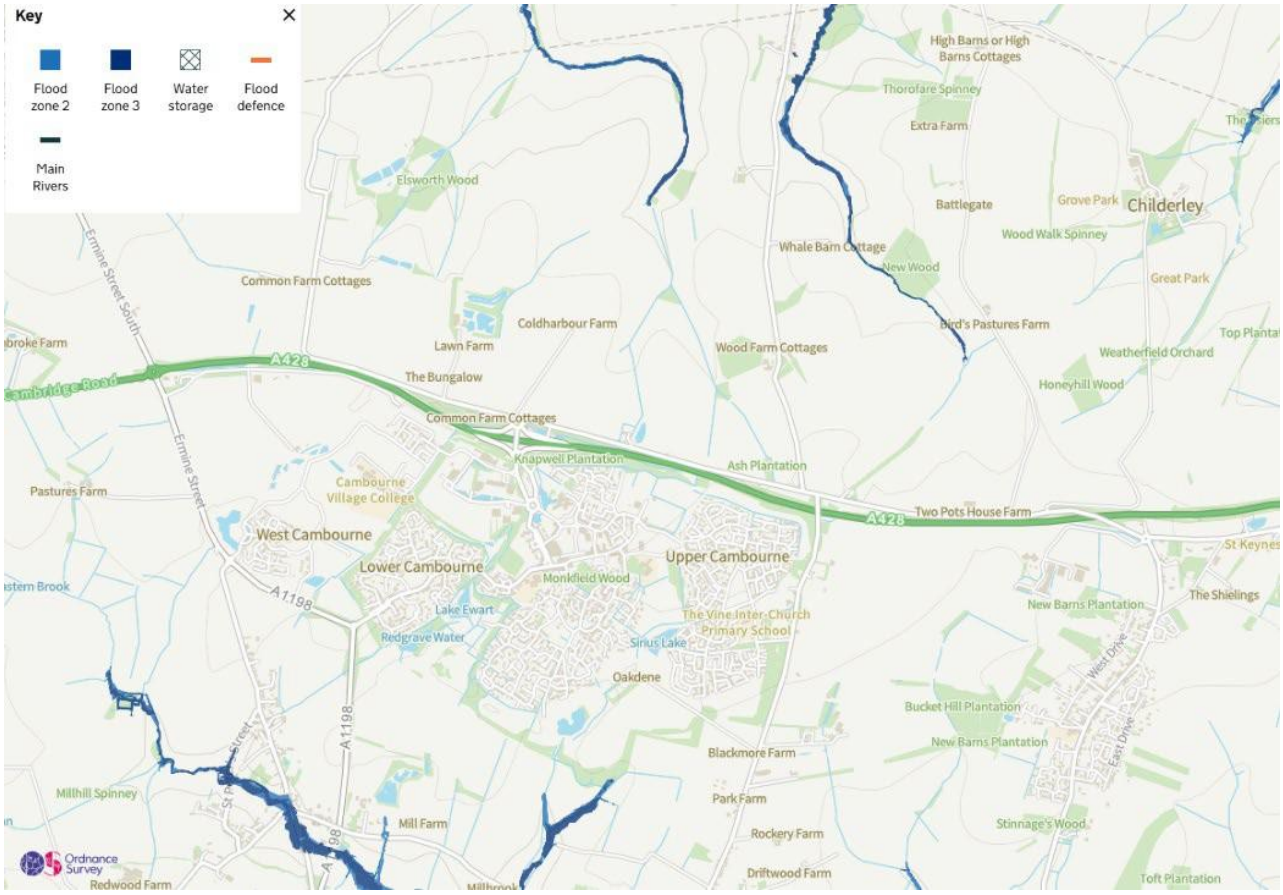


Figure 3 - EA's Updated Flood Zones Map

A few areas to the southwest and north of the study area fall within Flood Zone 2 (medium risk), and Flood zone 3 (high risk). These zones correspond to lower-lying areas and along ditches which is anticipated.

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025
Revision	02

2.2 Surface water flood risk

The surface water flood risk maps are similar to the fluvial flood risk maps that the majority of the study area has a low risk, less than 1 in 1,000 (0.1%) annual probability of flooding, from surface water sources, see Figure 4. The exception to this is areas around some of the natural water courses where there is a higher chance of flooding which is to be expected due to the water courses and naturally low-lying ground around them, these areas are not significant and therefore do not pose a major obstacle to development at a strategic level.

To better understand surface water flood risk at each site further information and analysis is required and careful site drainage design will be necessary to mitigate any potential surface water flood at the site level. This is normal for site design and can include Sustainable Drainage Systems (SuDS) and other drainage techniques with integration into the wider landscape and site master planning to achieve multi-functional benefits.

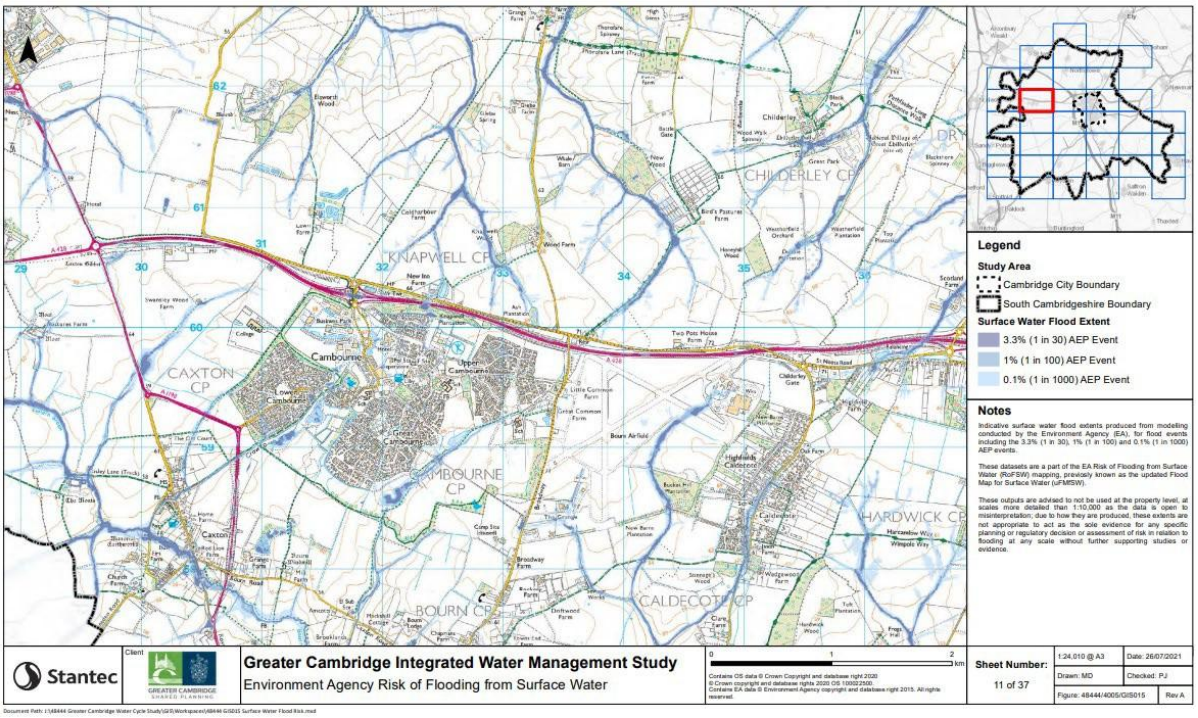


Figure 4 - Image from Surface Water Flood Risk Map

The latest EA's Surface Water Flood Map shown in Figure 5 aligns with the findings of the SFRA Level 1 Map in Figure 4. Both maps indicate that majority of the study area is at

very low risk (less than 0.1% annual probability) and low risk of surface water flooding. For further details refer to the map's key in Figure 5 below which details the annual probability of flooding.

The medium and high-risk surface water flood areas identified in Figure 5 are primarily located in natural topographical depression, such as farm ditches, lakes, and low-lying areas within Cambourne and the surroundings.

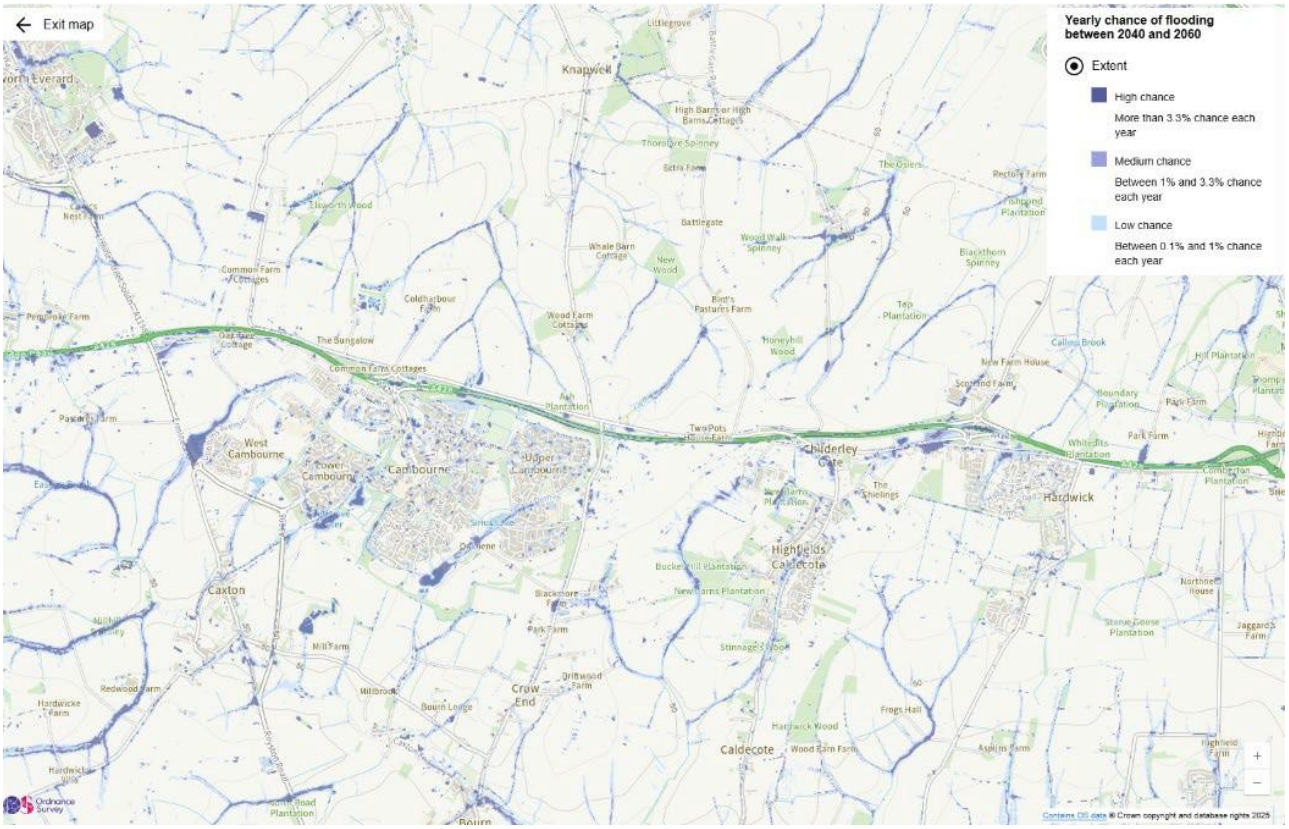


Figure 5 - EA Updated Surface Water Flood Risk Map

2.3 Ground water flood risk

The ground water flood risk is based on the British Geological Survey Areas susceptible to Groundwater Flooding dataset, see Figure 6. The Cambourne area includes areas that have potential for flooding to occur at the surface as well as below the surface. This will require further investigation at specific site locations and could impact building design especially for foundations and any buildings with basements.

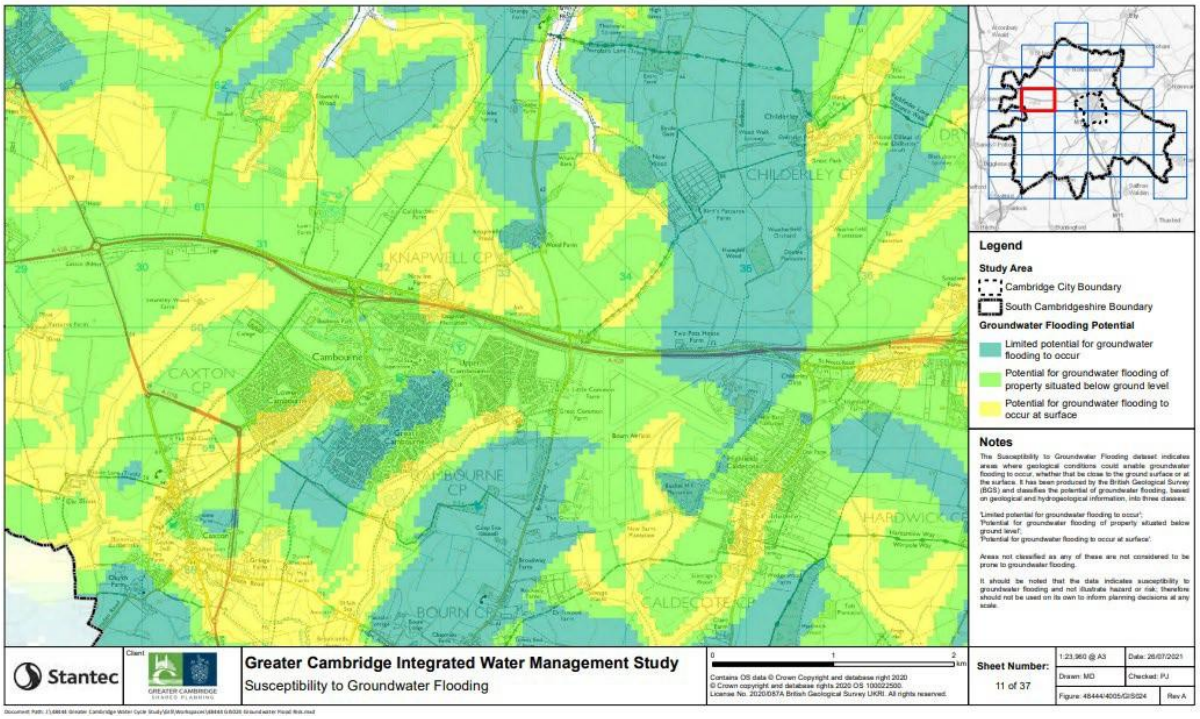


Figure 6 - Image from Groundwater Flood Risk Map

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025
Revision	02

2.4 Reservoir flood risk

Risk of reservoir flooding is not present within the Cambourne area as the SFRA study indicates that only areas in the far north of the Greater Cambridge area are within the flood extent of reservoirs, see Figure 7. This assessment only includes existing reservoirs and not any planned or future reservoirs.

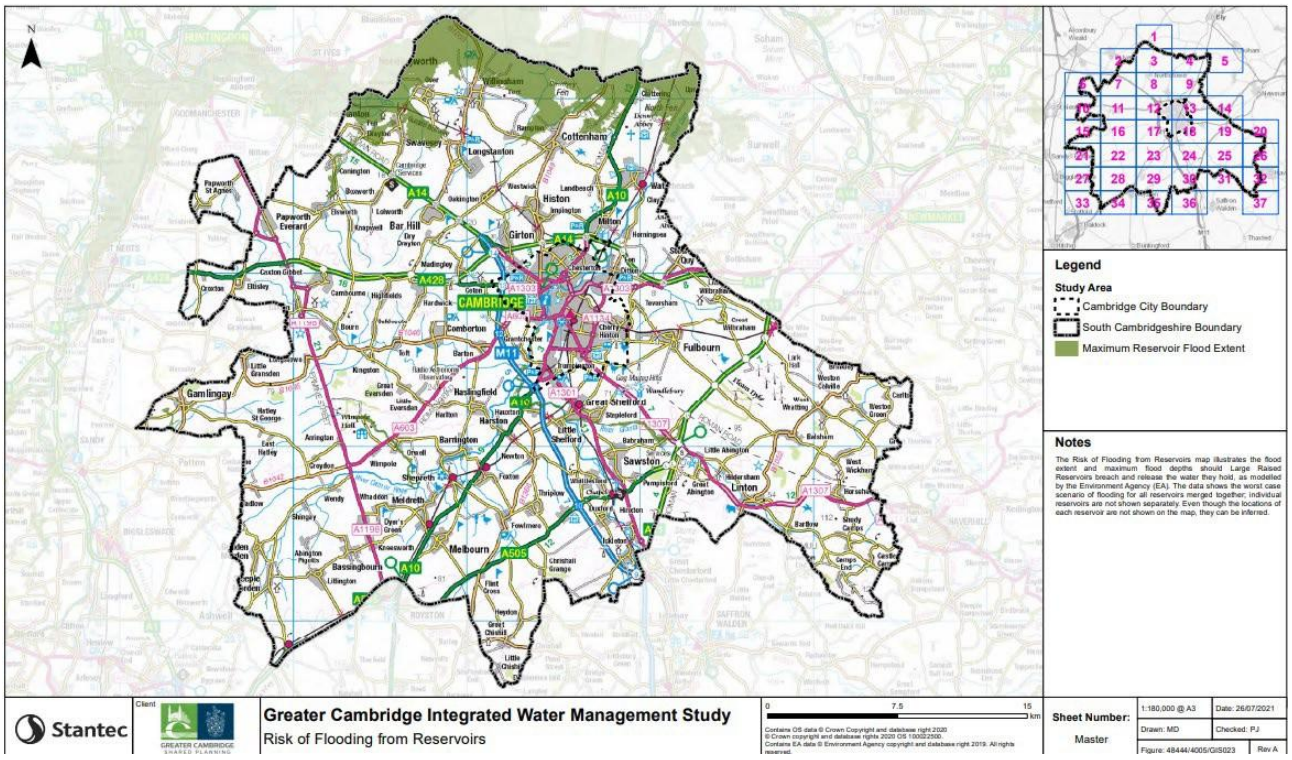


Figure 7 - Image from Reservoir Flood Risk Map

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025
Revision	02

2.5 Sewer flooding

The sewer flooding maps indicate areas where incidents of sewer flooding have been recorded by post code. The Cambourne area is in the highest range for this (Greater than >15 incidents, see Figure 8) and therefore greater investigation is advised to understand the performance and capacity of the local sewer network. Due to the strategic nature of the Cambourne Growth programme this risk is likely to be mitigated through the construction of new sewer infrastructure to support the significant growth in demand from the new developments.

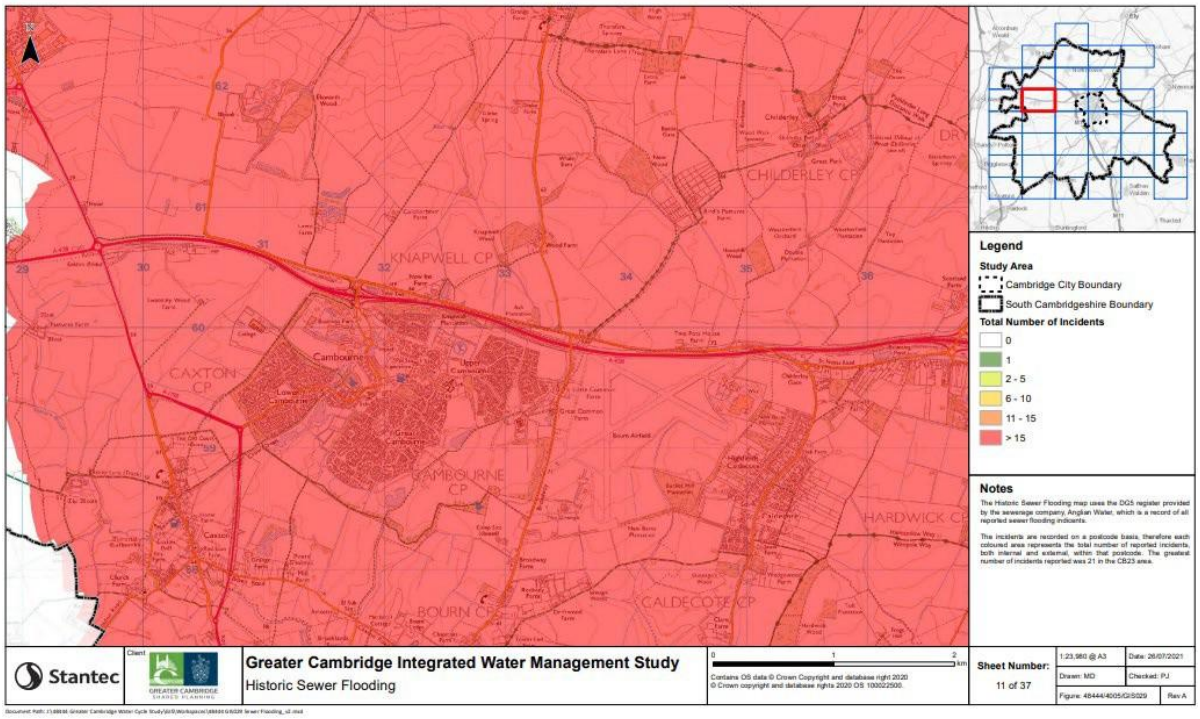


Figure 8 - Image from Historic Sewer Flooding Map

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025
Revision	02

3. Other key information

3.1 Climate change

Climate change has been factored in to varying degrees for the outputs of the SFRA. The fluvial flood map data includes inputs from various hydraulic models, see Figure 9 and Figure 10. Some of these include a climate change allowance.

The fluvial flood risk maps include hydraulic model inputs into the flood risk analysis, see Figure 9 and Figure 10. The 'Cam Rural' and 'Lower Ouse' models are the catchments in the vicinity of Cambourne and both include an allowance for climate change (20% allowance). Further investigation is advised to understand if this is a significant enough an uplift for the study area.

No climate allowance appears to have been added to the surface water flood risk and therefore a conservative approach is to assume the 0.1% (1 in 1000 year return period) extent may become the 1% (1 in 100 year return period) extent. Refer to section 7.2.2 of the SFRA for further information.

Model	Date	Type	Climate Change
Cottenham Lode PFS model	2003	ISIS	None
St Ives and Hemingford FAS model	2005	Mike 11 - 1D	None
Longstanton Brook Existing Situation	2006	Infoworks 1D	None
Vicars Brook Flood Zone improvements	2009	2D only JFLOW	None
Cam Phase 2 (Cam Lodes and Cam Urban)	2012	ISIS-TUFLOW 1D-2D	20% allowance
Coldhams Brook/Cherry Hinton Model	2013	ISIS-TUFLOW - 1D-2D	20% allowance for 0.1% probability event only
Cam Rural (Granta, Bourn Brook, Rhee, Ickleton, Cam and Non-Main Rivers)	2014	ISIS-TUFLOW 1D-2D	20% allowance
Lower Ouse Model	2015	ISIS/ESTRY-TUFLOW 1D-2D	20% allowance (25%, 35% and 65% allowance simulations are unstable)
Hauxton	2016	Third party (not available)	Not available
Gough Way Model	2017	1D-2D	20%, 25%, 35%, 65% allowances

Table 6-2: Detailed hydraulic model availability (Environment Agency)

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025
Revision	02

Figure 9 - Table extract showing the hydraulic model inputs into the flood maps and any climate change allowance. 'Cam Rural' and 'Lower Ouse' are the catchments in the vicinity of Cambourne.

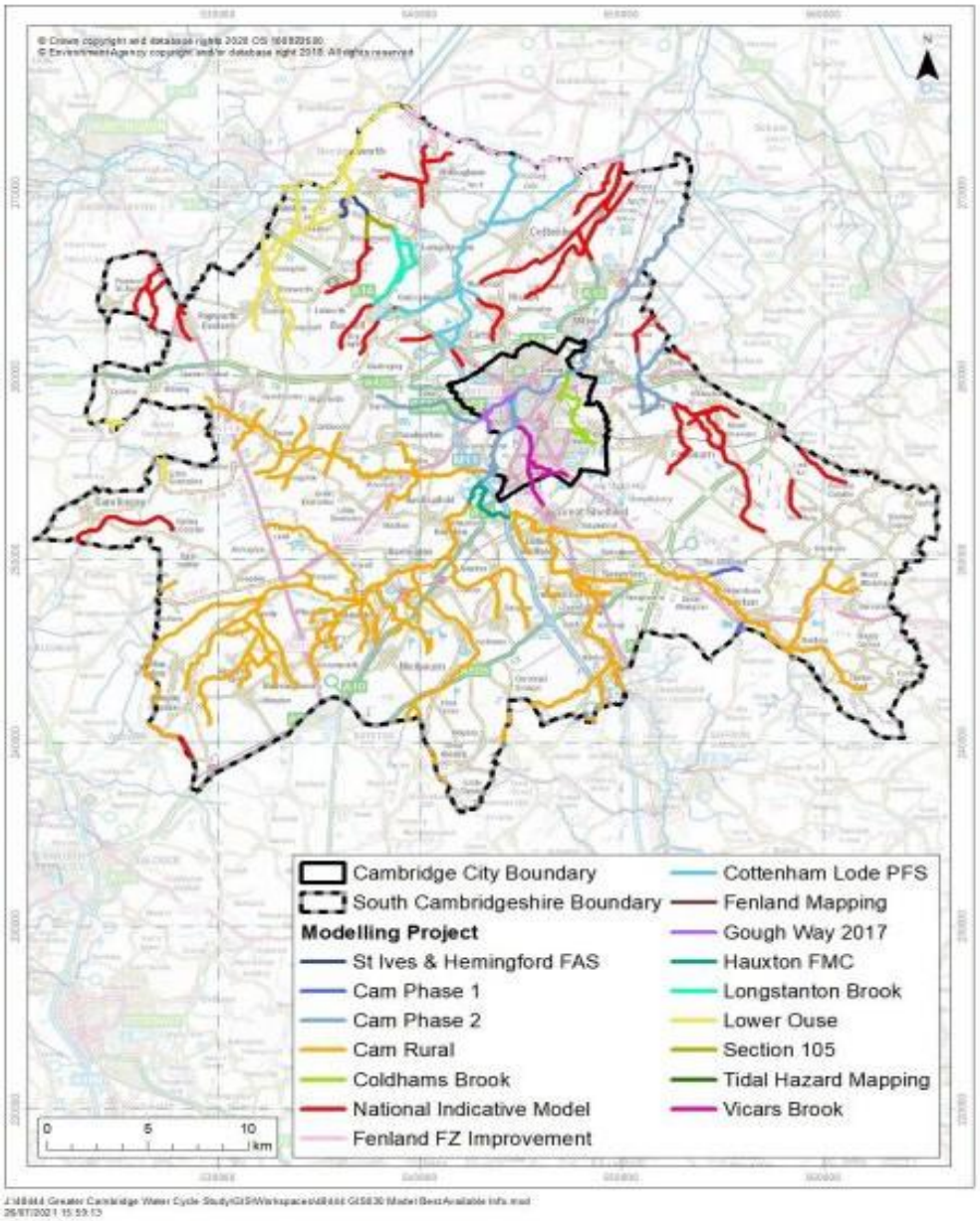


Figure 6-1: Environment Agency Model Extents

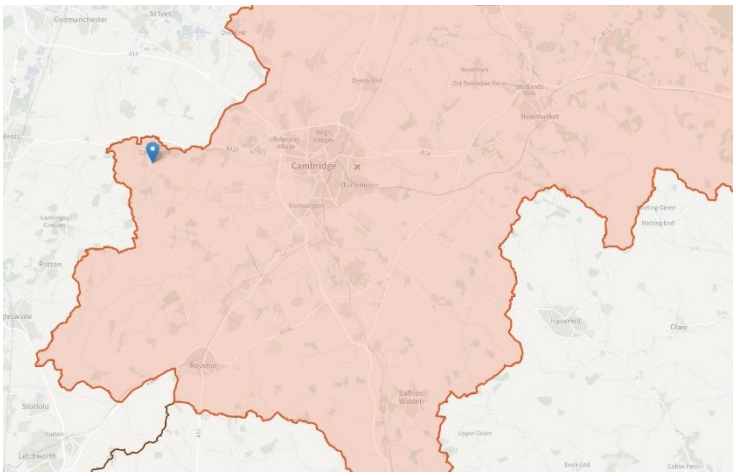
Figure 10- Extract showing the various hydraulics models that have inputted into the flood maps

The assessment of the SFRA Level 1 used the EA climate change allowances available at that time. Since the publication of the SFRA, The EA updated its guidance on Climate change allowance. The two relevant categories to Cambridge area are peak river flow allowance and peak rainfall intensity allowances.

The updated peak river flow allowance is now provided at the management catchment level. Allowances are categorised by percentiles:

- Central allowance: 50th percentile.
- Higher central allowance: 70th percentile.
- Upper end allowance: 95th percentile.

Cambourne and surrounding area fall within Cam and Ely Ouse catchment, the updated peak flow climate change increases shown in Figure 11 which are extracted from Department for Environment Food & Rural Affairs (DEFRA) website and should be applied based on the development vulnerability and flood zone.



Cam and Ely Ouse Management Catchment peak river flow allowances

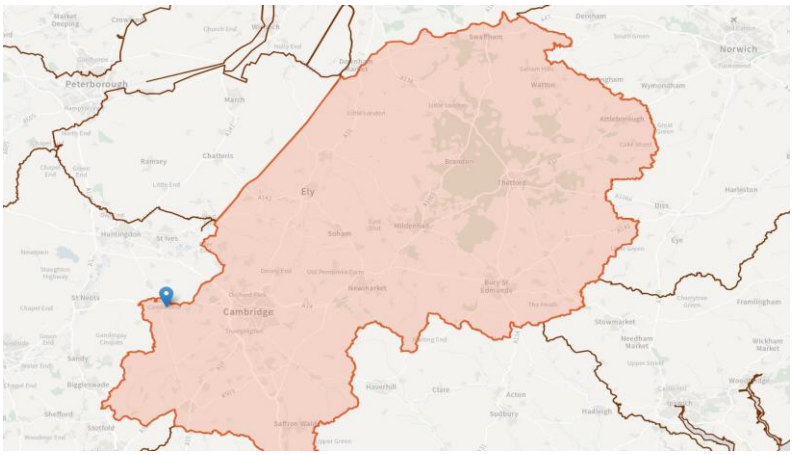
	Central	Higher	Upper
2020s	2%	7%	21%
2050s	2%	5%	22%
2080s	9%	19%	45%

This map contains information generated by UK Centre for Ecology and Hydrology using UK Climate projections.

Figure 11- Climate Change Allowances for Peak River Flow

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025
Revision	02

Peak Rainfall Intensity allowances are now specific to management catchments. Updated allowance are shown in Figure 12, these allowances should be used based on the development lifetime.



Cam and Ely Ouse Management Catchment peak rainfall allowances

3.3% annual exceedance rainfall event

Epoch

	Central allowance	Upper end allowance
2050s	20%	35%
2070s	20%	35%

1% annual exceedance rainfall event

Epoch

	Central allowance	Upper end allowance
2050s	20%	40%
2070s	25%	40%

*Use '2050s' for development with a lifetime up 2060 and use the 2070s epoch for development with a lifetime between 2061 and 2125.

This map contains information generated by Met Office Hadley Centre (2019): UKCP Local Projections on a 5km

Figure 12 – Climate Change Allowances for Peak Rainfall

The updated EA's flood mapping tool provides an option to show the fluvial flood risk with the climate change allowances applied. As shown in Figure 13, the majority of the study area have a negligible risk of fluvial flooding with few areas (highlighted in dark blue) classified as having a low risk of flooding (annual probability is 1% for rivers and 0.5 % for seas). This map should supersede the flood map in the SFRA Level 1 (202

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025
Revision	02

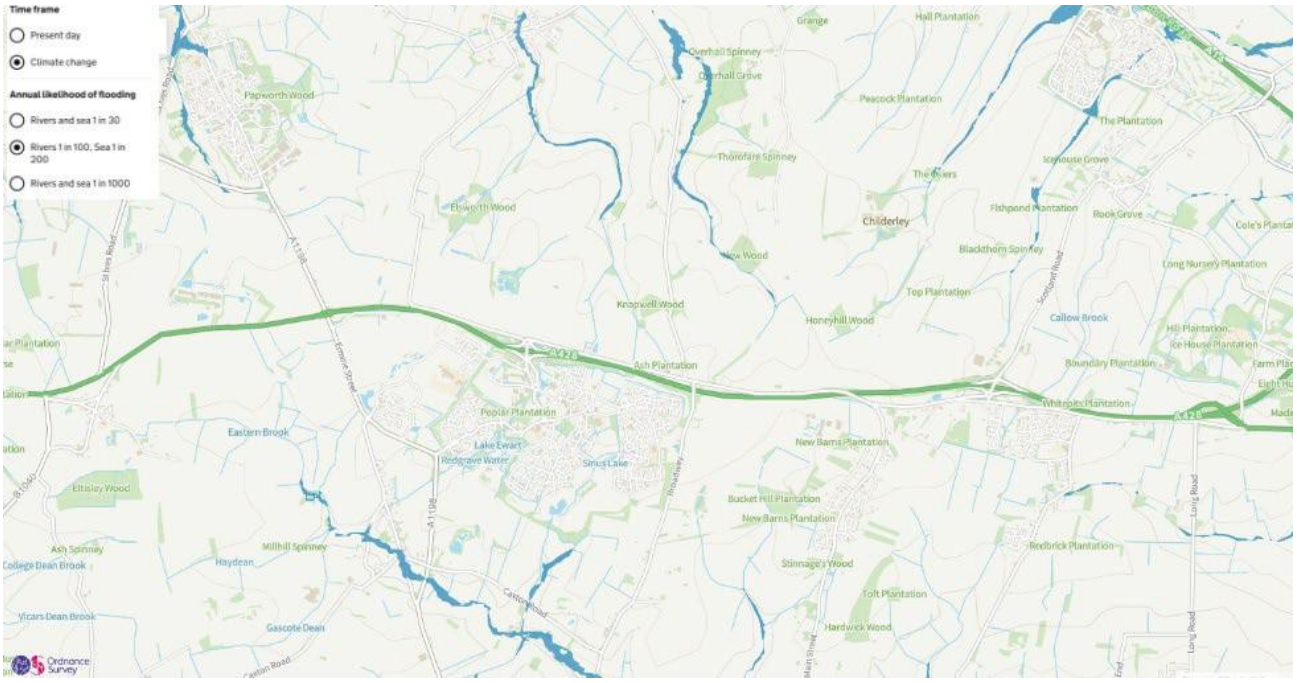


Figure 13 – EA's Updated Fluvial Flood Risk Map (including Climate Change Allowances)

The updated EA's Risk of Flooding from Surface Water (RoFSW) map shown in Figure 5 uses outputs from local detailed surface wate models and the New National Model (NNM) for surface water and accounts for the impact of climate change on the risk of flooding using the updated climate change allowances.

3.2 Data collection

Figure 9 and Figure 10 above highlight the hydraulic models that have inputted into the fluvial flood risk model. All other information inputs into the SFRA are what we would expect to see for a strategic flood risk assessment for Level 1. Further information including detailed level data, existing drainage networks surveys, geological data and other information will be required on a site-by-site basis for more site specific analysis.

Subject	SFRA Review
Job No/Ref	307292-04
Date	06 May 2025
Revision	02

4. Summary

In summary the SFRA provides an expected level of detail for a SFRA and generally, at a strategic level, the study area has a low flood risk. Areas immediately adjacent to the natural watercourses have a higher flood risk from rivers and surface water and this is to be expected. As specific sites and strategic masterplans are developed further flood risk analysis should be carried out on a site-by-site basis to minimise flood risk for new developments and downstream sites.

The risk of flooding from reservoirs is not present for the study area. There have been some instances of sewer flooding in the area and therefore this will also need to be considered on a site-by-site basis as plans develop. There is potential for groundwater flood risk, but this is based on high level geological data and therefore further investigation is needed on this on a site by site basis and could lead to increased mitigation measures for foundations and basements for buildings.

The EA most recent flood risk maps published on March 2025 have been reviewed against the SFRA maps and the EA maps should take precedence based on the most up to date modelling and climate change allowances. The SFRA is being updated by Stantec in the near future to ensure compliance with the newly released NaFRA2.