TECHNICAL NOTE

Cambridge South East Transport (CSET) Scheme

SUBJECT	PROJECT NO.	DATE
Flood modelling - Software version sensitivity test	5210174	24 July 2025

Document history

Revision	Purpose description	Originated	Checked	Reviewed	Authorised	Date
1.0	Issue	MG	PA	DP	EK	24/07/25

Introduction

The River Granta 1D/2D Flood Modeller and TUFLOW (FM/TUFLOW) baseline and scheme models were originally developed in 2022 to support the design and assessment of the scheme. The flood modelling work was finalised 2023 and submitted to the Environment Agency (EA) for review in November 2024. These runs utilized FM version 5.1 and TUFLOW version 2020, which were both supported versions at the time the modelling was being developed.

Since the modelling work was finailsed in 2023, there have been many updates to the flood modelling software. The initial review of the River Granta modelling by the Environment Agency identified that the work had not been carried out in the most recent version of the software and could therefore fail the review. A sensitivity test run has been carried out to provide confidence to the Environment Agency that the results of the original modelling work remain valid. The test is to run the flood model as currently set up but using the latest versions of Flood Modeller and TUFLOW and comparing the results to the original outputs.

Method and results

The River Granta baseline and scheme models are run again in July 2025 with FM 7.2 version and TUFLOW 2025.1.1-iSP-w64, to assess the model performance under the latest software conditions. The simulations are carried out for 1 in 100 event plus 45% climate change uplift (upper climate change allowance). This event was used in the original modelling work to calculate the floodplain compensation mitigation, and as such is replicated here to confirm the assessment remains valid.

The updated results indicate negligible differences in water level values compared to those generated in March 2023, demonstrating consistency across software versions. Table 1 and Table 2 show the water level comparison at the key locations for baseline and scheme, respectively. Figure 1 and Figure 2 show comparison between March 2023 and July 2025 flood extents, for 1 in 100 event plus 45% climate change event.

The July 2025 rerun confirms that the previous model results from March 2023 remain valid. The updated software versions do not affect the simulated water levels, and consequently to do affect the defined floodplain mitigation requirements.

Table 1 Comparison between 2023 and 2025 baseline maximum water levels (100yr + 45% climate change)

Location	Original results (mAOD)	Latest software version results (mAOD)	Impact (mm)
u/s Babraham Viaduct (Node: GR6600)	25.806	25.806	0
At the Babraham Viaduct (Node: GR6450)	25.521	25.522	1
d/s of Babraham Viaduct (Node: GR6390)	25.163	25.164	1
u/s of Stapleford Viaduct (Node: GR2400)	17.783	17.783	0
At the Stapleford Viaduct (Node: GR2400_i)	17.584	17.584	0
d/s of Stapleford Viaduct (Node: GR2200)	17.311	17.311	0

Table 2 Comparison between 2023 and 2025 scheme maximum water levels (100yr + 45% climate change)

Location	Original results (mAOD)	Latest software version results (mAOD)	Impact (mm)
u/s Babraham Viaduct (Node: GR6600)	25.807	25.807	0
At the Babraham Viaduct (Node: GR6450)	25.522	25.522	0
d/s of Babraham Viaduct (Node: GR6390)	25.163	25.164	1
u/s of Stapleford Viaduct (Node: GR2400)	17.785	17.785	0
At the Stapleford Viaduct (Node: GR2400_i)	17.592	17.593	1
d/s of Stapleford Viaduct (Node: GR2200)	17.313	17.313	0

Figure 1 Comparison between 2023 and 2025 baseline flood extents (1 in 100 + 45% climate change)

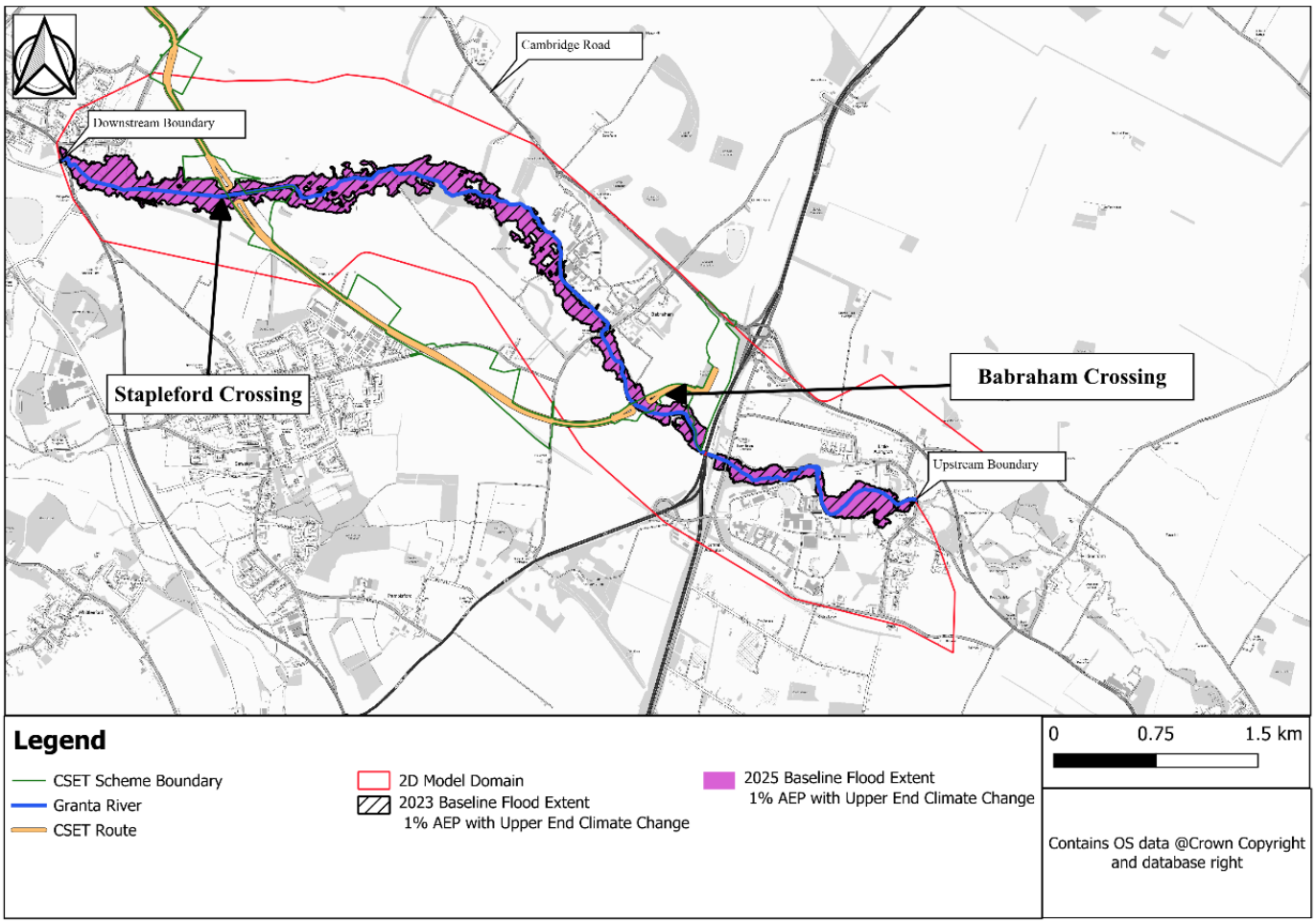
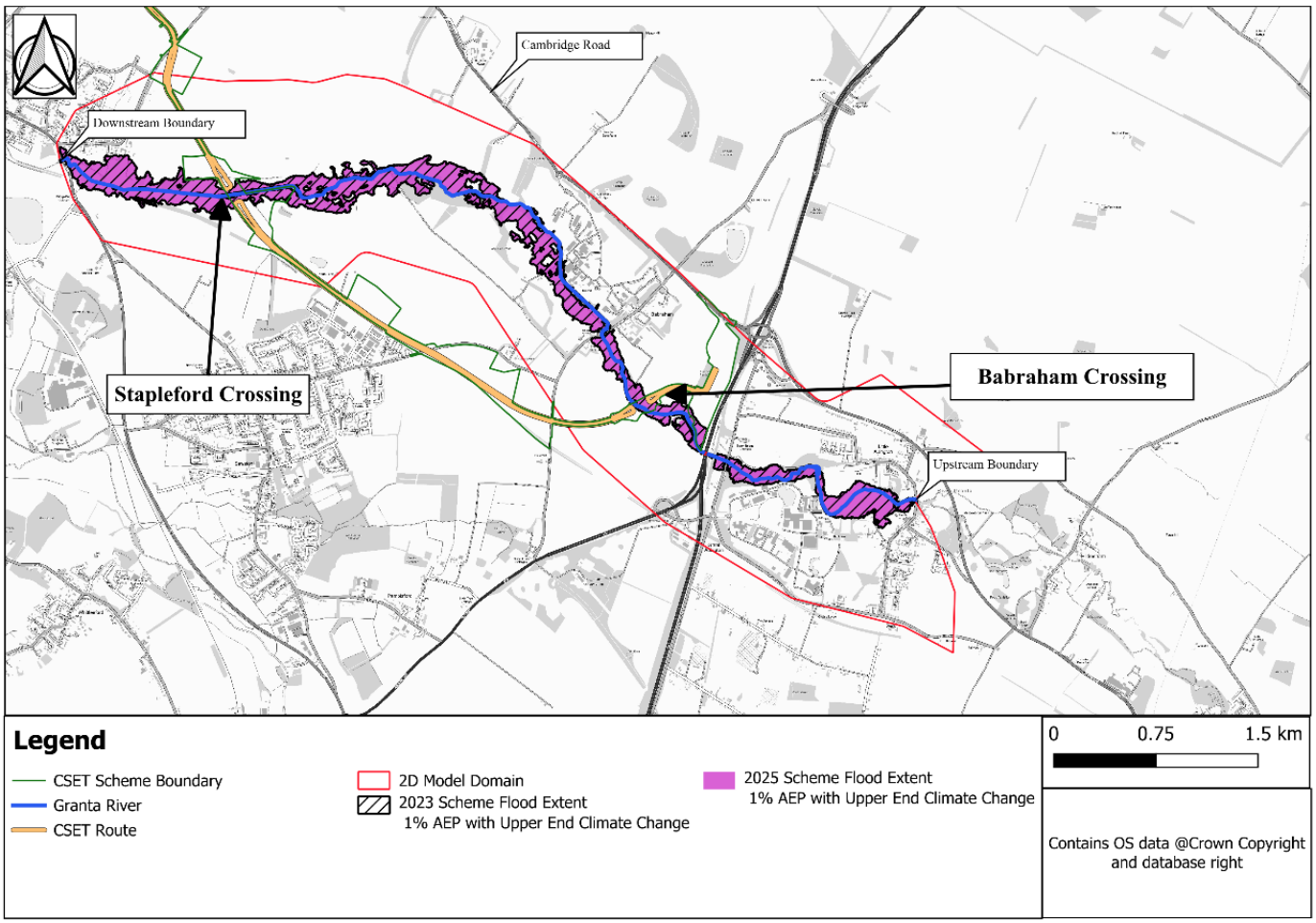
Figure 2 Comparison between 2023 and 2025 scheme flood extents (1 in 100 + 45% climate change)