



Technical Note – Chichester District Council 2023 SFRA

13 September 2024

The Strategic Flood Risk Assessment (SFRA) is primarily a planning tool. It is a pragmatic, risk-based assessment of flood risk to inform the spatial planning process. It is also an evidence-based document which supports the implementation of Supplementary Planning Guidance, Environment Agency Flood Risk and Coastal Erosion Risk Management Policy and other policies within the Local Plan.

The methodology followed in the preparation of an SFRA is designed to comply with the National Planning Policy Framework (NPPF), updated December 2023, and the accompanying Technical Guidance as well as guidelines from the Environment Agency (EA). Matters for consideration during the preparation of a SFRA are outlined below with particular reference to Coastal and Tidal Flood Risk and how this should be accounted for as part of the SFRA process.

Planning Practice Guidance was updated in August 2022 primarily to instruct Councils and Developers to make allowances for climate change (CC) during the planning decision-making process. They provide a range of allowances for each epoch for future sea level rise. For site-specific Flood Risk Assessments and Strategic Flood Risk Assessments, evaluation is required for both the 'Higher Central' +70%CC and 'Upper End' +95%CC scenarios. To help decide which allowance is to be used to address flood risk for a development or development plan allocation, the following needs to be considered;

- Likely depth, extent, speed of onset, velocity and duration of flooding for each allowance of climate change over time.
- Vulnerability of the proposed development types or land use allocations to flooding.
- 'Built in' measures used to address flood risk, for example, raised floor levels.
- Capacity or space in the development to include measures to manage flood risk in the future, using an adaptive approach.

Chichester District Council (CDC) have updated their Level 1 SFRA 'Final' December 2023 based on the coastal modelling undertaken for them by JBA Consulting in 2022. Key objectives of the SFRA are to provide updated surface water, coastal and fluvial climate change modelling in line with the EA's updated guidance and the updated climate change requirements provided in the Planning Practice Guidance as detailed above.

The updated 2022 SFRA modelling shows significant changes from the previous 2018 SFRA model and now shows extended areas, particularly along the coastline, as being liable to tidal flooding changing the Flood Zone classification from Flood Zone 1 (lowest classification in England) to Flood Zone 3b (high risk, functional floodplain).

Figures 01, 02 and 03 below, centred on East Wittering, show the changes to the flood zone classification from the previous 2018 SFRA to the 2022 SFRA modelling showing the extents for Flood Zone 3b, and the extents of flooding when climate change is applied to the area.

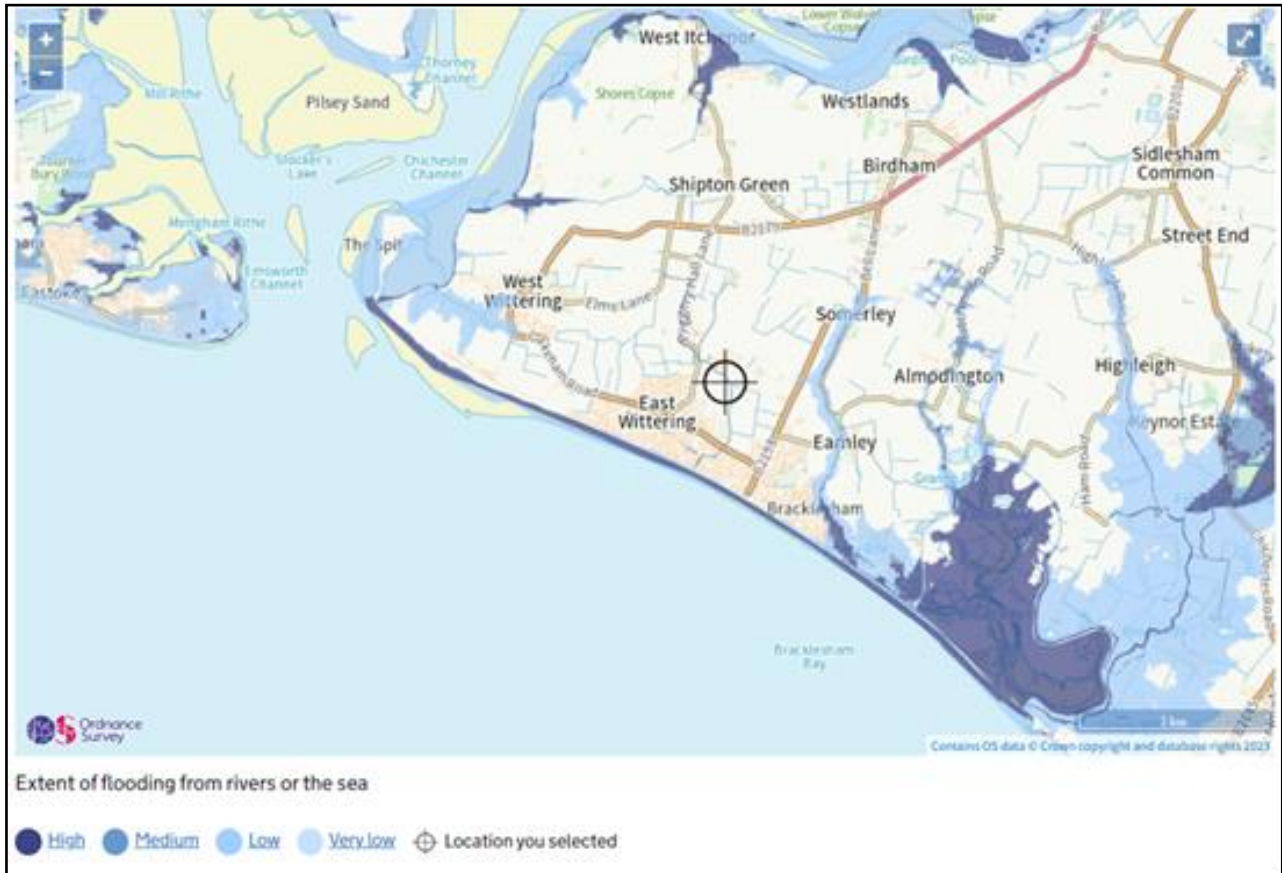


Figure 01 - Flood Zone Classification taken from the Arun to East Head model Centred on East Wittering - CDC 2018 SFRA

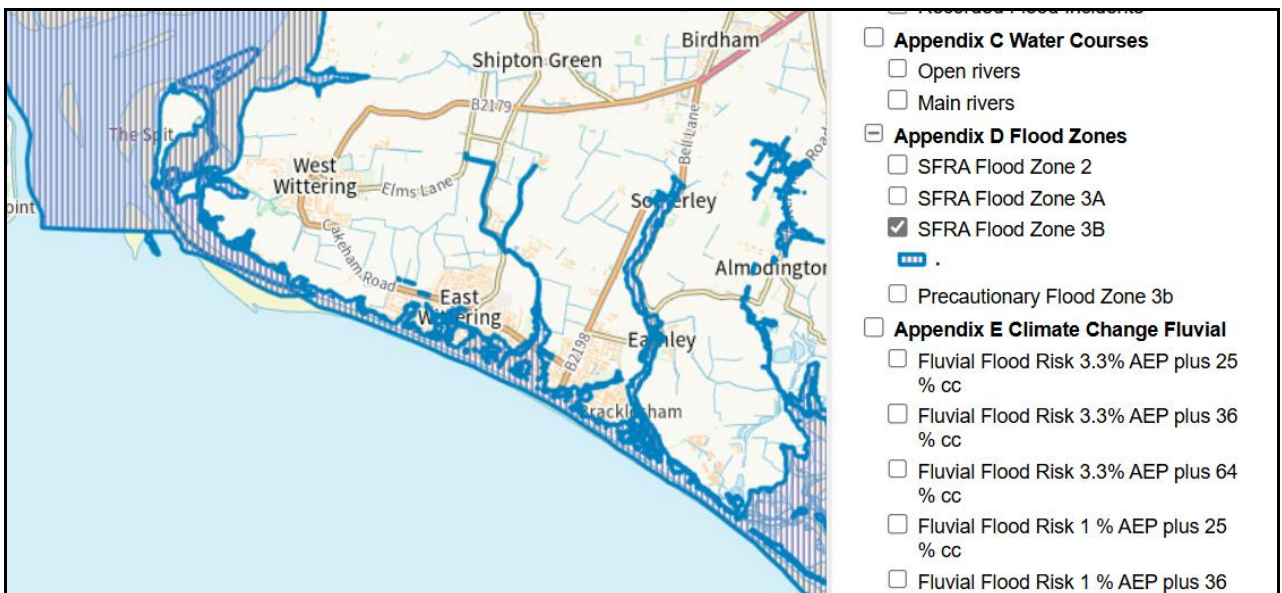


Figure 02 – Flood Zone Classification taken from the Arun to East Head model Centred on East Wittering – CDC 2023 SFRA Interactive Maps showing extensive ‘Present Day’ areas now in Flood Zone 3b Functional Floodplain

Figure 02 shows the Flood Zone 3b Functional Floodplain extents taken from the 2022 SFRA model. Flood Zone 3b represents predicted flood risk in 1 in 30yr (3.33% AEP) storm event. This is referred to as a ‘present day’ event which occurs more frequently. The Environment Agency have advised that a recent storm event in April 2024 ‘Storm Kathleen’ presented a 1 in 50 to a 1 in 75 year storm return event but the current SFRA model predicts that significant flooding should have occurred in East Wittering. In complete contrast, no such flooding was witnessed or recorded, meaning that the current 2022 SFRA model for the present day scenario is overestimating the risk of flooding in East Wittering.

There is no record of tidal flooding to East Wittering from any storm event since records began approximately 80 years ago. These embedded flaws in the ‘present day’ model are amplified when future climate change is applied to the model resulting in unrealistic outputs as illustrated in **Figure 03** below.

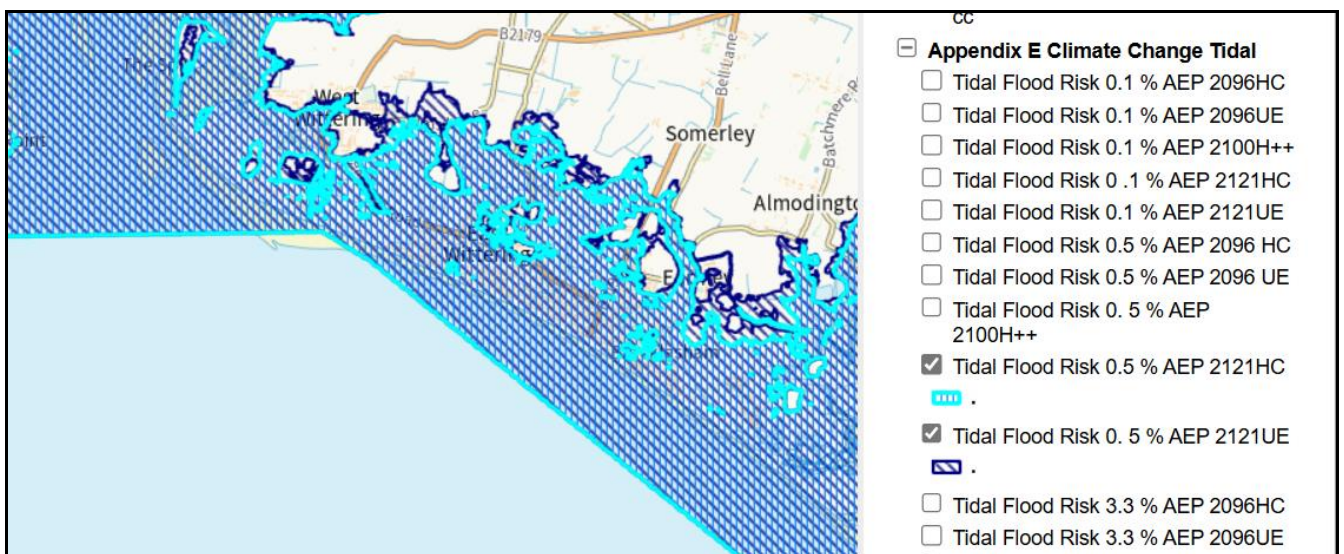


Figure 03 – Flood Zone Classification taken from the Arun to East Head model Centred on East Wittering – CDC 2023 SFRA Interactive Maps for the 1 in 200 year storm showing with the Higher Central (+70%) and Upper End (+90%) allowances for climate change

Figure 03 shows the current SFRA’s assessment for future flood risk for East Wittering when applying an allowance for climate change which is relied upon during the planning decision making process. The inherent flaws identified in the present day model are amplified when climate change is applied meaning that the entire area of the Witterings and Bracklesham, for example, are all placed in Flood Zone 3b and therefore incapable of sustainable development as defined within the NPPF.

‘Coastal Modelling Standards Update’, dated 21 April 2022, Revision 1.1, produced by Jacobs UK Limited for the Environment Agency, provides guidance and standards to councils on how to produce flood maps for Strategic Flood Risk Assessments. These include a requirement for the models to be calibrated to represent real life flood events to provide a sense check and give confidence in the model outputs. For example, if a town has not flooded in the last 80 years, the model should show no flooding in this time period. If however, the model shows frequent flooding in areas where no flooding has been recorded, it suggests the model is flawed and not fit for purpose. A model must present correct outputs for both the present day and the future flood risk scenarios. This is done via a calibration and validation process.

The current model has not been calibrated and the timely validation event ‘Storm Kathleen has exposed the obvious flaws in the model as the town did not flood contrary to the model’s present day mapping. Every



storm event provides a record that is used to adjust a model to improve confidence in its outputs. Storm Kathleen shows how unrealistic the current model is.

The current model shows that predicted flooding would be caused by wave overtopping. This is the main risk to East Wittering and the Environment Agency advises the following in a position statement letter to CDC dated 14 June 2024;

'For areas such as East Wittering there are often no raised flood defences as the ground level is already high enough to resist tidal inundation due to high sea levels. For much of these areas the only defence in place is the shingle beach which absorbs wave energy. This causes a problem when trying to estimate wave overtopping volumes for the undefended scenario as there is no obvious or measurable defence profile to use. This means that the undefended scenario does not include wave overtopping whereas the defended scenario does. When drawing the Flood Zones we overlay the defended and undefended extents to account for both mechanisms'

East Wittering is protected by shingle beaches without any formal raised flood defences. The current model assumes formal raised flood defences along this entire stretch of coastline and incorporates wave overtopping volumes in the outputs, contrary to the EA's advice above. In this scenario the model assumes that perceived inundation caused by wave overtopping is unable to return to the sea resulting in significant inundation to the town and surrounding area which does not follow guidance provided in the EA's Coastal Modelling Standards.

As a result of the obvious flaws in the current model, independent flood modelling has been undertaken by two internationally renowned UK companies (HR Wallingford and Royal Haskoning DHV) who are experts in this field. These companies have been selected as they are currently participants in the Coastal Partners framework with Chichester District Council and 4 other councils covering coastal modelling along the south coast.

The outputs for Future Flood Risk (worst case scenario) are presented in **Figures 04 and 05** below. For coastal flood risk, the 1 in 200 year storm return event must be considered with additional allowance for climate change (+70% Higher Central and +95% Upper End allowances).

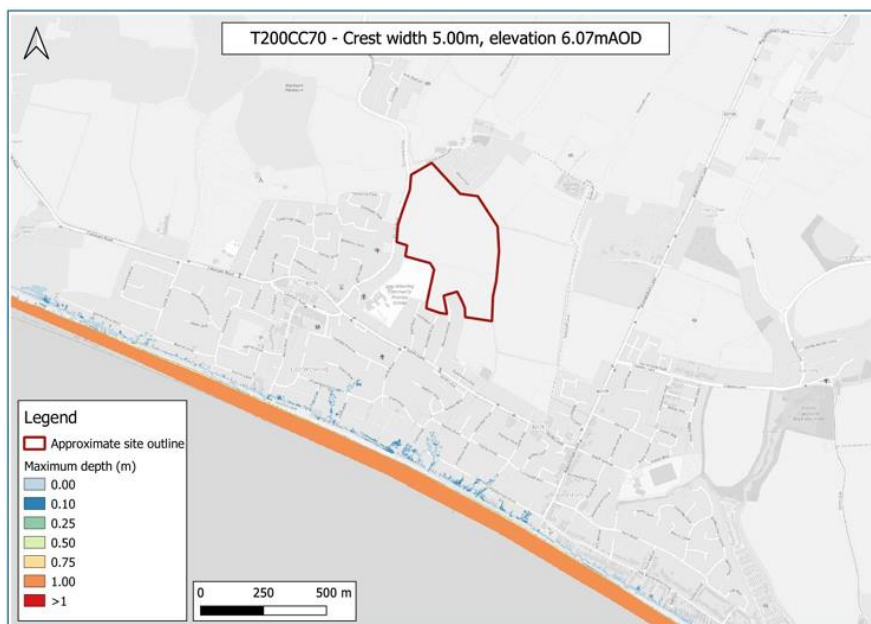


Figure 04 - Extent of Future Flood Risk from Tidal Flooding Centred on East Wittering during the 1 in 200 year storm event with +70% additional allowance for climate change

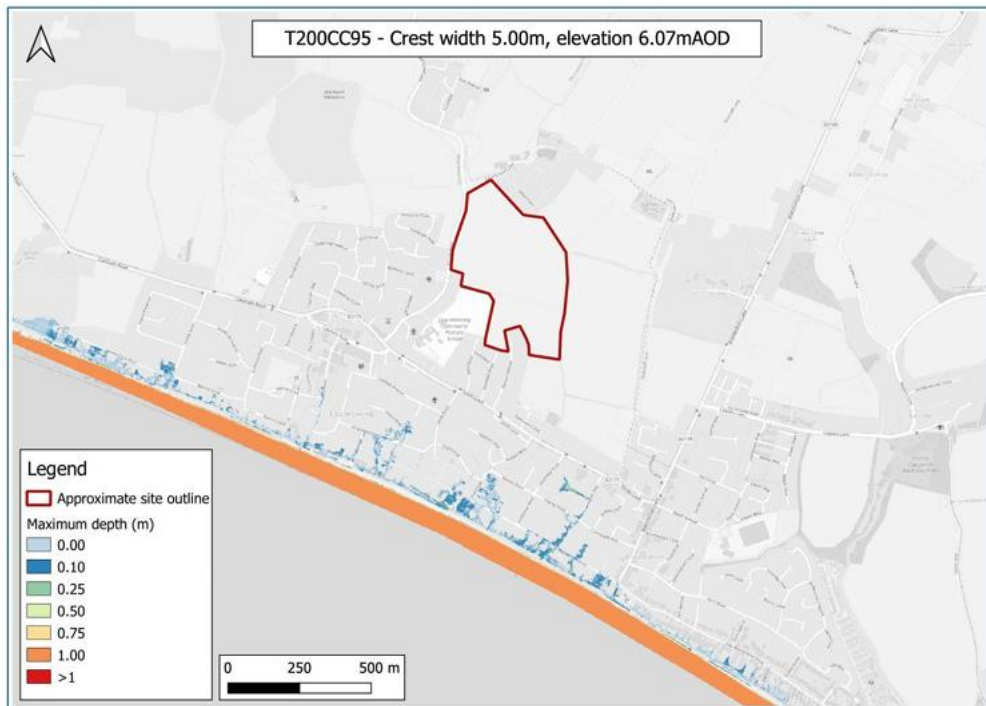


Figure 05 - Extent of Future Flood Risk from Tidal Flooding Centred on East Wittering during the 1 in 200 year storm event with +95% additional allowance for climate change

In conclusion, it is in the interest of all parties for a flood model to represent realistic conditions both in the present day and in the future. Where a model presents extreme inundation in the present day events, this error is amplified when future flood risk is taken into account. Furthermore, where a model shows an established community in the functional floodplain, when there is no history of coastal flooding, the impact on its residents is profound as it will negatively affect homes and businesses, property values, potential for economic growth and the ability for local extensions to their homes as location in a functional floodplain is extremely restrictive in planning terms. East Wittering is clearly not in the functional floodplain, Flood Zone 3b.

In light of the flaws identified in the current model, and its failure to accurately reflect the timely validation event which Storm Kathleen has presented, the current model should be updated to provide confidence in its outputs as they are crucial for the spatial planning decision-making process in the local plan.

Ends.