

Tonbridge and Malling Borough Council Level 1 SFRA – Methodology in support of Performing the Sequential Test

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Purpose

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Revision History

Revision Ref/Date	Amendments	Issued to
V1 May 2024	Draft Report	Julian Ling (Tonbridge and Malling Borough Council)
V2 July 2025	Draft Report	Julian Ling and Jenny Knowles (Tonbridge and Malling Borough Council)
V3 October 2025	Final Report	Julian Ling and Jenny Knowles (Tonbridge and Malling Borough Council)

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Environment Agency and Kent County Council Consultation

The Environment Agency and Kent County Council have been consulted on the approach to the Sequential Test. The Sequential Test Methodology has been agreed by the Environment Agency on 24th July 2023 and Kent County Council on 18th December 2023.

1 Introduction

1.1 Background

Following a meeting convened with Tonbridge and Malling Borough Council, Sevenoaks District Council, Kent County Council (Lead Local Flood Authority) and JBA Consulting, it was agreed that a technical note would be prepared to encapsulate the discussion and provide a way forward on formalising the arrangements to perform the Sequential Tests for Tonbridge and Malling Borough Council. The need to address this matter resulted from changes to the NPPF in July 2021 and the lack of any formal published guidance to describe how such a test should be performed at that time.

The scope and extent of changes to the PPG in August 2022 required that additional analysis and mapping is prepared so the content of the SFRA addresses the new matters introduced in the updated guidance.

The NPPF was further updated in December 2024 and February 2025 and new national data was issued by the Environment Agency in March 2025. Furthermore, the PPG has been updated in September 2025. Therefore, this document has been reviewed and updated to ensure this still aligns with this policy.

This document addresses the use of flood risk information in the performance of the Sequential Test with the aim of confirming that the LLFA and Environment Agency maintain their agreement in principle to the modified flood risk approach, does not include the consideration of wider planning issues as set out in the Sustainability Appraisal and also outlines the proposed modifications to the approach to assessing groundwater flood risk.

1.2 Summary of changes

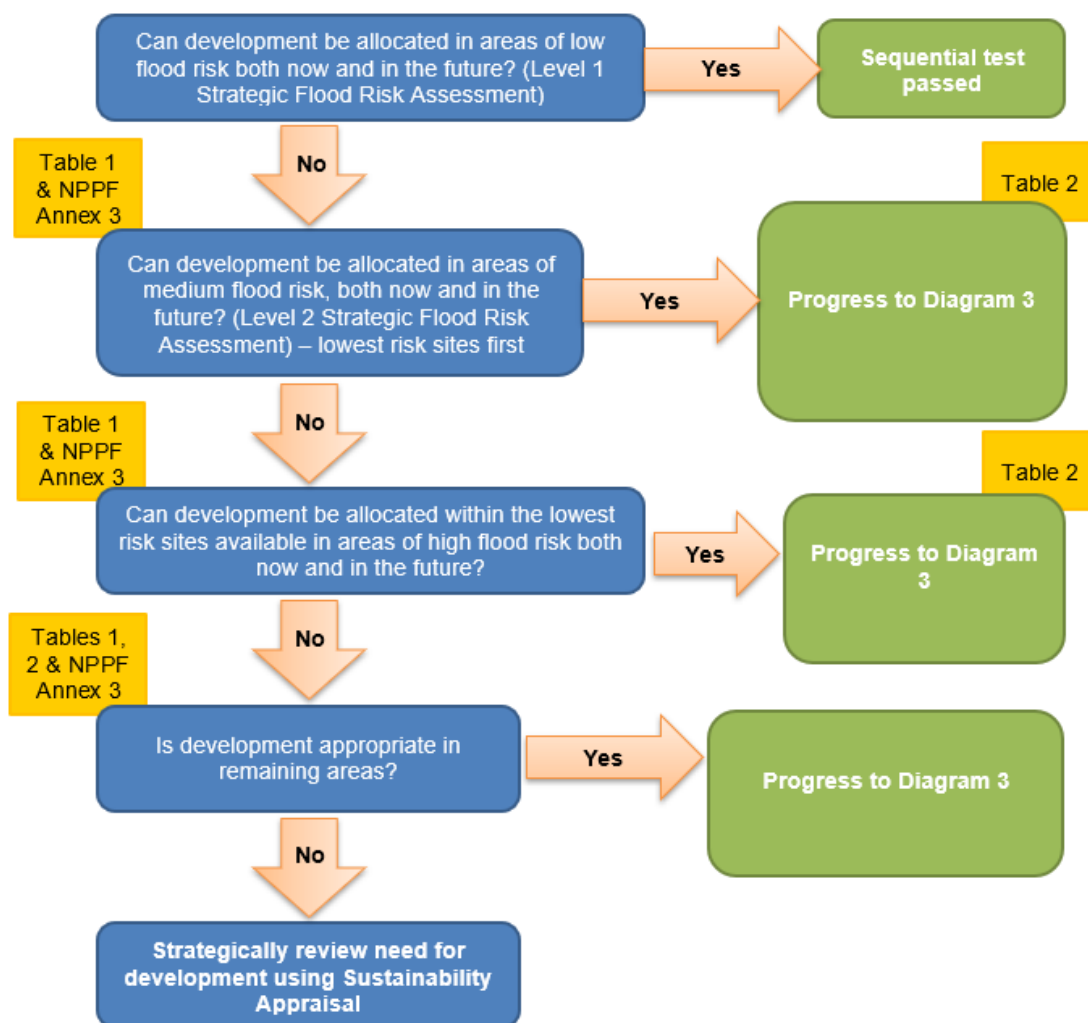
Paragraph 172 of the NPPF has been changed such that the recommended approach to the Sequential Test must now *"All plans should apply a sequential, risk-based approach to the location of development – taking into account all sources of flood risk and the current and future impacts of climate change – so as to avoid, where possible, flood risk to people and property."*

Prior to the changes to the NPPF the recommendation was set out as follows and only included consideration of river and sea flood risk when applying the Sequential Test:

Previous Policy Wording (pre-2021)	Policy Wording (December 2024)
The aim of the Sequential Test is to steer new development to areas with the lowest risk of flooding <i>(the Planning Practice Guidance advised that the exercise should be performed using the flood zones, as describe river and sea flood risk assuming there are no flood risk management measures or defences in place)</i>	The sequential test should be used in areas known to be at risk now or in the future from any form of flooding.

The August 2022 PPG application of the Sequential Test diagram (Figure 1-1) shows that flood risk should preferably be considered in terms of low, medium and high-risk areas, both now and in the future. To address this recommendation it is necessary to explicitly consider the effects of climate change when performing the Sequential Test.

Figure 1-1: Diagram 2 in PPG



Furthermore, the PPG was updated in September 2025. Substantial changes were made to paragraph 27. Specifically, it now states that "*in applying paragraph 175 [of the NPPF] a proportionate approach should be taken*". It goes on to state that the Sequential Test is not required where "*a site-specific flood risk assessment demonstrates clearly that the proposed layout, design, and mitigation measures would ensure that occupiers and users would remain safe from current and future surface water flood risk for the lifetime of the development [...], without increasing flood risk elsewhere*".

The PPG caveats the sentence "*The absence of a 5-year housing land supply is not a relevant consideration in applying the sequential test for individual applications*" (moved from paragraph 28) with the following: "*However, housing considerations, including housing land supply, may be relevant in the planning balance, alongside the outcome of the sequential test*".

Paragraph 27a incorporates elements from the former paragraph 27, retaining the principle that the Sequential Test area depends on local circumstances. Of particular note is the inclusion of the following sentence: "*Equally, where there are large areas in Flood Zones 2 and 3 (e.g. coastal towns and settlements on major rivers) and development is needed in*

those areas to sustain the existing community, sites outside them are unlikely to provide reasonable alternatives."

This paragraph also introduces new consideration when splitting large scale development across alternative sites: *"It may also, in some cases, be relevant to consider whether large scale development could be split across a number of alternative sites at lower risk of flooding, but only where those alternative sites would be capable of accommodating the development in a way which would still serve its intended market(s) as effectively."*

1.3 What happens next

Formal confirmation will again be sought from the LLFA and Environment Agency to confirm that the proposed modified approach outlined in this document to address surface water and groundwater flood risk and the Sequential Test will be supported in principle at Examination. The content of the SFRA will be prepared on the basis of the agreed approach.

The Level 2 SFRA (should it be required) will involve more detailed consideration of surface water drainage, reservoir flooding and groundwater than was the case prior to the NPPF and PPG updates. The implications of this have not been assessed in this document.

In some circumstances the proposed approach will require more detailed consideration of surface water drainage requirements in the Level 2 SFRA. At this stage it might be necessary and appropriate to engage more closely with Southern Water and Thames Water (responsible for sewerage) in circumstances where there is long term reliance on the performance of existing drainage systems affected by lack of capacity as a consequence of climate change effects (increased rainfall intensities and depths)

2 Summary of influential changes to the NPPF and PPG implications for Sequential and Exception Tests

2.1 Summary of implications of changes

The Sequential Test was originally conceived to direct proposed new development to locations that did not rely on Flood Risk Management features, so they are inherently safe and don't place a burden on future generations. This was achieved using a set of "Zone" maps that showed the extent of river and sea flooding for circumstances where no defences were present for events with high, medium and low probability. Following this approach delivers new development that will not require future investment in flood risk management.

The test process recognised that in some circumstances it would not be possible to locate development in locations outside of medium and high-risk flood Zones, as there were no reasonable alternatives. In circumstances where the Sequential Test has been performed but is not satisfied the policy requires that the Exception Test is performed. The Exception Test is a two-part process that requires preparation of evidence to demonstrate that development proposals at risk of flooding deliver wider sustainability benefits and that it can be made safe for the intended lifespan (thus it is a requirement to demonstrate that proposed development will be safe under climate change conditions).

The updated NPPF recommends the application of the Sequential Test to any source of flooding. The general implications of this are summarised as follows:

- The Sequential Test should preferably be based on mapping that enables decision making according to a prioritisation based on a risk-based sequence (for river and sea flooding national mapping is available that describes low, medium and high risk flood zones but comparable mapping of this specific type and quality is not available for other sources. For river and sea flooding the risk zones are based on the assumption that no flood risk management features are present).
- The other sources of flood risk that can potentially be included in the Sequential Test are surface water, groundwater, sewer flooding and reservoir flooding (or other water impounding features such as canals).
- It follows that proposed new development placed in locations at high or medium risk from flooding from other sources now and in the future (*note that the explicit requirement to include climate change in the test, as set out in the August 2022 PPG will require the preparation of additional modelling and mapping*) should be accompanied by evidence that the Exception Test can be satisfied (in a Level 2 SFRA).

The updated PPG recommendations are summarised below:

- The PPG now states that the Sequential Test is not required to consider surface water flooding if it can be shown a development can be made safe from surface water flooding for its lifetime without impacting on flood risk elsewhere. Therefore, on the basis that this can be demonstrated within a site-specific FRA, there will no longer be a requirement to consider the Sequential Test for surface water.
- The PPG makes clear that a Sequential Test is still required where there is an absence of a 5-year housing land supply. However, the outcome of the Sequential Test should be considered alongside other aspects including housing land supply. Therefore, failure of the Sequential Test will not necessarily mean that a development should be refused.

- The guidance now promotes greater flexibility and pragmatism in terms of the search area which may be restricted to certain settlements and communities rather than a Council area- wide approach. Clarity is also provided in relation to coastal communities and settlements on major rivers where it may be appropriate to reduce the search area to the community to avoid a situation where the existing community is no longer sustained.
- Greater emphasis has been added meaning that reasonably alternative sites need to meet the same development needs as a proposed development. Developers should also not now need to consider part of a larger site in their search. This means that there will be a smaller number of sites which will be considered reasonably alternative.

A basic requirement for the Sequential Test to be performed is that appropriate, competent mapping is available to enable logical comparison of the flood risk from different sources at alternative locations, as this is a fundamental requirement to establish a logical “risk sequence”.

The following summary of the available data and mapping:

- describes the implications of including any source of flooding in the Sequential Test;
- highlights matters to be considered; and
- identifies a preferred approach.

2.1.1 River and sea risk – now and in the future

Implications

Source of Flooding	Available Mapping	Implications of making use of mapping in the Sequential Test
Rivers and sea	Flood Map for Planning, Environment Agency's Risk of Flooding from Rivers and Sea dataset and detailed flood models	- The Sequential Test can be carried out using the Flood Map for Planning for present day low (Flood Zone 1), medium (Flood Zone 2) and high risk (Flood Zone 3a) as previously was the case. - Future Flood Zones will be assessed with climate change allowances as prepared within the SFRA Appendix A

Recommendations for using river and sea flood risk in the Sequential Test

- For present river flood risk, the EA's Flood Zones 1, 2 and 3a should be used
- For future river flood risk, the 1% AEP event and 0.1% AEP event with climate change allowances should be used.
- For present tidal flood risk, the EA's Flood Zones 1, 2 and 3a should be used.
- For future tidal flood risk the 0.5% AEP event and 0.1% AEP event including climate change allowances (using the Upper End allowances for 2097 and 2122 to account for the potential vulnerability of proposed development on low lying coastal areas to climate change effects) should be used.
- The Environment Agency's national team have been consulted and confirmed that they recommend that future Flood Zones 1, 2 and 3a are assessed as part of the Sequential Test.

2.1.2 Surface water flood risk

Implications

Source of Flooding	Available Mapping	Implications of making use of mapping in the Sequential Test
Surface Water	Risk of Flooding from Surface Water (RoFSW) 0.1% AEP RoFSW mapping while climate change mapping is not available. Once available RoFSW Climate Change mapping.	• Mapping based on a generalised modelling methodology. • Doesn't always include allowance for drainage features such as culverts and can over or underestimate flooding where there are linear features such as embankments. • Unlike the Zone maps for river and sea flooding the surface water mapping makes an allowance for the assumed performance of a local drainage system. • Normal profile of extent and shape of flooding is a "dendritic" pattern that follows low lying topography and is not an extensive blanket, as is most often the case for river and sea flooding. • The flood risk is normally more likely to be relatively short lived and much more localised than would be the case for river flooding (most likely being caused by local high intensity short duration rainfall events). • In some cases, the surface water flood risk could affect a relatively small proportion of a proposed allocation site. In practical terms, this may not prevent the principle of development from being supported. This would need to be considered on a case-by-case basis. • Current surface water mapping with climate change is insufficient as the time horizon is too short for most development types and the climate change scenario is insufficiently precautionary. Appropriate mapping is expected to become available by Summer 2026. While the data is not available use the 0.1% AEP present day surface water extent should be used as a proxy for the 1% AEP plus climate change event.

Recommendations for surface water flooding

Use the following surface flood extents to define high, medium and low risk:

High risk - 3.3% AEP (1 in 30-year)

Medium risk – between 1% AEP (1 in 100-year) and 3.3% AEP (1 in 30-year)

Low risk – between 0.1 AEP% (1 in 1000-year) and 1% AEP (1 in 100-year)

The Risk of Flooding from Surface Water dataset does not currently include climate change outputs. As such, the low risk 0.1% AEP (1 in 1,000-year) surface water extent should be used as a proxy for climate change. Once climate change outputs are available, these should be used.

The use of these surface water events should be done with caution due to the highlighted uncertainties in the surface water modelling and mapping.

Surface Water mapping does not strictly describe the same conceptual risk zone as defined for river and sea flooding (even though it is associated with the same probability), as the mapping is based on different assumptions and is filtered to remove shallow depths of

water. However, it does create a product that can accommodate sequential testing, as it would facilitate strategic decisions that directed development to land in lower risk areas.

The proposed approach is relatively simple and enables an appropriate level of sequential selection to be made. It is not totally aligned with the river and sea zones (but this is appropriate as the mapping is not based on the same parameters), but from a practical perspective it is strongly aligned with the sequential test defined in para 175 of the NPPF. For these reasons it is recommended.

If it can be shown a development can be made safe from surface water flooding for its lifetime without impacting on flood risk elsewhere, on the basis that this can be demonstrated within a site-specific FRA, there will no longer be a requirement to consider the Sequential Test for surface water.

2.1.3 Groundwater flood risk

Implications

Source of Flooding	Available Mapping	Implications of making use of mapping in the Sequential Test
Groundwater	British Geological Survey (BGS) Groundwater flood susceptibility maps Also: JBA groundwater Flood Map KCC historic flood events BGS superficial geology mapping	- BGS mapping describes the risk of groundwater emergence but does not show the likelihood or risk of groundwater flooding occurring, i.e. it is a hazard and consequence base product and does not enable the application of a risk based approach. - JBA groundwater map does potentially enable a risk-based approach to be taken as it depicts different levels of risk. However, this also is based on the risk of emergence of groundwater and not surface flooding due to groundwater. The analyses performed to prepare the mapping are all for a 1 in 100-year event and so provide a risk of groundwater emergence to the surface as they are based on predicted difference between groundwater level and the ground surface. Five zones are defined to describe the risk of groundwater being: at or very near ground surface; between 0.025m and 0.5m below the ground surface; between 0.5m and 5m below the ground surface; at least 5m below the ground surface; and negligible risk of groundwater flooding. - The BGS superficial geology layer provides an indication of whether an area is susceptible to alluvial groundwater flooding as it gives an indication of the porosity of near surface deposits that are potentially connected to watercourses or the sea. However, it does not take into account the local topography. - Historic flood data is available from Kent County Council, however this does not always list the source of flooding. In addition, it is often difficult to determine the source of historical flood events and groundwater and surface water flooding can often be confused. - The underlying challenge is that the data is very uncertain and could not be used with confidence unless supported by more detailed local studies. The mapping provides an indication of where risk might be higher, but it would not be easy to defend sequential decisions based on the available mapping. - There is no climate change mapping available for groundwater and in view of the uncertainty in the present-day data it is unlikely that such mapping will be available in the near future.

Recommendations for using zone maps for groundwater flooding

The JBA groundwater flood map does not provide the confidence or certainty required to undertake the Sequential Test on its own as it only shows likely area of risk of emergence and does not show where the groundwater is likely to flow or cause a risk of flooding. The risk of emergence mapping will be combined with supplementary GIS analysis to understand where the groundwater is likely to flow once it has emerged. This supplementary assessment is performed using the 1 in 1,000-year Risk of Flooding from Surface Water

mapping (pre-2025 dataset) to provide an indication of the likely flow paths as the generalised modelling is based on the topography of the area. Where a surface water flow path intersects and is downstream of, a groundwater emergence zone this will be highlighted as an area potentially at-risk from groundwater flooding. If the flow path is also associated with a watercourse, this will not be identified as an at-risk area as this would already be considered in the base flow of the watercourse and therefore fluvial flooding.

Using GIS techniques, the JBA Groundwater Flood Map high and medium risk areas will be merged with the likely flow paths. This will provide a zone map which will show areas which are potentially at higher risk of groundwater flooding than other areas and create a product that can accommodate an appropriate level of sequential testing.

If a site is potentially at risk from groundwater flooding a more detailed assessment should be undertaken within the Level 2 SFRA and will consider local conditions on a site-by-site basis using historic, borehole, geological and LIDAR data.

2.1.4 Sewer flood risk

Implications

Source of Flooding	Available Mapping	Implications of making use of mapping in the Sequential Test
Sewer flooding risk	Southern Water and Thames Water Sewer Incident Report Form (SIRF) Southern Water and Thames Water Drainage Water Management Plans (DWMPs)	- Only available at postcode level and thus mapping does not define spatial extent or location of sewer flooding. - DWMP information provides strategic mapping but this is not of appropriate resolution or format for the purpose of comparative assessment. Further details can be found in Appendix D of the Level 1 SFRA. - Available mapping does not enable execution of risk based sequence compatible with data from other sources of flood risk.

Recommendations for using zone maps for sewer flooding

It is recommended that the available sewer flood risk is not considered alongside the other sources of flood risk in the Sequential Test on the basis that the publicly available information is not of appropriate resolution or format and so does not support a logical spatial comparison of risk that can be substantiated by appropriate evidence. Southern Water has confirmed that there is currently no available data that can be made publicly available which will enable the application of the Sequential Test. Please find email confirmation from Southern Water in Appendix A.

This will be clearly stated in the Level 1 SFRA and where possible the SIRF and DWMP information will be used to inform the scope of site specific FRAs so the risk can be addressed.

2.1.5 Reservoir flood risk

Implications

Source of Flooding	Available Mapping	Implications of making use of mapping in the Sequential Test
Reservoir flooding risk	Reservoir Flood Mapping (RFM)	- The latest available mapping now shows “wet day” and “dry day” reservoir inundation extents. The “wet day” being a reservoir breach at the same time as a 1 in 1000 river flood (as this is a likely time when a reservoir might fail) and the dry day shows the failure just from the water retained by the dam. - Neither set of mapping describes a risk-based scenario as it does not provide the probability of a dam failure but are intended to describe a “worst credible case”. Accordingly care must be taken in using the information in a comparative assessment alongside other sources of flood risk. - More detailed information on flood velocities and depths has been prepared as part of the modelling and mapping study, but this is not publicly available and can only be viewed by those with appropriate security classifications. The flood extents are publicly available. - The mapping could be used to direct proposed new development away from locations that could potentially be affected by reservoir flood risk. However, it would not be conceptually similar to the risks pertaining to river and sea flooding and further assessment would be required to understand the magnitude of the potential hazard. - A consideration with respect to the reservoir maps is that placing new development in locations potentially affected by reservoir inundation could potentially change the “risk category” of the reservoir and this could result in the reservoir owner “undertaker” having to invest in substantive remedial works to demonstrate that the reservoir had the appropriate level of safety. This is not strictly related to the sequential test, but should be a consideration that should be appropriately addressed and managed when planning new development. - The mapping does not provide climate change information on future flood risk and provision of such mapping is unlikely based on the existing methodology

Recommendations for using zone maps for reservoir flooding

It is recommended that the available mapping for reservoir flooding makes it inappropriate to be used alongside risk mapping from other sources when performing the Sequential Test. It will be made clear in the SFRA that the available information is not conceptually similar to

the risks pertaining to river and sea flooding as it shows the worst credible case and not the risk of flooding and so does not support a logical spatial comparison of risk that can be substantiated by appropriate evidence.

This will also identify locations where proposed development could result in a change to the risk designation of a reservoir. If proposed sites are located in a zone where reservoir flooding is predicted to make fluvial flooding worse, it will be necessary to include a more detailed assessment in a Level 2 SFRA to understand the extent to which the flooding could be made worse and to report on the implications with respect to allocating the land for development. On that basis such an approach is recommended.

3 Sequential approach at a site level

The Environment Agency's Flood Risk Assessment guidance was updated in July 2024. The guidance states that *"you may not need a sequential test if development can be laid out so that only elements such as public open space, biodiversity and amenity areas are in areas at risk of any source of current or future flooding."* The premise of this was subsequently included within Paragraph 175 of the NPPF which was updated in December 2024.

Therefore, in cases where the proportion of the site at flood risk is small, a sequential approach at the site level would be appropriate and enable development to be located in areas of low risk of flooding (by avoiding high risk areas that might exist at a particular site). This involves incorporating the less vulnerable aspects of the development (such as public open space, biodiversity and amenity areas) in the areas at risk of flooding. The more vulnerable aspects would be incorporated within areas at lower risk, and a Sequential Test would not be required.

4 Conclusions

This technical note has been prepared to formalise the arrangements to perform the Sequential Test for Tonbridge and Malling Borough Council. Updates to the NPPF in July 2021 recommend that all sources of flooding are considered in the preparation of the Sequential Test. In addition, updates to the August 2022 PPG now recommend that the Sequential Test assesses all sources of flooding for low, medium and high-risk areas both now and in the future.

The NPPF was further updated in December 2024 and February 2025 and new national data was issued by the Environment Agency in March 2025. Therefore, this document has been reviewed and updated to ensure this still aligns with this policy.

Prior to the changes to the NPPF, only consideration of river and sea flood risk was recommended when applying the Sequential Test.

A review of readily available information has been undertaken to assess suitable data sources which could be considered. A summary of the datasets to be used in the Sequential Test can be found in Appendix B.

For fluvial and tidal flood risk, it is recommended that Flood Zones 1, 2 and 3 are assessed both for the present day and appropriate climate change uplifts are used for future.

For surface water, it is recommended that the 3.3% AEP (1 in 30-year), 1% AEP (1 in 100-year) and 0.1% AEP (1 in 1,000-year) surface water flood extents are used to define high, medium and low risk areas. As climate change outputs are not currently available, the 0.1% AEP surface water flood extent mapping should be used as a proxy. Climate change outputs should be used once available.

It is recommended that a potential high-risk zone is prepared for groundwater flooding. This will involve merging the JBA Groundwater emergence map with potential flow paths based on the 1 in 1,000-year Risk of Flooding from Surface Water extent (pre-2025 dataset) to provide a high-risk zone.

The readily available datasets for sewer flood risk do not competently define areas of high or low risk of flooding and so do not competently support an assessment of comparative risk alongside other sources of flood risk.

For reservoir flood risk, it is recommended that the available reservoir flood mapping is not included in the Sequential Test as the available data is inappropriate to be used alongside risk mapping from other sources. A more detailed assessment of those sites identified to be at risk of inundation should be included in the Level 2 SFRA (if required).

The assembly of risk information to support the preparation of the Sequential Test has considered the uncertainty of the data and the implications for using data in a comparative exercise to assess the identification of reasonably available alternative sites at lower risk. There is a recommendation in the Guidance that the exercise be performed for a high, medium and low risk from flooding but for some sources of flood risk the uncertainty in the data does not make it appropriate to make such demarcations and use derived mapping alongside the available flood Zone information for River and Sea flooding. Introducing mapping and data with high level of uncertainty will potentially compromise the basis for Sequential Testing as it introduces the prospect that sites that are incorrectly identified as having a high or medium risk of flooding are incorrectly excluded from the Plan (and vice versa). It is accepted that the approach adopted in the recommended method is precautionary, but also important to recognise that the flood risk is not discounted and that more detailed assessment is included in the Level 2 SFRA when appropriate.

Further consultation will be sought from the LLFA and the Environment Agency for their comments on the updated methodology and continued agreement with the approach will be confirmed before the inclusion in the SFRA.

A Email confirmation from Southern Water

From: Policy, Planning <Planning.Policy@southernwater.co.uk>
Sent: Thursday, April 6, 2023 11:29 AM
To: Ffion Wilson <Ffion.Wilson@jbaconsulting.com>
Cc: Abigail Betts <Abigail.Betts@jbaconsulting.com>; Julian Ling <Julian.Ling@tmbsc.gov.uk>; Jenny Knowles <Jenny.Knowles@tmbsc.gov.uk>
Subject: RE: 2021s1233 - Tonbridge and Malling SFRA - Data Request

Dear Ffion, thank you for your email. At present the SFRA data sharing process remains as previously advised, and we would need to adopt the same approach now as used for the Chichester SFRA data sets you refer to.

Kind regards,

Catherine Adamson
Strategic Planning Lead
Kent & East Sussex

M. 07788 183754
southernwater.co.uk



From: Ffion Wilson <Ffion.Wilson@jbaconsulting.com>
Sent: 27 March 2023 16:28
To: Policy, Planning <Planning.Policy@southernwater.co.uk>
Cc: Abigail Betts <Abigail.Betts@jbaconsulting.com>; Julian Ling <Julian.Ling@tmbsc.gov.uk>; Jenny Knowles <Jenny.Knowles@tmbsc.gov.uk>
Subject: 2021s1233 - Tonbridge and Malling SFRA - Data Request

You don't often get email from ffion.wilson@jbaconsulting.com. Learn why this is important

Good afternoon,

In September 2021 we contacted Southern Water as part of Tonbridge and Malling Borough Council's Strategic Flood Risk Assessment (SFRA) to obtain your flooding incidents dataset which you provided to us on a postcode basis.

In July 2022 we contacted Southern Water to ask if there was any data you could share with us to include in Chichester District Council's SFRA which would enable CDC to include sewer flooding within their Sequential Test. We were trying to identify a dataset which would enable the council to steer development to areas at lowest risk of flooding. At the

time, Southern Water confirmed that there were flood volume nodes, information on the number of properties predicted to flood and heat mapping available to show hotspots. However, we were not able to make this data publicly available. It was noted that this may be made available in the future.

Due to the updates to the National Planning Policy Framework in 2021 and Planning Practice Guidance in August 2022, we are still preparing the Tonbridge and Malling SFRA. We would like to confirm if Southern Water hold information, **which could now be made publicly available**, to enable sewer flood risk to be considered within Tonbridge and Malling Borough Council's Sequential Test for their Local Plan. The data would need to be of appropriate resolution or in GIS format to support spatial comparison of risk. Ideally it would be used to assess areas at high, medium and low risk both now and in the future.

Please let me know if you have any queries about this, happy to have a call about the Sequential Test requirements if it is easier.

Kind regards,

Ffion Wilson

Senior Analyst | JBA Consulting

T: 01444 473 652

B Summary of the Sequential Test methodology

Source of Flooding	High risk	Medium risk	Low risk	Justification of approach	
				Risk now	Future risk
Fluvial	Greater than 1 in 100 year (FZ3)	Between 1 in 100 and 1 in 1,000 year (FZ2)	Less than 1 in 1,000 year	EA's Flood Zones 1, 2 and 3 use a risk-based approach	Use the Flood Map for Planning River and Sea climate change dataset 'without defences' for the 1% AEP (1 in 100-year) and 0.1% AEP events. The Central Allowance should be used for the 2080s (2070-2121) epoch.
Coastal / Tidal	Greater than 1 in 200 year (FZ3)	Between 1 in 200 and 1 in 1,000 year (FZ2)	Less than 1 in 1,000 year	EA's Flood Zones 1, 2 and 3 use a risk-based approach	Use the Flood Map for Planning River and Sea climate change dataset 'without defences' for the 0.5% AEP (1 in 200-year) and 0.1% AEP events. The Upper End Allowance should be used. The development lifetime guidance in the PPG should be used to work out the appropriate epoch to be considered. The 2025 epoch has been provided within the mapping.
Surface Water	Greater than 3.3% AEP (1 in 30-year)	Between 3.3% AEP (1 in 30-year) and 1% AEP (1 in 100-year)	Less than 1% AEP (1 in 100-year)	Environment Agency's Risk of Flooding from Surface Water mapping, 3.3% (1 in 30-year) and 1% AEPs (1 in 100-year). Different assumptions are used to derive surface water risk than is the case for fluvial and tidal flood zones. Care should be taken using the RoFSW dataset as in some areas it potentially does not provide the confidence or certainty required (for example where there is a risk of linear features impacting on flood extents).	No climate change modelling is currently available. Use 0.1% AEP (1 in 1,000-year) as a proxy for climate change Once climate change datasets are available these should be used.
Groundwater	Within a groundwater emergence zone or likely groundwater flow path		Not within a groundwater emergence zone or likely groundwater flow path	Available datasets on their own potentially do not have the confidence or certainty required to provide mapping that enables a competent comparative assessment to be made of the risk of flooding of land from groundwater. Therefore, selected data sets have been merged to identify a high and low risk zone. This enables locations with a low potential risk of groundwater flooding to be identified and a more detailed assessment to be performed in the Level 2 SFRA for allocated sites and where the implications for the sequential selection of groundwater flood risk can be considered at that stage.	There are no datasets readily available which assess future groundwater emergence or flood risk and there is a very high level of uncertainty in such predictions
Sewer	The readily available datasets for sewer flood risk do not competently define areas of high or low risk of flooding and so do not support an assessment of comparative risk alongside other sources.			Datasets that can be made publicly available, potentially do not have the confidence or certainty required to provide mapping that enables a comparative assessment to be made of the risk of flooding of land from sewers. The risk can be addressed in site level FRAs.	There is no future sewer flood risk dataset readily available.
Reservoir	Screening to be undertaken to identify sites where development is proposed in a high hazard zone. Additional information required via a Level 2 SFRA or site-specific Flood Risk Assessment where susceptibility is considered to be high.			Datasets potentially do not have the confidence or certainty required to provide mapping that enables a comparative assessment to be made of the risk of flooding of land from reservoirs. In addition, the reservoir flood map identifies the consequence of a reservoir breach rather than risk, so applying high, medium and low 'risk' is not possible using this dataset. Therefore, a precautionary approach should be taken and sites where development is proposed in a high hazard zone will be identified and assessed in a Level 2 SFRA or site-specific Flood Risk Assessment. The implications for sequential selection of alternative locations should be considered at that stage.	There is no future reservoir flood risk dataset readily available.

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