NOTE TO FILE

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Author	Joanne Chillingworth
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1 Statement regarding the robustness of the SFRA (2018, 2020)

1.1 Introduction

JBA Consulting were commissioned by Shropshire Council to undertake a Level 1 Strategic Flood Risk Assessment (SFRA) in 2018, which was followed on by a Level 2 SFRA in 2019-2020. This was to provide the evidence base for flood risk in support of the Local Plan.

The Draft Shropshire Local Plan is currently the subject of Examination. Shropshire Council have now received the interim findings from the Planning Inspectors and specifically the Planning Inspectors state:

"The issue of whether the Council's Strategic Flood Risk Assessment (SFRA) was up to date in terms of hydraulic modelling and fluvial flood risk was raised at the relevant hearing session. It was agreed that the Council would provide a note of clarification regarding the methodology and data relied upon and whether any updating is necessary. Also, the Council should review whether the SoCG with the Environment Agency needs to be updated in view of this."

This document provides a statement about how elements of the SFRA were conducted to support the Inspector's question, as requested by Shropshire Council.

1.2 Robustness of the SFRA (Level 1 2018 and Level 2 2020)

1.2.1 Available Information

The Level 1 (2018) and Level 2 (2020) SFRAs were comprehensive and robust with regards to using latest available data, hydraulic modelling and flood risk assessment methodologies at the time of preparation of the studies, to inform the Shropshire Local Plan.

Data was requested and sourced from the Environment Agency, Lead Local Flood Authority (Shropshire Council), Water Companies and other partners to capture the latest data as available at the time. Any updated data available between the Level 1 and Level 2 was received from the EA and LLFA (for example River Severn modelling results in Shrewsbury, discussed in Section 1.3).

1.2.2 Robustness of the SFRA Methodology

The Level 1 SFRA assessed all sources of flood risk across Shropshire in line with PPG and the EA's guidance 'How to prepare a Strategic Flood Risk Assessment' (updated in August 2019 at the time of the studies). Following the Level 1 SFRA, the Council were supported in their site selection process by production of a 'Site Development Guidance Sheet', where selected flood risk parameters were jointly developed to support the assessment of levels of concern of flood risk at a site. This process informed the decision making on whether development of a site should be considered or not. The parameters assembled for the Site Development Guidance sheet were not based on strict application of formal guidance or policy, but it did address all sources of flooding which exceeded the minimum stated requirement as existed at the time with respect to consideration of Flood Zones.

The Council's shortlisted site boundaries were screened against the following data, showing the focus as not just on fluvial Flood Zones, to determine the percentage area of the site which was covered by the following:

- Fluvial Flood Zones
- Surface water flood map 30-year, 100-year and 1,000-year
- Historic flood map
- Reservoir inundation mapping
- Areas benefitting from defences
- Detailed drainage Network +20m buffer
- Flood forum layer +20m buffer around the polyline

A Red-Amber-Green analysis was then applied to the site screening exercise, to determine the following:

- Red - Which sites required a Level 2 assessment (fluvial flood risk or significant surface water flood risk). In order to assess whether a site was deemed to have significant surface water risk,

professional judgment was used based on the extent and location of the surface water issues relative to the site and access and egress.
    - This aspect of the Level 2 SFRA went above what was nationally required by PPG at the time, which was to focus on Flood Zones (fluvial risk), by assessing sites at other sources of risk, predominantly surface water.
- Amber - Which sites required a flag in the main report to say these are deemed lower risk, but there is still some risk to be considered by developers at FRA stage. For these sites with less significant but still noteworthy surface water issues, these were highlighted in Table 6-2 in the Level 2 report with general recommendations and that the LLFA expect the developer to take these into account at an early stage when planning the form and layout of the site, the surface water drainage system and any surface water mitigation measures that may be necessary.
- Green - Which sites are at no/ very low risk and therefore do not require a Level 2 assessment.

It should be noted that groundwater flood risk was not included, as there were no competent data sets available that would enable a comparative assessment of risk to be performed and this is remains the case today. Similarly, there are no competent data sets to enable a comparative assessment of sewer flooding, as this data can only be obtained for postcode areas and again this remains the case today.

Where available, climate change data was obtained, but mapping was not prepared for all sources of risk. As the change to the NPPF in July 2021 and the update to the Planning Practice Guidance had not been published, the assessment was not prepared strictly in accordance with this policy and guidance.

1.3 Hydraulic modelling approach

The SFRA was comprehensive and robust with regards to hydraulic modelling and flood risk in accordance with the guidance and policy as applied at the time of preparation. All available hydraulic models were requested and received from the EA and LLFA. Mapped model outputs were used to form the SFRA mapping (Flood Zones 3b, 3a and 2) and the models were re-run for latest climate change allowances at the time of the studies. This is discussed further in Section 1.3.1.

Between the L1 and L2 SFRA, the draft modelled outputs for the 2020 Environment Agency River Severn Modelling Study Phase 1 (covering Shrewsbury) became available and were obtained from the Environment Agency, to inform two site assessments at SHR166 and SHR173.

For the Level 2 SFRA, depth, velocity and hazard mapping was used from the models where it was available (models with a 2D element).

1.3.1 Climate change modelling

2016 Guidance

The Level 1 and Level 2 SFRA assessed fluvial climate change allowances from February 2016 guidance on the received EA models, which was 100yr + 25% (central), 35% (higher central) and 70% (upper end) for the 2080s epoch. Where no detailed hydraulic models were present, Flood Zone 2 was used as a proxy; this was an appropriate method given the Upper End allowance extents are often similar to the Flood Zone 2 extents, therefore the difference would be deemed to be minimal.

The 1,000-year surface water extent was also used as an indication of climate change on surface water risk for the 1 in 100-year design flood event and risk to smaller watercourses, which are too small to be covered by the EA's Flood Zones. More detailed hydraulic modelling in these areas would be required at site-specific Flood Risk Assessment stage to confirm flood risk and climate change impacts.

2021 Guidance

Since the SFRA was completed in 2020, the EA published new climate change guidance in 2021, moving from allowances based on large river basins (River Severn) to distinct management catchments. Shropshire would fall into 4 new catchments below, each with different Central, Higher Central and Upper End allowances. Table 1 shows this information.

Most of the new allowances in Table 1 are covered conservatively by the previously modelled +35% or +70% allowances (except for the Teme) and latest guidance suggests to use the Central or Higher Central allowances for the majority of instances for development, therefore having the previously modelled Upper End allowance gives a conservative estimate of climate change compared to the new

allowances.

Table 1: 2021 fluvial climate change allowances covering Shropshire

Management Catchment	2080s Central	2080s Higher Central	2080s Upper End
Severn Uplands	33	43	68
Severn Middle Shropshire	33	44	72
Severn Middle Worcestershire	30	40	67
Severn Teme	45	60	96

2022 Guidance

In 2022, the equivalent rainfall climate change allowances were updated. The SFRA did not explicitly model climate change on surface water. The 1,000-year surface water flood extent was used to infer climate change risk on surface water, which was considered to be an appropriate proxy, such as that where Flood Zone 2 was used for fluvial risk in the absence of model data.
Developers undertaking FRAs would need to model latest climate change allowances at their sites based on the EA guidance: Peak river flow climate change allowances by management catchment - GOV.UK (www.gov.uk)

1.3.2 Shifnal model data

The 2003 Shifnal model was received from the EA and was the only modelled source of information in Shifnal at the time of the study and was therefore used in preference over proxy data.

With older hydraulic models, professional judgment is used to decide whether they should be included in the assessment or not. Usually, older models are not received with all the model files needed to re-run them for climate change or to represent flood extents required in the SFRA, or the survey may be very old and therefore local channel and floodplain levels may have since changed. Judgment is therefore based on an opinion on the quality of output data that can be obtained from the model. The Shifnal model did however have all the Flood Zone information and model files required and it was possible to provide climate change extents as well as the Flood Zones. The Flood Zone data from the model does match the national FZ2 and FZ3a extents, meaning this model data has been incorporated into the national FZs by the EA and so is understood to be accepted by them. The added value the SFRA brings, is being able to show the mapping for Flood Zone 3b (20-year model extent) and climate change extents.

At the time of the SFRA, there was a flood alleviation scheme in progress - Wesley Brook Flood Alleviation Scheme in Shifnal. No specific model for this scheme was highlighted by Third Parties or received to inform the assessment included in the SFRA. If there is a hydraulic model now available that includes the effects of the scheme, Developers should request this to inform any Flood Risk Assessments.

In general, Developers would be advised to request any latest EA/ LLFA modelling to inform FRAs, in case there have been any updates since 2020.

1.3.3 Implications of latest PPG

With regards to the implications of the more recent changes to PPG, not present at the time of the studies, we note the following points:

- As already outlined, there is no nationally available groundwater dataset available, therefore this risk should be addressed and mitigated at FRA stage.
- Flood Zone 3b changing to the 30-year extent instead of 20-year: the SFRA looked at a range of severity flood risk events, so sites would have been captured conservatively for assessment due to being at risk in more severe events: Flood Zone 3a, 2. The main implication is most likely to affect the potential developable area rather than the principle of development at a particular site

allocation, but the Council propose to develop outside of the Flood Zones. This new Flood Zone 3b extent should be modelled and mapped as part of new FRAs in line with latest guidance.

- As already noted, the guidance recommends that climate change mapping is now used in addition to present-day flood risk to inform the preparation of the Sequential Test. The SFRA used the latest climate change allowances at the time of the studies and sites brought forward for Level 2 assessment were assessed on all the Flood Zone classifications. It is difficult to comment on the extent to which the introduction of climate change data affects the comparative risk at particular sites. It is probable that it would not normally affect the principle of development but it should be recognised that if this is a concern then there would be a need to understand the exact circumstances applying to particular alternatives.
- The guidance now recommends that surface water + climate change should be evaluated, which looks at high risk, now called 'SW FZb'. The SFRA used a conservative proxy of the 1,000-year extent as there was no modelling required at the time.

Overall, it is deemed that the SFRA technical work contained flood risk information that exceeded the minimum recommendations as existed in the guidance at the time of preparation of the assessment. The SFRA does not explicitly contain all of the flood risk mapping that is now recommended in the current guidance, but it should be noted that some of this data is not readily available and would not be appropriate for use in a comparative assessment of flood risk if the SFRA was prepared.

The SFRA does not explicitly address all of the matters raised by the changes to policy and guidance in 2022. It is anticipated that additional modelling required by the latest PPG would not be expected to have a material effect on the site allocations, although without performing a more detailed exercise on the comparison of particular alternatives this cannot be verified for all circumstances. It is probable that the decision on whether the principle of development can be supported is not changed although it should be recognised that other technical matters will need to be addressed at the site-specific SFRA stage.

1.4 Site-specific Flood Risk Assessments (FRA)

The SFRA contains mapping and data that can be used to support the preparation of the Sequential Test based on detailed modelling available at the time and historic data.

There are ways of controlling flood risk issues at the site level as part of Masterplanning. Any future FRA will be required to assess all sources of flood risk in line with latest PPG requirements, so in the absence of any SFRA data, a site could still be brought forward in terms of allocation, and the FRA would need to provide the appropriate level of detail, demonstrate flood risk at the site and any mitigation required to not adversely increase this on or off site.

1.5 Site allocations

For all proposed allocations that contain a component of the site in Flood Zones 2 and/ or 3, Shropshire Council's site guidelines explicitly state that development will be excluded from the portions of the site located in these Flood Zones. This supports the recommendation to apply the Sequential Approach in locating development away from areas of flood risk. The result is an intent that proposed development is located in the locations at lowest flood risk. The scope of site-specific FRAs will need to reflect the content of the latest guidance and policy and thus any adjustments to accommodate the differences arising since the allocation sites were identified would be expected to be accommodated.