



Swindon Borough Council

Level 2 Strategic Flood Risk Assessment

August 2026

Prepared for:
Swindon Borough Council

Prepared by:
M.Lingham

Project Number:
331510291

Swindon Borough Council – Level 2 Strategic Flood Risk Assessment

Revision	Description	Author	Date	Quality Check	Date	Independent Review	Date
DRAFT	For client comment	ML	21/08/26	EE	21/08/2026	RMF	21/08/2026

DRAFT



The conclusions in the Report titled **Level 2 Strategic Flood Risk Assessment** are Stantec's professional opinion, as of the time of the Report, and concerning the scope described in the Report. The opinions in the document are based on conditions and information existing at the time the scope of work was conducted and do not take into account any subsequent changes. The Report relates solely to the specific project for which Stantec was retained and the stated purpose for which the Report was prepared. The Report is not to be used or relied on for any variation or extension of the project, or for any other project or purpose, and any unauthorized use or reliance is at the recipient's own risk.

Stantec has assumed all information received from Client (the "Client") and third parties in the preparation of the Report to be correct. While Stantec has exercised a customary level of judgment or due diligence in the use of such information, Stantec assumes no responsibility for the consequences of any error or omission contained therein.

This Report is intended solely for use by the Client in accordance with Stantec's contract with the Client. While the Report may be provided by the Client to applicable authorities having jurisdiction and to other third parties in connection with the project, Stantec disclaims any legal duty based upon warranty, reliance or any other theory to any third party, and will not be liable to such third party for any damages or losses of any kind that may result.

Prepared by: _____
Signature
M.Lingham

Printed Name

Reviewed by: _____
Signature
E.Edney

Printed Name

Approved by: _____
Signature
R. Fisher

Printed Name



Contents

1	Introduction	1
1.1	Scope of Report	1
1.2	Objectives	1
2	Site Assessment Methodology	3
2.1	Site Selection	3
2.2	Accounting for Climate Change	3
3	Baseline Flood Risk Information	5
3.1	Fluvial Flooding	5
3.2	Flood Defences	5
3.3	Surface Water/Pluvial Flooding	6
3.4	Groundwater Flooding	6
3.5	Flooding from Impounded Water Bodies (Reservoirs & Canals)	6
3.6	Historic Flooding	7
3.7	Sewer Flooding	7
4	Requirements for Flood Risk Mitigation	8
4.1	Overview of Mitigation Requirements	8
4.2	Ground Floor Levels	8
4.3	Floodplain Storage	8
4.4	Safe Access and Flood Risk Management	9
4.5	Surface Water Drainage	9
5	Conclusion	10
5.1	Site Assessment Summary	10
5.2	Limitations	10

Figures

Figure 2-1 Site Allocations	3
-----------------------------------	---

Tables

Table 2-1: EA Climate Change Allowances - Peak River Flow	4
---	---

Appendices

Appendix A	Location of Sites for Further Analysis
Appendix B	Site Specific Assessments



1 Introduction

1.1 Scope of Report

- 1.1.1 Stantec was commissioned by Swindon Borough Council (SBC) to undertake a 'Level 2 Strategic Flood Risk Assessment' ('SFRA') to consider the flood risk to 19 sites throughout the Borough.
- 1.1.2 The National Planning Policy Framework (NPPF) Planning Practice Guidance: Flood Risk and Coastal Change (PPG), advocates a tiered approach to risk assessment and identifies the following two levels of SFRA:
- **Level 1:** where flooding is not a major issue in relation to potential development sites and where development pressures are low. The assessment should be sufficiently detailed to allow application of the Sequential Test.
 - **Level 2:** where land outside flood risk areas cannot appropriately accommodate all the necessary development creating the need to apply the NPPF Exception Test. In these circumstances the assessment should consider the detailed nature of flood characteristics considering all sources of flooding.
- 1.1.3 The Level 2 assessment supports application of the Sequential Test by identifying the severity and variation in risk within medium and high flood risk areas, following the site screening exercise undertaken in the Level 1 SFRA Update. It establishes whether proposed allocations or windfall sites, are capable of being made safe throughout their lifetime without increasing flood risk elsewhere, and applying the Exception Test, where relevant.

1.2 Objectives

- 1.2.1 The Level 2 SFRA has been prepared in accordance with the NPPF and associated PPG on Flood Risk and Coastal Change, and in accordance with the latest Environment Agency (EA) guidance on climate change (last updated May 2022).
- 1.2.2 The objective of this Level 2 assessment is to include detailed assessments of the proposed site options. These include:
- An assessment of all sources of flooding including fluvial flooding, surface water flooding, sewer flooding, groundwater flooding, mapping of the functional floodplain and the potential increase in fluvial and surface water flood risk due to climate change. Given the distance of the Borough from tidal influences, tidal flooding has not been considered within this assessment.
 - Reporting on current conditions of flood defence infrastructure, where applicable.
 - An assessment of existing flood warning and emergency planning procedures, including an assessment of safe access and egress during an extreme event.
 - Advice and recommendations on the likely applicability of sustainable drainage systems for managing surface water runoff.
 - Advice on whether the Exception Test is required, and whether likely to pass the second part of the Exception Test with regards to flood risk and on the requirements for a site-specific FRA.
- 1.2.3 The Level 2 SFRA should provide sufficient information to inform the application of the Exception Test, where appropriate through considering:



- Flood probability;
- Flood depth;
- Flood velocity;
- Rate of onset of flooding; and
- Duration of flooding.

1.2.4 The Exception Test is detailed within paragraph 178 of the NPPF, and is a method used to demonstrate that flood risk to people and property will be managed satisfactorily, while allowing necessary development to be permitted in situations where suitable sites at lower risk of flooding are not available. The NPPF states:

“The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. To pass the exception test it should be demonstrated that:

a) the development provides wider sustainability benefits to the community that outweigh flood risk; and

b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.”

1.2.5 SBC determined the sites which required a Level 2 assessment with confirmation from the EA, based on the information from the Level 1 SFRA and proximity of the sites to watercourses and known flood risk areas. Detailed site summaries have been produced for the proposed sites. Each site summary is accompanied by mapped flood risk outputs.



2 Site Assessment Methodology

2.1 Site Selection

- 2.1.1 The L2 SFRA has been prepared to determine the risk of flooding from a number of sources (fluvial, surface water, groundwater, sewer and artificial sources) at specified development sites, as advised by SBC.
- 2.1.2 The sites taken forward for Level 2 assessment are shown in **Figure 2-1** and included in **Appendix A**.

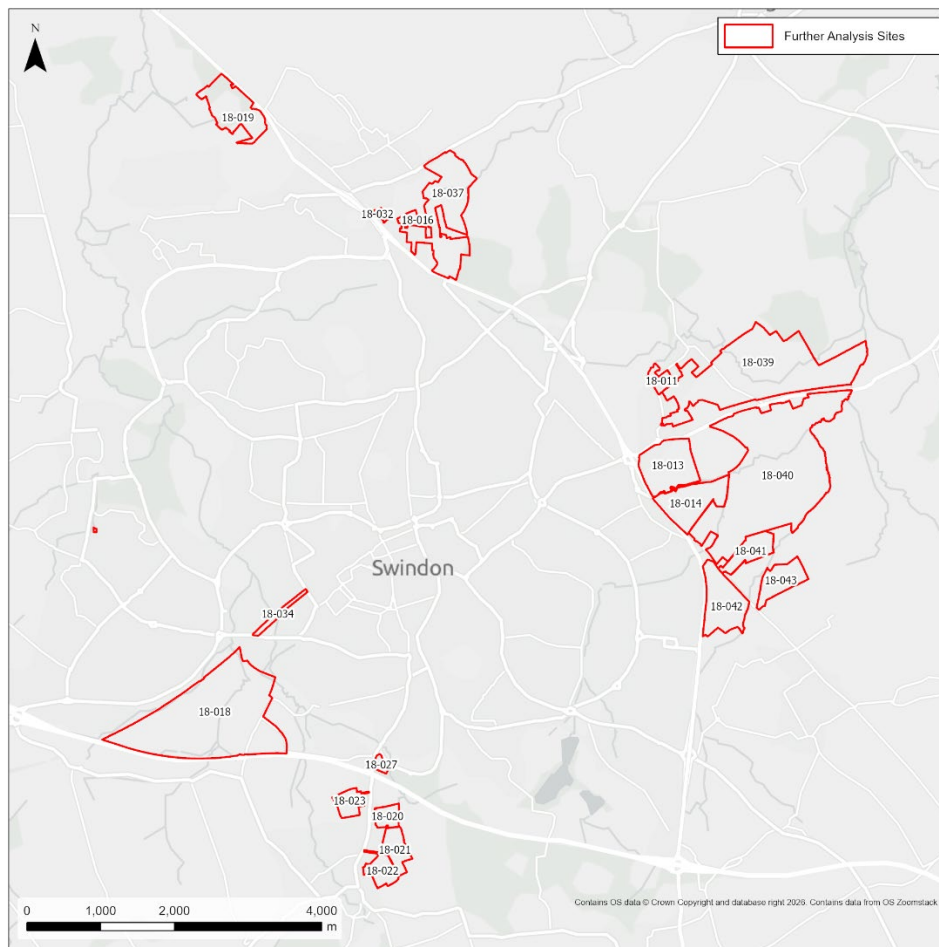


Figure 2-1 Site Allocations

- 2.1.3 Where the site has been identified in the Local Plan, the relevant reference number has also been provided.
- 2.1.4 The sources of information used to inform the site-specific assessments are detailed in **Section 3**, with the relevant chapter location (or Map prefix) provided for cross-reference to the L1 SFRA.

2.2 Accounting for Climate Change

- 2.2.1 The Level 2 SFRA has been prepared in accordance with the NPPF and associated PPG on Flood Risk and Coastal Change, and in accordance with the latest EA guidance on climate change (last updated May 2022).

2.2.2 In considering flood risk to the sites, it is necessary to fully consider the impacts of climate change for the lifetime of the development. Details of the latest EA climate change guidance on the application of climate change allowances in flood risk assessments is provided via the following link:

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>.

2.2.3 This guidance provides contingency allowances for potential increases in peak river flow and peak rainfall intensity.

2.2.4 The allowances vary depending on river basin district and management catchment. The Borough is mostly located within the Gloucestershire and Vale management catchment, with the southern edge located within the Kennet and tributaries management catchment.

2.2.5 The Level 1 SFRA utilised the Gloucestershire and Vale management catchment climate change allowances for peak river flow and peak rainfall intensity as the majority of the Borough is covered by this management catchment and the climate change allowances are higher.

2.2.6 **Table 2-1** outlines the peak river flow allowances for the Gloucestershire and Vale management catchment.

Management Catchment	Allowance Category	Total Potential Change Anticipated		
		2020s	2050s	2080s
Gloucestershire and Vale	Central	11%	11%	26%
	Higher Central	17%	19%	41%
	Upper End	33%	43%	84%

Table 2-1: EA Climate Change Allowances - Peak River Flow

2.2.7 These allowances should be applied to reflect the proposed design life of buildings, and the 2080s horizon is the typical standard for most forms of new residential/commercial development unless there is specific justification for a shorter lifespan.

2.2.8 The specific allowance to be considered in the new development under consideration within this Level 2 SFRA – i.e. either ‘More Vulnerable’ residential or ‘Less Vulnerable’ commercial/industrial development – is the ‘Central’ Allowance (2080s epoch).

2.2.9 Detailed EA river models, where available, were rerun for climate change scenarios as part of the original assessment.

2.2.10 The potential impacts from climate change have also been assessed in reference to the following data sources:

- EA Flood Map for Planning which includes:
 - Risk of Flooding from Rivers and Sea (RoFRS) with Climate Change map (2070-2125)
 - Risk of Flooding from Surface Water (RoFSW) with Climate Change (2061-2125)

2.2.11 The impact of climate change on surface water flood risk in the absence of specific hydraulic modelling, has been assessed using the RoFSW datasets, which include new climate change scenarios considering the projections to 2125.



3 Baseline Flood Risk Information

3.1 Fluvial Flooding

Flood Zone

3.1.1 The Level 1 SFRA Figures 008A-008D shows the Flood Zones, which includes national and local modelled data, and information from past floods. The data shows the extent of land at present-day risk of flooding from rivers, ignoring the presence/benefits of flood defences, for the following scenarios:

- **Flood Zone 1 'Low Probability':** land having less than a 1 in 1000 (0.1%) annual probability of flooding;
- **Flood Zone 2 'Medium Probability':** land having between a 1 in 100 (1.0%) and 1 in 1000 (0.1%) annual probability of flooding from rivers or between a 1 in 200 (0.5%) and 1 in 1000 (0.1%) annual probability of flooding from the sea, and accepted flood outline records;
- **Flood Zone 3 'High Probability':** land having greater than a 1 in 100 (1.0%) annual probability of flooding from rivers, or greater than a 1 in 200 (0.5%) annual probability of flooding from the sea.

3.1.2 The Level 1 SFRA further subdivides Flood Zone 3 to identify the functional floodplain, which is based on the 1 in 30 (3.3%) annual probability extent (where available) – as follows:

- **Where detailed river modelling is available:** Flood Zone 3b should be based on the 1 in 30 (3.3%) annual probability flood extent; if unavailable, then the 1 in 20 (5.0%) annual probability flood extent should be used as a proxy;
- **Where no detailed river modelling is available:** Flood Zone 3b should be based on the 1 in 30 (3.3%) annual probability flood extent, as extracted from the EA RoFRS dataset;
- The extent of any **flood alleviation schemes or reservoirs** within the Borough.

3.1.3 Where available, modelled flood extents have been used as the primary data source to inform fluvial flood risk in the Level 2 SFRA. These extents are shown on Level 1 SFRA Figures 012A-012D, 013A-013D and 014A-014D.

3.1.4 For ordinary watercourses not mapped within models or available data, the RoFSW extents have been used as a proxy for assessing fluvial flood risk.

3.1.5 The Flood Zone and model information indicates flood risk to areas of land and is not sufficiently detailed to show whether an individual property is at risk of flooding.

3.1.6 Further information on the EA hydraulic model data utilised within this assessment are provided in **Level 1 SFRA Section 3.8**.

3.2 Flood Defences

Risk of Flooding from Rivers and the Sea

3.2.1 The EA have released a number of new Opendata datasets from March 2025 on, produced as part of the National Flood Risk Assessment (NaFRA) study. These provide significantly higher resolution national scale mapping and based on more robust modelling techniques than the previous iteration of the mapping. These outputs include the new 'Risk of Flooding from Rivers and Sea' (RoFRS) datasets – showing the risk of flooding from rivers or the sea, allowing for



existing flood defence infrastructure – and updates of the Risk of Flooding from Surface Water (RoFSW) datasets, with both also including new climate change scenarios.

- 3.2.2 The Level 1 SFRA Figures 015 and 016 shows the RoFRS mapping for present day and for climate change (2080s epoch – to 2125) respectively, with Figure 016 displaying the defended 1 in 100 annual probability plus climate change event.
- 3.2.3 This is utilised for areas where no detailed hydraulic modelling to provide an initial appraisal of flood risk, and an initial delineation of Flood Zone 3b Functional Floodplain. Even so, this data is not typically considered robust at a site-specific level and it is recommended that this is reviewed when any further detailed hydraulic modelling is undertaken through an area.

EA Detailed Hydraulic Modelling

- 3.2.4 The EA have provided detailed hydraulic modelling outputs from a number of studies through the Borough. These provide the best available information on fluvial flood risk and are detailed under **Level 1 SFRA Section 3.8**.

3.3 Surface Water/Pluvial Flooding

- 3.3.1 Surface water/pluvial flood risk has been assessed using the EA RoFSW extents, both for present-day and climate change scenarios.
- 3.3.2 The mapping includes information about flooding extents and depths and is produced using national scale modelling and enhanced with compatible, locally produced modelling from Lead Local Flood Authorities (LLFAs).
- 3.3.3 Level 1 SFRA Figure 009cc provides extents based on a climate change scenario using the Upper End peak rainfall intensity allowance for the 2070s epoch (2061-2125).
- 3.3.4 Further information on surface water/pluvial flood risk in the Borough is set out in **Level 1 SFRA Section 6.3**.

3.4 Groundwater Flooding

- 3.4.1 The EA 'Areas Susceptible to Groundwater Flooding' (AStGWF) dataset is a strategic scale map showing groundwater flooding probability areas on a 1km square grid. The data is annotated to show what percentage of the 1km area could be susceptible to groundwater flooding, thus providing an indication of the degree of probability of groundwater flooding that is present within a broad area.
- 3.4.2 The accompanying guidance specifies that *"these data show likelihood of groundwater flooding occurring and is therefore a hazard not risk-based dataset"*.
- 3.4.3 The EA AStGWF map is presented in **Level 1 SFRA Figure 010**. Further information on groundwater flood risk is set out in **Section 6.5**.

3.5 Flooding from Impounded Water Bodies (Reservoirs & Canals)

- 3.5.1 Impounded bodies of water, in either a section of canal elevated above adjacent ground or in a reservoir, present a residual flood risk as a breach could occur in the retaining structure. The failure of such a structure has the potential to cause catastrophic damage due to the sudden release of large volumes of water.
- 3.5.2 The safety record for reservoirs in the UK is very good and the EA ensure the enforcement of the Reservoirs Act 1975 in England and Wales. A 'reservoir' of water is defined under The Reservoirs Act as such if ***"it is designed to hold, or capable of holding, more than 25,000 cubic metres of water above the natural level of any part of the land adjoining the"***



reservoir”, and the Act states that all large reservoirs must be inspected and supervised by reservoir panel engineers, and it is assumed that that these reservoirs are regularly inspected with essential safety works carried out, in order to present reservoirs as a managed risk.

- 3.5.3 There are several reservoirs in Swindon Borough including Coate Water and Stanton Park Reservoirs, Peatmoor Lagoon and the Whitehill Flood Storage Area.
- 3.5.4 For development planning purposes, the EA provides maps showing the area at risk of flooding in the event breach from large reservoirs (over 25,000 cubic metres of water) – refer to Level 1 SFRA Figures 011.
- 3.5.5 The Wiltshire and Berkshire Canal flows through Swindon Borough. The canal is typically at existing ground level and as such would not provide a risk of flooding in a potential breach.
- 3.5.6 Further information on flood risk from impounded water bodies is set out in **Level 1 SFRA Section 6.4**.

3.6 Historic Flooding

- 3.6.1 The Level 1 SFRA Figures 015-016 use the EA Historic Flood Map, which shows the maximum extent of individual recorded flood outlines from rivers, the sea and groundwater springs that meet set criteria. It shows areas of land that have previously been subject to flooding in England. It excludes flooding from surface water, except in areas where it is impossible to determine whether the source is fluvial or surface water, but the dominant source is fluvial.
- 3.6.2 Further information on historic flooding is provided in **Level 1 SFRA Section 3.11**.

3.7 Sewer Flooding

- 3.7.1 The risk of sewer flooding was determined using the postcode DG5 register incident count (provided by Thames Water Utilities Ltd. for the Level 1 SFRA), which counts the number of internal and external sewer flooding incidents which have occurred within the postcode area of a given site.
- 3.7.2 It should be noted that the records do not identify flooding at a property or site level but gives an indication of areas within the Borough where sewer flooding may be more prevalent.
- 3.7.3 The Thames Water DG5 information for sewer flooding incidents is presented on Level 1 SFRA Figure 020.
- 3.7.4 Further information on flood risk from sewers is set out in **Level 1 SFRA Section 6.6**.



4 Requirements for Flood Risk Mitigation

4.1 Overview of Mitigation Requirements

- 4.1.1 The screening process (Level 1 SFRA **Section 10.4**) considered the full list of potentially developable sites and identified those that were shown to be at low risk of flooding, based on the available datasets.
- 4.1.2 A number of sites at partial risk of flooding were considered for further scrutiny at a site level. The following sub-sections provide an overview of the mitigation requirements for new development, which are detailed further in the **Level 1 SFRA Section 11** and have been applied in the recommendations when undertaking the site-specific reviews.

4.2 Ground Floor Levels

- 4.2.1 Standard requirements for ground floor levels of new development are set out in the British Standards document BS8533:2017 'Assessing and Managing Flood Risk in New Development – Code of Practice'.
- 4.2.2 This recommends ground floor levels of new development be set a minimum of 300mm above the 1 in 100 AP plus climate change fluvial flood level. This is therefore the standard criteria where detailed modelling is available to provide local flood levels over a site.
- 4.2.3 It also notes that *"Where climate change has not been calculated, or there is low confidence in the computation of overtopping or breach, floor levels should be situated 600 mm above the design flood level"*. As such, if there is low confidence in any detailed modelling, or if national scale datasets have been utilised, then this additional 300mm should be applied.
- 4.2.4 Where relevant, building floor levels should also be an appropriate freeboard above
- i) the predicted 1 in 100 AP plus climate change surface water flood level,
 - ii) surrounding ground levels, to mitigate the flood risk in an extreme rainfall event, and
 - iii) the maximum anticipated groundwater flood level (which would be informed by detailed site monitoring, if necessary).
- 4.2.5 Where floor levels cannot be elevated to the recommended level due to access or planning constraints, and where it is considered acceptable in terms of the flood risk vulnerability classification, then a lower ground floor level may be acceptable provided the building fabric incorporates appropriate flood resistant measures and/or flood resilient measures.

4.3 Floodplain Storage

- 4.3.1 Any new development located in the vicinity of a watercourse should be constructed such that it does not reduce the available floodplain storage capacity over a site, which could potentially cause an increase in flood levels on-site or elsewhere – see **Level 1 SFRA Section 11.5**.
- 4.3.2 Where a development site encroaches within the modelled 1 in 100 AP plus allowance for climate change floodplain, a floodplain storage analysis should be undertaken as part of any site-specific FRA to compare the floodplain capacity pre- and post- development, demonstrating no detrimental impact and ideally an improvement over the existing situation.
- 4.3.3 This is normally undertaken on a 'level-for-level' basis considering the impacts in (typically) 100mm to 200mm depth level bands, to ensure the characteristics of the floodplain are mimicked at all stages of the hydrograph, up to the reference modelled 1 in 100 (1%) annual probability plus allowance for climate change flood level. However, there may be some site-



specific considerations where a more flexible approach is considered acceptable – i.e. if conventional level-for-level gains cannot be fully met it may still be acceptable if there is a significant over-provision of overall floodplain storage capacity (i.e. total volume).

4.4 Safe Access and Flood Risk Management

- 4.4.1 It is necessary to consider safe access arrangements as part of the mitigation for any new development and the policy recommendations for safe access and flood risk management are outlined within **Level 1 SFRA Section 11.7**.
- 4.4.2 For proposed 'Less Vulnerable' uses – i.e. commercial or office use where sleeping accommodation is not provided – safe access can typically be addressed through the incorporation of management systems including, in the event of widespread flooding, closure of the site in advance of flooding affecting the area and re-opening after the flooding has receded.
- 4.4.3 For 'More Vulnerable' uses, the provision of safe access is a more sensitive issue, and the detailed site assessments consider the impacts from both fluvial flooding and surface water.

4.5 Surface Water Drainage

- 4.5.1 Any new development needs to ensure that proposed surface water drainage arrangements are appropriately designed to ensure no increase – and preferably a decrease – in flood risk with priority given to the use of Sustainable Drainage Systems (SuDS) to replicate, as closely as possible, the natural (pre-development) drainage regime of a site. The requirements for such are detailed in the **Level 1 SFRA Section 12**.
- 4.5.2 Different forms of SuDS contribute to the key pillars of water quantity, water quality, amenity and biodiversity and measures which provide an enhancement of these elements should be actively encouraged.
- 4.5.3 SBC is a statutory consultee for surface water drainage on 'major developments' as part of their role as the LLFA for the Borough.
- 4.5.4 To avoid compromising the functionality and capacity of SuDS attenuation features such as detention basins or ponds, these should be located outside the fluvial 1 in 100 AP plus allowance for climate change floodplain. As a general rule of thumb, a plan area of approximately 10-15% of the proposed development area should be considered as a spatial requirement for any main SuDS attenuation features, in advance of detailed sewer modelling of the drainage system.
- 4.5.5 The key design criteria for aspects of the surface water drainage system are detailed in the DEFRA 'National standards for sustainable drainage systems', published in June 2025.



5 Conclusion

5.1 Site Assessment Summary

- 5.1.1 This Level 2 SFRA has carried out detailed site assessments for 19 no. sites. The site assessments presented in Appendix B summarise flood risk from all sources to each site based on a range of strategic and local datasets, considering both current risk and the future implications of climate change. Each assessment sets out the NPPF requirements for the site as well as guidance for the development of site-specific FRAs.
- 5.1.2 Each site assessment is accompanied by flood maps to illustrate the source, extent and severity of flooding. The maps should be viewed alongside each site assessment.
- 5.1.3 A broadscale assessment of opportunities is presented for each site, alongside an assessment of suitable SuDS options, and FRA and site design requirements.
- 5.1.4 The Exception Test is required for 'More Vulnerable' development within Flood Zone 3a 'High Probability'. For each of the sites considered as part of this Level 2 SFRA, there are large areas of Flood Zone 1, such that if the sequential approach is followed when considering development layout, the application of the Exception Test may not be deemed necessary on the basis that built development is excluded from Flood Zone 3a. Recommendations have been made on flood risk mitigation measures such that it has been concluded development of the sites are capable of being made safe throughout their lifetime without increasing flood risk elsewhere.

5.2 Limitations

- 5.2.1 This Level 2 SFRA has been prepared using the best available information at the time of preparation when assessing both the current risk of flooding from all sources and the potential impacts of climate change.
- 5.2.2 This Level 2 SFRA should be treated as a live document, and should be updated when new information, or new planning guidance or legislation becomes available.



Appendix A Site Allocations

- Figure 01 – Location of Sites for Further Analysis

DRAFT



Appendix B Site Specific Assessments

- Site Assessment 18-011
- Site Assessment 18-013
- Site Assessment 18-014
- Site Assessment 18-016
- Site Assessment 18-018
- Site Assessment 18-019
- Site Assessment 18-020
- Site Assessment 18-022
- Site Assessment 18-023
- Site Assessment 18-027
- Site Assessment 18-032
- Site Assessment 18-033
- Site Assessment 18-034
- Site Assessment 18-037
- Site Assessment 18-039
- Site Assessment 18-040
- Site Assessment 18-041
- Site Assessment 18-042
- Site Assessment 18-043

