

Flood Risk Sequential and Exception Test Document

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1. Introduction

- 1.1 Flooding of people and property can have significant social and economic consequences. Flood risk is therefore a significant consideration for a Local Planning Authority when it is considering where and how development should take place. The Sequential and Exception Tests (SET), as described in national planning policy and guidance, enables Local Planning Authorities to appraise the flood risk associated with new development via a risk-based approach.
- 1.2 This document explains how Welwyn Hatfield Borough Council has applied the SET to development sites promoted through the Call for Sites 2019 for allocation in the emerging Local Plan and sets out the results of those tests. The application of the SET has been informed by a Strategic Flood Risk Assessment (SFRA) Level 1 and Level 2 update completed in December 2019.
- 1.3 The results of the SET and the SFRA have informed the Council's Sustainability Appraisal, Housing and Employment Land Availability Assessment (HELAA) and the Sites Selection Background Paper.

2. Policy framework

- 2.1 The Council's SFRA outlines the legislation, policy and guidance relating to flood risk and development within Welwyn Hatfield. The following is a summary of the key elements which particularly relate to the SET.
- 2.2 Consistent with the National Planning Policy Framework (NPPF) 2019, Annex 1: Implementation (Paragraph 214), the policies in the previous NPPF (March 2012), apply for the purposes of examining plans, where those plans were submitted on or before 24 January 2019.
- 2.3 As the Welwyn Hatfield Draft Local Plan 2016 was submitted prior to 24 January 2019 (in May 2017), and this SET has been prepared during the examination process, references in this document relate to the NPPF 2012¹ and the associated Planning Practice Guidance 2014²(unless otherwise stated).
- 2.4 However, any planning applications that subsequently come forward in the plan period, including those assessed as part of the Local Plan, will need to

¹ NPPF 2012: Archived document:

<https://webarchive.nationalarchives.gov.uk/20180608213715/https://www.gov.uk/guidance/national-planning-policy-framework>

² Planning Practice Guide: <https://www.gov.uk/guidance/flood-risk-and-coastal-change>

comply with the most up to date version of the NPPF, last updated in June 2019.

- 2.5 Below is a summary of the flood risk planning policy framework relevant to the Local Plan examination.

3. National Planning Policy Framework (NPPF)

- 3.1 Paragraphs 94 and 100-102 of the NPPF set out the approach to flood risk and development that Local Planning Authorities should follow when seeking to allocate land for development. Paragraph 100 sets out the approach that should be taken when preparing Local Plans and allocating land for development:

“...Local Plans should apply a sequential, risk-based approach to the location of development to avoid where possible flood risk to people and property and manage any residual risk, taking account of the impacts of climate change, by:

- *applying the Sequential Test; if necessary, applying the Exception Test ...”*

- 3.2 Paragraph 101 explains that the aim of the sequential test is to direct development to areas with the lowest probability of flooding, and that development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower probability of flooding. The Strategic Flood Risk Assessment provides the basis for applying this test. A sequential approach should be used in areas known to be at risk from any form of flooding.

- 3.3 Paragraph 102 states that, if following application of the sequential approach not all development can be accommodated on land located in areas with the lowest probability of flooding, then development can take place in areas with a greater probability of flooding provided that the Exception Test is met. This consists of the following:

“it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a Strategic Flood Risk Assessment where one has been prepared; and;

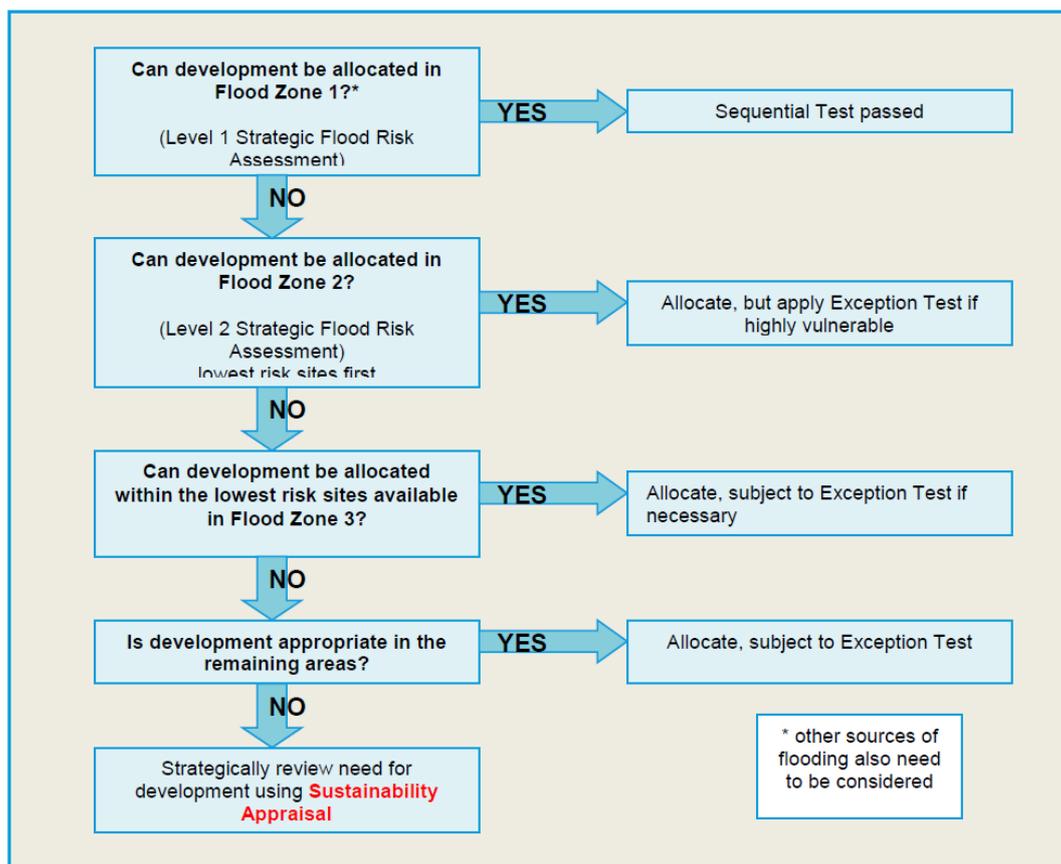
a site-specific flood risk assessment must demonstrate that the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.

Both elements of the test will have to be passed for development to be allocated or permitted.”

4. Planning Practice Guidance

- 4.1 Planning Practice Guidance (PPG) provides further detail and advice on applying the SET as established in the NPPF. The SET ensures that a sequential approach is taken, steering development to areas with the lowest probability of flooding. The aim is to steer new development to Flood Zone 1 (areas with the lowest probability of river flooding).
- 4.2 If there are no reasonable sites within Flood Zone 1, account should be taken of the flood risk vulnerability of land uses of available sites in Flood Zone 2 (areas with a medium probability of river flooding). Only if there are no reasonably available sites in Flood Zones 1 and 2, should sites in Flood Zone 3 (areas with a high probability of river flooding) be considered. Within each flood zone, surface water and other sources of flooding need to be taken into account³. Figures 1 and 2 below explain the stepped process for applying the SET.

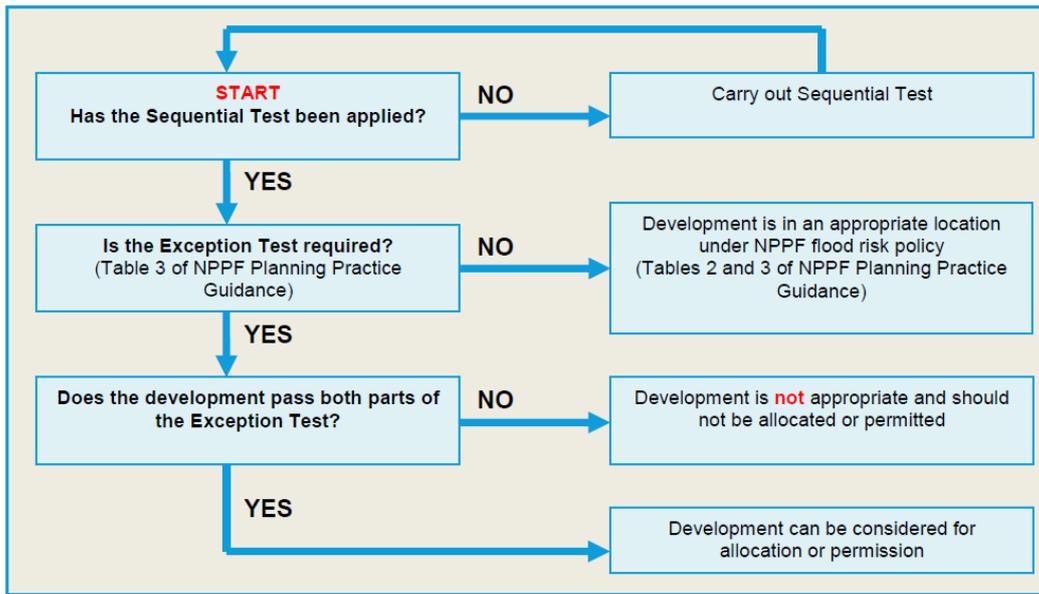
Figure 1 Sequential Test decision tree⁴



³ Paragraph 019, Reference ID:7-019-20140306

⁴ Diagram 2, Paragraph 021, Reference ID: 7-021-20140306

Figure 2 Exception Test decision tree⁵



4.3 In order to undertake the SET, the flood risk probability within any given site needs to be understood and considered in relation to the vulnerability of the proposed use in order to determine the flood risk ‘compatibility’ of the proposed site allocation. The classifications of flood risk probability and flood risk vulnerability are set out in Tables 1 and 2 below.

Table 1 Flood risk probability

Flood Zone	Flood probability	Explanation
Flood Zone 1	Low probability	This zone comprises land assessed as having a less than 1 in 1,000 annual probability of river or sea flooding (<0.1%).
Flood Zone 2	Medium probability	This zone comprises land assessed as having between a 1 in 100 and 1 in 1,000 annual probability of river flooding (1% – 0.1%), or between a 1 in 200 and 1 in 1,000 annual probability of sea flooding (0.5% – 0.1%) in any year.
Flood Zone 3a	High probability	This zone comprises land assessed as having a 1 in 100 or greater annual probability of river flooding (>1%), or a 1 in 200 or greater annual probability of flooding from the sea (>0.5%) in any year.
Flood Zone 3b	Functional floodplain	This zone comprises land where water has to flow or be stored in times of flood.

⁵ Diagram 3, Paragraph 028 reference ID:7-028-20140306

Table 2 Flood Risk Vulnerability

Category	Explanation
Essential Infrastructure	<ul style="list-style-type: none"> • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk, and strategic utility infrastructure, including electricity generating power stations and grid and primary substations.
Highly Vulnerable	<ul style="list-style-type: none"> • Police stations, Ambulance stations and Fire stations and Command Centres and telecommunications installations required to be operational during flooding. • Emergency dispersal points. • Basement dwellings. • Caravans, mobile homes and park homes intended for permanent residential use. • Installations requiring hazardous substances consent.
More Vulnerable	<ul style="list-style-type: none"> • Hospitals. • Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels. • Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels. • Non-residential uses for health services, nurseries and educational establishments. • Landfill and sites used for waste management facilities for hazardous waste. • Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.
Less Vulnerable	<ul style="list-style-type: none"> • Buildings used for: shops; financial, professional and other services; restaurants and cafes; hot food takeaways; offices; general industry; storage and distribution; non-residential institutions not included in 'more vulnerable'; and assembly and leisure. • Land and buildings used for agriculture and forestry. • Waste treatment (except landfill and hazardous waste facilities). • Minerals working and processing (except for sand and gravel working). • Water treatment plants. • Sewage treatment plants (if adequate pollution control measures are in place).
Water-compatible development	<ul style="list-style-type: none"> • Flood control infrastructure. • Water transmission infrastructure and pumping stations. • Sewage transmission infrastructure and pumping stations. • Sand and gravel workings. • Docks, marinas and wharves. • Navigation facilities. • MOD defence installations. • Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location. • Water-based recreation (excluding sleeping accommodation). • Lifeguard and coastguard stations. • Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms. • Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

- 4.4 When taken together, flood risk probability and vulnerability indicate the flood risk compatibility for any given site allocation, as shown in Table 3. The table indicates whether the proposed site allocation would be appropriate, whether the exception test should be applied, or if development should not be allocated/permitted-although the sequential test should be applied in all scenarios outside Flood Zone 1 to direct development to the area of lowest risk.

Table 3 Flood Risk Compatibility

Flood Zone	Essential Infrastructure	Water Compatible	Highly Vulnerable	More Vulnerable	Less Vulnerable
Zone 1	Compatible	Compatible	Compatible	Compatible	Compatible
Zone 2	Compatible	Compatible	Exception Test Required	Compatible	Compatible
Zone 3a	Exception Test Required	Compatible	Not compatible	Exception Test Required	Compatible
Zone 3b	Exception Test Required	Compatible	Not compatible	Not compatible	Not compatible

5. Updated National Planning Policy Framework - planning applications

- 5.1 Whilst the Local Plan has been under examination, the iteration of the NPPF produced in July 2018 has updated the policies in relation to flood risk planning, in Chapter 14: 'Meeting the challenge of climate change, flooding and coastal change.' There is now a greater emphasis on climate change and resilience, including where necessary, withdrawing from the worst affected areas of flood risk.
- 5.2 Whilst applicants need not apply the sequential test for applications on sites allocated in the development plan, paragraph 162 of the NPPF 2019⁶ advises that the Exception Test may need to be reapplied at planning application stage, e.g. if more recent information about existing or potential flood risk needs to be taken into account. This is relevant to address here as sites that will be subject to the 2012 NPPF policy for the purposes of the Local Plan

⁶ NPPF 2019:

https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/810197/NPPF_Feb_2019_revised.pdf

examination, will be subject to the most up to date version of the NPPF on determination.

6. Strategic Flood Risk Assessment 2019

- 6.1 Following the Call for Sites event in 2019, the Council appointed specialist consultants to update its Strategic Flood Risk Assessment, completed in December 2019. This includes a Level 2 study (subsequent to the one undertaken in December 2015/May 2016) which looks at fluvial and surface water flood risk associated with the new sites (as well as 1 site from the previous site selection process) including allowances for climate change.
- 6.2 These sites have been promoted for development and have been found to be partly within Flood Zones 2 or 3, and/or had an ordinary watercourse within or adjacent to them, through the screening process. The individual Level 2 assessments report on the proportion of the site affected by fluvial flood risk (Flood Zones 2, 3a and 3b) and on the annual probability of the land in question being inundated by surface water.
- 6.3 The analysis of flood risk set out within the SFRA Level 1 and 2 studies has been used to undertake the SET

7. Summary context of flood risk in Welwyn Hatfield

- 7.1 The smaller, mainly upper catchment watercourses in Welwyn Hatfield means that only a relatively low proportion of land is within fluvial Flood Zones 2 and 3, with **97.6% of the borough in Flood Zone 1**. The large percentage of land in Flood Zone 1 means that development can be steered away from Flood Zones 2 and 3.

8. Sequential and Exception Test Methodology

- 8.1 All sites promoted through the Call for Sites 2019 were subject to the Level 1 Screening process, prior to an assessment of site suitability.
- 8.2 The Sequential and Exception Test has then been applied to the promoted sites that passed Stage 1 and 2 of the HELAA (i.e. suitable, available and achievable development sites) and which could accommodate 10 or more dwellings within the main towns and 5 or more in the excluded villages (or rural areas).
- 8.3 The test has been informed by the results of the updated Strategic Flood Risk Assessment of land within the borough (the Level 1 study) and the subsequent Level 2 assessment of 10 locations.
- 8.4 The detailed results of the sequential test are provided within Appendix A. Fluvial flood zones have been shown with percentages of the site area within each band of flood zone. In the column querying whether all development can be provided in a lower risk flood zone, flood zones have been considered as

an absolute constraint. Developable areas have been reduced prior to this stage to only include areas of Flood Zone 1.

9. Approach to sites at risk of other sources of flooding

- 9.1 The NPPF and PPG require the SET to take account of flood risk from other sources. As evidenced in the SFRA, the only other principal source of flood risk in Welwyn Hatfield, of which there is knowledge and information, is surface water flood risk.
- 9.2 When undertaking the sequential test, both the proportion of a site affected by surface water flood risk and the nature of that flood risk (flow routes, ponding, area of a site affected) has been taken into account. Where there is a notable risk of surface water flooding and it has a potential effect upon the suitability of part of the site (in sequential test terms) without a level of mitigation, this has been reflected upon in the sequential test tables in Appendix A. For consistency, a figure of 10% of the site being at risk of surface water flooding in the 100yr event has been applied to identify sites which could be considered to be at 'high risk'. Where sites have at least 10% of their site area identified as having a risk of flooding in the 1,000yr surface water event, a note has been made of this in the column for consideration of 'residual' risk, but these are not considered to represent high risk sites and it is simply presented to inform the reader.
- 9.3 Only 1 site has a potentially significant level of surface water flooding in the 30yr event (Cuf15) where development should ideally be avoided. However, the percentage of the site within this zone is only 10%, and the zone broadly corresponds to the fluvial risk on the southern edge of the site, and tightly around the un-modelled watercourse running through the centre. As the fluvial risk areas have already been discounted from the assessment of the developable area, it is likely that the area of high surface water flood risk would also be discounted (or appropriately managed) within detailed development proposals for the site.
- 9.4 Due to a greater emphasis being placed on surface water flood risk since the 2016 iteration of the SFRA, 3 sites have been included in the Level 2 assessment, including 1 site proposed for allocation in the Draft Local Plan 2016.
- 9.5 Appendix B sets out the sites already proposed for allocation in the Draft Local Plan 2016 and highlights the most up to date flood risk information. Although the surface water mapping has not changed in the interim, there are some instances where the percentages of the site affected by surface water flooding has changed between the 2015/16 assessment and 2019 assessment. A number of these examples have been interrogated and have been found to be the result of site boundary changes, with sites either reducing in size or being larger or changing shape, which has affected the percentage coverage of the surface water flood zones.

10. Sequential Test Results

- 10.1 All sites are considered to have passed the sequential test and therefore the exception test need not be applied to any of them.
- 10.2 Notwithstanding this, some sites promoted through the Call for Sites 2019 are affected by both fluvial and surface water flood risk, as noted with the detailed sequential test table within Appendix A of the SET and have had a Level 2 SFRA assessment applied to them.
- 10.3 Although there were ten SFRA Level 2 assessments undertaken, only 3 of the relevant sites promoted through the Call for Sites 2019 passed the Stage 1 and 2 of the HELAA. A summary of the Level 2 SFRA sites assessed in the SET is provided in Table 4 below.

Table 4: SFRA Level 2 sites which passed Stage 1 and 2 of the HELAA

Site ref	Vulnerability classification	% FZ1	% FZ2	%FZ3a	%FZ3b	Consideration	Conclusion
Cuf15 (Land to the south east of KGV playing fields, Cuffley)	More vulnerable	90%	10%	8%	7%	Surface water flood risk is significant in this location with 10% 14% and 28% of the site affected in the 30, 100, and 1000yr risk events respectively. Areas at risk are mainly associated with the Hempshill/Northaw Brook along the southern boundary and the drainage ditch running through the site. Design and layout should take account of these zones and should avoid the highest risk areas (30yr). Additionally, there is an un-named watercourse flowing towards the Northaw Brook through the east of the site which will need to be modelled as part of any planning application, if allocated.	Passes the Sequential Test

Site ref	Vulnerability classification	% FZ1	% FZ2	%FZ3a	%FZ3b	Consideration	Conclusion
Pea106 (73-83 Bridge Road East, Welwyn Garden City)	More vulnerable	100%	-	-	-	Significant levels of surface water flood risk, (23% in the 100 year and 40% in the 1000 year risk events) surround the smaller building in the western part of the site. Steps should be taken to design out some of the risk, for example by having some permeable areas, reducing the built development in the highest risk areas and raising finished floor levels.	Passes the Sequential Test
SB1 (Land south of Swanley Bar Lane)	More vulnerable	100%	-	-	-	Whilst not high risk, the site is affected by surface water flooding (18% in the 1000 year risk event) with 2 flood flow paths converging in the north east of the site, and only very small percentages of flooding in lower return periods.	Passes the Sequential Test

11. Potential fluvial flood risk (for noting)

11.1 Notwithstanding the above, some sites have ordinary watercourses within or adjacent to them which may represent fluvial flood risk. Where the SFRA has not modelled this flood risk, it is noted as something which would require further investigation via a site-specific Flood Risk Assessment, should the site be allocated and a planning application be submitted. These sites are:

- BrP5 Land west of Brookmans Park
- BrP12 Land north of Peplins Way
- Cuf15 36 Adjacent King George V Playing Fields
- WeG6 Skimpans Farm, Welham Green
- GTLAA08 Land north of Barbaraville, Hertford Road

11. Conclusion

- 11.1 The SET has been applied to the sites promoted through the Call for Sites 2019 which passed stages 1 and 2 of the HELAA (as part of the site selection process).
- 11.2 The majority of the sites are entirely within Flood Zone 1 and where sites have a small proportion of land within the flood plain (Flood Zones 2 and 3), the sequential test has been applied within the site boundary to situate all development in Flood Zone 1.
- 11.3 All sites are considered to pass the sequential test and the exception test is not required.
- 11.4 Surface water flooding in the majority of cases can be managed by design and mitigation (i.e. finished floor levels). There are small areas in a few cases affected by the 30 year surface water flood risk event where there may be detailed layout considerations, but this should not be a constraint to development.