

# Flood Risk Sequential and Exception Test Document

June 2016



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Colin Haigh  
Head of Planning  
Welwyn Hatfield Borough Council  
Council Offices  
The Campus  
Welwyn Garden City  
Hertfordshire  
AL8 6AE

Tel: 01707 357000

Fax: 01707 357285

E Mail [planningpolicy@welhat.gov.uk](mailto:planningpolicy@welhat.gov.uk)

# Introduction

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 do so via a risk-based approach to appraising the flood risk associated with new development.

This document explains how Welwyn Hatfield Borough Council has applied the SET to development sites promoted for allocation in the emerging Local Plan and sets out the results of those tests. The application of the SET has been informed by the Council's Strategic Flood Risk Assessment Level 1 and 2 (SFRA), published in December 2015 and amended in June 2016 following the publication of the Environment Agency's updated guidance on climate change allowances<sup>1</sup>.

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.

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<sup>1</sup> <http://www.welhat.gov.uk/article/6206/Strategic-Flood-Risk-Assessment-Level-1-and-Level-2>

# Policy framework

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.

## National Planning Policy Framework (NPPF)

Paragraphs 94 and 100-102 of the NPPF<sup>2</sup> set out the approach to flood risk and development that Local Planning Authorities should follow when seeking to allocated land for development. Paragraph 100 in particular prescribes an 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...”

Paragraph 101 explains that 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 is to provide the basis for this approach basis for applying this test. A sequential approach should be used in areas known to be at risk from any form of flooding.

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.

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<sup>2</sup> <http://planningguidance.communities.gov.uk/blog/policy/achieving-sustainable-development/delivering-sustainable-development/10-meeting-the-challenge-of-climate-change-flooding-and-coastal-change/>

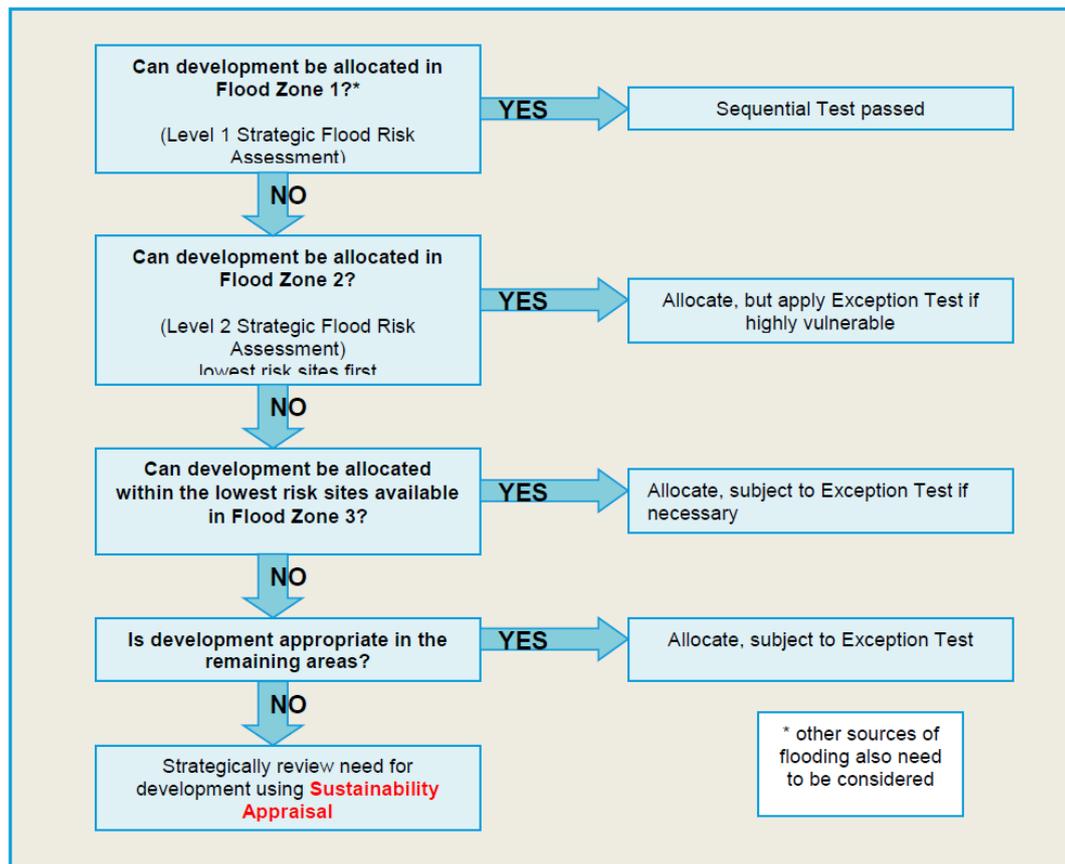
Both elements of the test will have to be passed for development to be allocated or permitted.”

## National Planning Practice Guidance (PPG)

The PPG provides further detail and guidance on applying the SET as established in the NPPF. It states that the aim is for development to be kept out of Flood Zones 2 and 3 and other forms of flooding should be treated consistently with river flooding in mapping probability and assessing vulnerability to apply the sequential approach across all flood zones.<sup>3</sup>

Figures 1 and 2 below explain the stepped process for applying the SET. They are extracts from SFRA and are based on Diagrams 2 and 3 of the PPG.

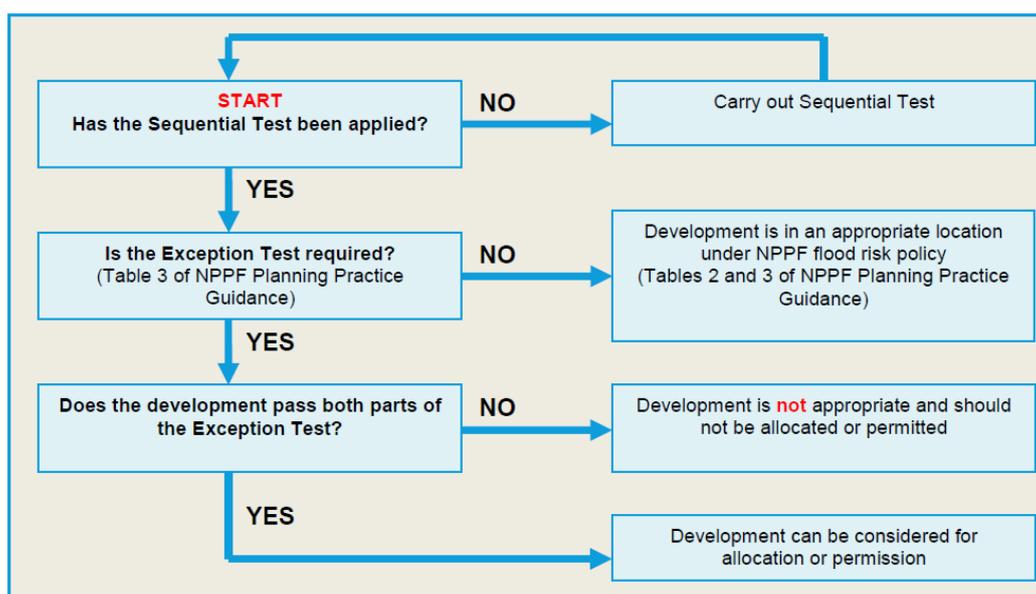
Figure 1 Sequential Test decision tree



† Based on Diagram 2 of NPPF Planning Practice Guidance: Flood Risk and Coastal Change (paragraph 020, Reference ID: 7-021-20140306) March 2014

<sup>3</sup> Planning Practice Guidance, Reference ID: 7-018-20140306

Figure 2 Exception Test decision tree



† Based on Diagram 3 of NPPF Planning Practice Guidance: Flood Risk and Coastal Change (paragraph 028, Reference ID: 7-021-20140306) March 2014

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.

**Table 2 Flood risk vulnerability**

Category	Explanation
Essential Infrastructure	<ul style="list-style-type: none"> <li>• 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.</li> </ul>
Highly Vulnerable	<ul style="list-style-type: none"> <li>• Police stations, Ambulance stations and Fire stations and Command Centres and telecommunications installations required to be operational during flooding.</li> <li>• Emergency dispersal points.</li> <li>• Basement dwellings.</li> <li>• Caravans, mobile homes and park homes intended for permanent residential use.</li> <li>• Installations requiring hazardous substances consent.</li> </ul>
More Vulnerable	<ul style="list-style-type: none"> <li>• Hospitals.</li> <li>• Residential institutions such as residential care homes, children’s homes, social services homes, prisons and hostels.</li> <li>• Buildings used for: dwelling houses; student halls of residence; drinking establishments; nightclubs; and hotels.</li> <li>• Non–residential uses for health services, nurseries and educational establishments.</li> <li>• Landfill and sites used for waste management facilities for hazardous waste.</li> <li>• Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.</li> </ul>
Less Vulnerable	<ul style="list-style-type: none"> <li>• 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.</li> <li>• Land and buildings used for agriculture and forestry.</li> <li>• Waste treatment (except landfill and hazardous waste facilities).</li> <li>• Minerals working and processing (except for sand and gravel working).</li> <li>• Water treatment plants.</li> <li>• Sewage treatment plants (if adequate pollution control measures are in place).</li> </ul>
Water-compatible Development	<ul style="list-style-type: none"> <li>• Flood control infrastructure.</li> <li>• Water transmission infrastructure and pumping stations.</li> <li>• Sewage transmission infrastructure and pumping stations.</li> <li>• Sand and gravel workings.</li> <li>• Docks, marinas and wharves.</li> <li>• Navigation facilities.</li> <li>• MOD defence installations.</li> <li>• Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.</li> <li>• Water-based recreation (excluding sleeping accommodation).</li> <li>• Lifeguard and coastguard stations.</li> <li>• Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.</li> <li>• Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.</li> </ul>

When taken together, flood risk probability and vulnerability indicate the flood risk compatibility for any given site allocation, as shown in Table 3, which indicates whether the proposed site allocation would pass the sequential test, whether the exception test should be applied, or if development should not be allocated/permitted.

**Table 3 Flood Risk Compatibility**

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

# **Strategic Flood Risk Assessment**

The Council updated and expanded its Strategic Flood Risk Assessment in December 2015. This includes both a Level 1 study of fluvial, pluvial, groundwater and residual flood risk across the borough and a Level 2 study of fluvial and surface water flood risk associated with Specified Sites, including climate change.

Specified Sites are sites that have been promoted for development and were recorded within HELAA and which were within Flood Zone 2 or 3, and/or had an ordinary watercourse within or adjacent to them. The individual Level 2 assessments assessment 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.

The analysis of flood risk set out within the SFRA Level 1 and 2 studies has been used to undertake the SET

## **Sequential Test**

The SET has been applied to the reasonably available sites within the geographical area of Welwyn Hatfield, and has been informed by the results of the Strategic Flood Risk Assessment of land within borough (the Level 1 study) and the assessment of Specified Sites (the Level 2 study).

Reasonably available sites are considered to be those that pass Stage 1 and 2 of the HELAA (i.e. suitable, available and achievable development sites) and which could accommodate 10 or dwellings within the principal towns and 5 or more in the excluded villages or rural areas. An exception has been made for GTLAA08, which has a capacity of 4 gypsy and traveller pitches but would be considered for allocation in the Local Plan given the level of need for Gypsy and Traveller pitches in the borough and the relative lack of promoted sites.

On this basis, the SET has been applied to 59 reasonably available sites within Welwyn Hatfield borough. The detailed results of the SET are provided within Appendix A.

### **Approach to sites at risk of other sources of flooding**

The NPPG 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.

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 its potential effect upon the suitability of the site (in Sequential Test terms) this has been reflected upon in the Sequential Test tables in Appendix A.

### **Summary of SET Results**

All of the 59 sites with the SET are considered to have passed the Sequential Test and therefore the Exception Test need not be applied to any of them. Notwithstanding this, some sites are affected by fluvial and surface water flood risk, as noted with the detailed Sequential Test Table within Appendix A. A summary of them is provided in Table 4 below:

Site ref	Vulnerability classification	% FZ1	% FZ2	%FZ3a	%FZ3b	Consideration	Conclusion
BrP4	More vulnerable	94.8%	5.2%	4.7%	4.4%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test
BrP6	More vulnerable	95.1%	4.9%	3.2%	2.5%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test
BrP12	More vulnerable	96%	4%	3.5%	3.1%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test
Cuf1	More vulnerable	99.9%	0.1%	0.1%	0.1%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test
Cuf4	More vulnerable	99.5%	0.5%	0.4%	0.3%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test
Cuf5	More vulnerable	94.8%	5.2%	4.7%	3.8%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test
Cuf7	More vulnerable	84.1%	15.9%	6.4%	2.7%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test

Cuf12	More vulnerable	98%	2%	-	-	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test
Hat2	More vulnerable	92.5%	7.5%	4.1%	0.5%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test
Hat5	More vulnerable	93.8%	6.2%	2.1%	0%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test
WeG4 b	More vulnerable & Less vulnerable	94.9%	5.1%	5%	5%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test
WeG6	More vulnerable	87.8%	12.2%	9.9%	6.9%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1, and if necessary Flood 1 and Zone 2, following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test
WGC5	More vulnerable & Highly vulnerable	98.1%	1.9%	1.6%	1.3%	The site is predominantly in Flood Zone 1. Development can be restricted to Flood Zone 1 (Gypsy and Traveller) or Flood Zones 1 and 2 if necessary (Dwelling houses) following a sequential approach to layout. As such, there is no need to consider alternative sites in Flood Zone 1.	Passes the Sequential Test

Some sites have ordinary watercourses within or adjacent to them which may present fluvial flood risk. Where the SFRA has not modelled this flood risk, it has been 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:

- No02, 36 The Ridgeway, Cuffley

- HC94, Hatfield Fire Station, Hatfield
- Hat1/13, Stanboroughbury Farm, Hatfield
- GTLAA01, Foxes Lane, Welham Green
- WGC1, Creswick, Welwyn Garden City
- GTLAA08, Land north of Barbraville, Rural South.

## **Conclusion**

The SET has been applied to 59 reasonably available development sites within the borough which are capable of allocation with the Council's Local Plan. All 59 sites are considered to pass the Sequential Test, and therefore the Exception Test is not required.