Flood Risk:
The Sequential and Exception Tests
Update February 2013

Draft version. 1

1. Introduction

1.1. Following the Core Strategy examination Inspector's preliminary conclusion (ID28), the Council is proposing changes to the submitted Core Strategy. These changes are underpinned by evidence prepared since the hearings. This paper updates the Sequential/Exception Test report for the Draft Core Strategy Publication Version (Nov 2010) and sets out how the sequential test has been applied to inform changes to the Core Strategy.

1.2. Since inspector has accepted the Council's position on the sequential test for economic uses in Bath. (ID 28 Para 3.12), this paper relates to how the housing provisions have been sequentially tested to inform the proposed changes to the submitted Core Strategy.

2. Policy Context

2.1. National Planning Policy Framework (NPPF CD2/31) and Technical Guidance to the NPPF (CD2/32) set the national planning policy context for consideration of flood risk. It states that inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk, but where development in these locations is necessary, setting out why an exception should be made and how it can be made safe without increasing flood risk elsewhere.

2.2. B&NES Strategic Flood Risk Assessments (CD4/FR6-14) underpinning the submitted Core Strategy refine information on the probability of flooding, including various sources of flooding as well as the impacts of climate change, and provide the basis for applying the Sequential Test.

2.3. Since the Core Strategy hearings in early 2012 (Dec 2010 CD4/FR2), B&NES appointed Black & Veatch Ltd (B&V) to prepare Hydraulic Modelling for the River Avon and to investigate flood mitigation measures need to make new development sites safe including having a means of safe access/egress during a flood event. The B&V Bath Flood Risk Management Project: Technical Note (Feb 2013) sets out the findings of B&V's work, proposals for mitigating flood risk, and summarises the further work required to implement the solution.

3. The Core Strategy Approach

3.1. The spatial vision for the district envisages that the district will continue to be distinctive , become a more competitive area within the West of England and will be made up of competitive, healthy and attractive urban, town and village centres within a rich and varied rural setting.

3.2. In accordance with the NPPF, the Core Strategy supports sustainable economic development to deliver growth and encourage the effective use of land by reusing previously developed land and directing new development to the most sustainable locations.

Housing needs and supply

3.3. The Council has reviewed its housing requirement and housing land supply, and as a result of this work a number of changes are proposed to the Plan. Key evidence is;

- The **Strategic Housing Market Assessment** (SHMA): This study was undertaken in accordance with national guidance and the latest best practice. Its objective is to assess demographics, market trends and other statistics, and to identity the housing requirement in a given area.

- The **Strategic Housing Land Availability Study** (SHLAA): This assesses whether sites are suitable, deliverable and developable during the plan period. The assessments were carried out applying the sequential risk based approach required by the NPPF and also reflect the outcomes of the Sustainability Appraisals weighing the flood risk with wider sustainability objectives. (Sustainability Appraisal Annex L)

3.4. The Core Strategy makes provision for 12,700 homes. According to the SHLAA, of the 12,700 homes, 5,088 homes are already built or are sites with Planning Permission. A windfall sites allowance of 1,586 homes will be subject to the sequential test through the Development Management process***. This leaves 6,047 homes to be sequentially tested for development as*** summarised below.

Table 1 Housing development sites

	Built / with planning permissions (homes)	**Subject to the sequential test (homes)**	**Windfall (homes)**	**Total (homes)**
Bath	2,935	3,318	752	7,005
Keynsham	416	1,510	164	2090
Somer Valley	1,436	699	260	2,395
Rural	301	320	410	1,031
Whitchurch		200		
	5,088	**6,047**	**1,586**	**12,721**

4. The Sequential Test for Bath

4.1. The Council commissioned Black and Veatch to prepare the Hydraulic Model which reflects more accurately the flood risk along the river corridor in Bath. The model is now endorsed by the EA, but not incorporated into the EA's Flood Zone nor B&NES SFRA maps. Therefore this sequential test is based on the SFRA zones. However, in general, the FZ2/3 areas are not larger than the SFRA zones and B&V Bath Flood Risk Management Project Technical Note provides detail maps.

4.2. Table 2 summarises the housing development sites identified in SHLAA affected by flood risk zones, taking into account the effects of climate change. (ie future FZs not current FZs)

Table 2 Bath Housing development sites

Subject to the sequential test		**FZ1**	**FZ1 (FZ2 can be avoided**	**FZ2 area**	**FZ 2/FZ 3 area**
Urban area	2,598 homes	1,536 home (11 sites)	442 homes (8 sites)	63 homes (4 site)	392 homes (9 sites)
		165 homes (Hilton Hotel/ Cattle Market/ Corn Market; Bath Press; Argos)			
Greenfield	720 homes	720 homes			
	3,318 homes	2,858 homes			

4.3. Only small parts of SHLAA sites-Wes.2 (Bath Press), Abb.6 (Hilton Hotel/Cattle Market/Corn Market) and King.13 (Argos) are within FZ2/3. There is enough flexibility to apply the sequential approach directing residential development to FZ1 within these sites. Therefore the residential element is included in the FZ1 figure.

4.4. Some areas fall partly in FZ1, 2 and 3. For the purpose of this test, a general proportional assumption is applied. See the Table 3 below.

4.5. The majority of the SHLAA site King 6 (Green Park Station) is within FZ1. FZ 2 and 3 amount to only 0.45 ha of 2.4 ha, therefore the majority of homes can be directed to FZ1. Applying the average density in the city centre on a precautionary approach 250 homes within FZ1, 50 homes in FZ2/3 for this test. However, the latest modelling by B&V shows that existing Sainsbury's store footprint is already raised and only a small area is in the 1 in 75 year probability zone therefore it is likely that FZ3 can be avoided.

4.6. Therefore 2,863 homes pass the sequential test but 455 homes cannot be accommodated in FZ1. Consideration of greenfield land forms part of this sequential test and will be discussed below.

Table 3 Bath SHLAA sites falls partly in FZ2 and 3 with the proportionate indicative capacities

		Homes	Area (ha)	FZ1(ha)	FZ2 with climate change (ha)	FZ3 with climate change (ha) Exception Test
Abb.1/ 2	**Avon Street Car Park/Coach Park**	150	0.9	0	0.06	0.84 (150 homes)
Abb.3-5	**Manvers Street Royal Mail Sorting Depot/Police Station Car Park**	100	1.25	0.31 (50 homes)	0.05	0.89 (50 homes)
King.6	**Green Park Station**	300	2.4	1.92 (250 homes)	0.09	0.36 (50 homes)
King.7	**Alexander House, Norfolk Place**	19	0.08	0.054 (13 homes)	0.026 (6 homes)	0
King.10	**Hinton Garage, Albion Place**	55	0.45	0.2 (27 homes)	0.04	0.21 (28 homes)
King.11	**Onega Centre**	36	0.3	0.24 (12 homes)	0.032 (12 homes)	0.028 (12 homes)
King.12	**Comfortable Place**	60	0.62	0.19 (20 homes)	0.07	0.36 (40 homes)
King.15	**Westmark, Windsor Bridge Road**	120	0.73	0.21 (40 homes)	0.255 (40 homes)	0.265 (40 homes)
Lam.4	**The former 'Harvester' restaurant, Gloucester Road**	46	0.74	0.48 (30 homes)	0.01	0.25 (16 homes)
	15 St George Place	11	0.06	0.007	0.023 (5 homes)	0.03 (6 homes)
	Sub-total	**851 homes**	**7.53 ha**	**3.61 ha (442 homes)**	**1.99 ha (63 homes)**	**3.23 ha (392 homes)**
						455 homes

4.7. The overall aim of the sequential test is to steer new development to Flood Zone 1. Only where there is no reasonably available site in FZ1, reasonably available sites in FZ2 can be considered.

4.8. The Core Strategy seeks to maximize the use of available and deliverable land in the urban area and there are currently no further reasonably available sites within the urban areas in the district. The SHLAA and SA have also assessed potentially available greenfield sites within Flood Zone 1. Consideration of these locations and sites taking into account wider sustainability issues is presented in the SA report Annex L.

4.9. Annex L sets out a summary of the reasonability available alternative sites (Stage 3 assessment). As recognized through the Locational Alternative Appraisal Matrices in the SA (particularly objective 18: Reduce vulnerability to, and manage for risk taking into account climate change), the greenfield land is preferable in terms of flood risk. In the wider sustainability context, the SA shows that the residential capacity of greenfield sites in FZ 1 on the edge of Bath is significantly constrained by a highly sensitive environment such as the World Heritage Site and its setting, the AONB, heritage designations and Conservation Areas. Various studies and assessments including the Habitat Impact Assessment Screening, Landscape Impact and Green Belt Review were prepared to identify the areas with less impact or with potential mitigations. Three potential locations, with the total capacity of 720 homes have been identified at Bath, along with 1,150 homes on the greenfield sites elsewhere in the district.

4.10. Bath is a key centre within the West of England and the development of sites in the river corridor is integral to the Council's economic strategy and the growth aspirations of the LEP Enterprise Area associated with proposed significant infrastructure investment. Residential development is integral to the mixed use regeneration of priority sites in Bath and is essential to make development viable in some sites. Development in the city centre presents opportunities for walking, cycling and public transport to access existing key facilities, services and jobs. The majority of housing capacity (19 homes on site FZ2 and 392 homes in on FZ2/3) is within this regeneration area. The housing numbers in the key regeneration sites are still indicative but without the inclusion of housing provision could potentially undermine the achievement of better urban design, better social mix and economic viability, impacting on economic development.

4.11. Areas beyond the new greenfield land now identified at Bath for development would cause substantial environmental harm and would not have the same benefits of supporting regeneration in the centre of Bath. They are not considered as reasonable alternatives. Therefore there is no reasonably available alternative site to accommodate this level and nature of development of 455 homes with economic and social benefits.

Flood Zone 2

4.12. Of 455 home, 63 homes could be accommodated within FZ2 as shown in Table 3. Following the Sequential Test and consistent with wider sustainability objective, it is not possible for the development of about 392 homes to be located in FZ 1 nor 2. Therefore the Exception Test needs to be applied as set out in para 102 of the NPPF.

The Exception Test for Bath

4.13. The Core Strategy does not allocate specific sites but identifies locations. Therefore it is not the objective of this paper to undertake a detailed Exception Test. Those sites to be located for development within a flood risk area will be subject to a site specific sequential/exception test through the Placemaking or/and Development Management process.

4.14. **Exception Test 1:** 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.

- The SFRA level 1 assessment was prepared in April 2008 and a more detailed level 2 assessment was prepared for Bath in July 2009. They provide the basis for the Exception Test.
- Development within this area will provide major regeneration opportunities in Bath, a key centre within West of England. It will provide the majority of new office and commercial space for the district, contributing to economic prosperity. These sites are essential to the Council's economic strategy and the growth aspirations of the LEP Enterprise Area which has significant infrastructure investment.
- These sites are well located in and close to the city centre and are accessible to a variety of services by sustainable transport modes, walking, cycling and public transport.
- Sites King 10 to 15 are part of the Bath Western Riverside regeneration area and further planning guidance is provided in the BWR Supplementary Planning Document.

- Development within this area will provide more housing including a proportion of affordable housing and addressing the issues of in-commuting.
- The development within this area will enable redevelopment of areas of derelict or underperforming land within the city in order to protect and enhance the World Heritage Site, its setting, landscape value including AONB and the Green Belt from unnecessary incursion.
- Development within this area will help to maintain Bath as a tourist destination.
- Development within this area will provide the opportunity to protect and enhance the multi-functional role of the river corridor. e.g. wildlife habitat, public access and recreation and sustainable cycle routes.

4.15. **Exception Test 2)** 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, reducing flood risk overall.

4.16. The council has already undertaken SFRA level 1 and 2 and has been investigating flood risk management measures. The Flood Risk Management Strategy has recommended on-site defences combined with upstream compensatory storage subject to Hydraulic Modelling.

4.17. The Hydraulic Modelling has now been completed and confirms that the impact of raising the development sites (including all sites subject to the Exception Test in the regeneration sites) is a loss of conveyance, rather than a loss of flood storage. It recommends, where necessary, to raise all the development sites and the access/egress routes (or raise defence walls).

4.18. The Lower Bristol Road will form the main access to several of the proposed developments which will be raised above the floodplain. NPPF requires that safe access to and from the development is maintained in all floods up to the future 1 in 100 year event. The B&V modelling has confirmed that the existing flood defences protecting Lower Bristol Road would be over topped during a 1 in 50 year event and the existing surface water drainage network has limited capacity. Therefore the Lower Bristol Road is at risk of flooding from both the Avon and surface water. If not addressed, there would be no safe access to /egress from the development sites when the River Avon is in flood.

4.19. B&V Bath Flood Risk Management Project: Technical Note (Feb 2013) provides the details of schemes and is agreed in principle with the Environment Agency. In summary;

- All key development sites (including housing and employment mixed use sites) to be raised to make new development safe and provide conveyance mitigation measures to compensate lost conveyance capacity.
- Lower Bristol Road: Improve defence walls and provide conveyance mitigation measures to provide safe access/egress. Provide surface water management scheme.

4.20. On-site defences and conveyance mitigation schemes provide good scope to demonstrate that development will be safe for its lifetime without increasing flood risk elsewhere. The improvements to the Lower Bristol Road will also provide a benefit to existing properties as well as reducing traffic disruption.

4.21. The B&V Technical Note also summarises the further work required to implement the schemes. The scheme can be delivered in a number of phases as development sites come forward. The Council proposes to submit a planning application for the first phase scheme during 2013 with a view to completing the works in 2014/15. This work, which will

enable the key employment sites in the Enterprise Area to come forward, will be funded by part of the £13m infrastructure funding awarded to B&NES by the LEP. Onsite defenses combined with the conveyance mitigation scheme ensures that new development will be safe without increasing risk elsewhere, passing the Exception Test.

4.22. The Core Strategy makes provision for 12,700 homes. This consist of the SHMA projection with the LEP job numbers with low-trend migration, the Local Plan backlog and the extra housing to boost affordable housing and meet its requirements. As result, the extra market housing of around of 3,600 to 4,000 homes will be provided. This will provide some flexibility in case there is some delay in implementing the mitigation measures. This is sufficient to meet the mid trend migration with backlog.

4.23. Taking account of the above, it is considered that the development proposed in Bath could be carried out in accordance with the Exception Test.

5. The Sequential Test for Keynsham

5.1. The table below summarises the housing development sites in Keynsham. Of 2,090 home, 416 homes are already built or with planning permission. A windfall sites allowance of 164 homes will be subject to the sequential test through the Development Management process. This leaves 1,510 homes to be sequentially tested for development as summarised below.

Table 4 Keynsham housing development sites

	Built / with planning permissions	**Subject to the sequential test**	**Windfall**	**Total**
Keynsham	416 homes	1,510 homes	164 homes	2,090 homes

5.2. The table 5 below summarises the housing development sites with its flood risk zones.

Table 5 Keynsham housing development sites with its flood risk zones

Subject to the sequential test		**FZ1**	**FZ1 (FZ2 can be avoided**	**FZ2 area**	**FZ 2/FZ 3 area**
Urban area	1,060 homes	410 home (4 sites)	390 homes (Somerdale)	120 homes (Somerdale)	140 homes (Somerdale)
Greenfield	450 homes	450 homes			
	1,510 homes	1,250 homes			

Table 6 Keysham SHLAA site falls partly in FZ2 and 3 with the proportionate indicative capacities

		Target capacity	Total Area (ha)	FZ1	Current FZ2	Current FZ 3	FZ2 with climate change	FZ3a with climate change
K1	Somerdale	650 homes	25.3 ha	15.18 ha (390 homes)	10.12 ha	0	4.87 ha (120 homes)	5.25 ha (140 homes)

5.3. The only potential housing site affected by flood risk is Somerdale, a site of 25ha, of which 10ha falls within flood zone 2. The SHLAA indicates an estimated housing potential of this site as being about 650 dwellings as part of a mixed use development. At the present time, there is reasonably available land within flood zone 2 for the use of land within Flood Zone 3a to be minimised. In the "with climate change" scenario, however, the use of some land within Flood Zone 3a may be necessary to accommodate the proposed level of development. For the purpose of this test, a general proportional assumption is applied. It assumes 390 homes in FZ1, 120 homes in FZ2 and 140 in FZ3a taking into account climate change.

5.4. Therefore 1,250 homes pass the sequential test but 260 homes cannot be accommodated in FZ1 as shown in Table 5

5.5. As explained in the Bath section, there are currently no further reasonably available sites within the urban area in the district. The Sustainability Appraisal Report Annex L sets out a summary of the reasonability available alternative sites (Stage 3 assessment). As result, two potential locations, with the total capacity of 450 homes in Keynsham have been identified, along with 1,420 homes on the greenfield sites elsewhere in the district.

5.6. Keynsham is located between Bath and Bristol therefore it contributes well to the district and sub-regional economy as well as becoming a more significant business location. The proposed changes to the Core Strategy maintain the objective of increasing self containment. The Somerdale development is essential to the Council's Economic Strategy and the growth aspirations. The Economic Strategy highlights the need to bring forward new employment space in the town centre increasing the number and diversity of jobs available locally. The Somerdale development is essential to achieve this. Residential development is integral to the mixed use regeneration and helps to make development viable. The Somerdale site is well located and presents opportunities for walking, cycling and public transport to access existing key facilities, services and jobs. Without the inclusion of housing provision could potentially undermine the achievement of better urban design, better social mix and economic viability, impacting on economic development. The factory ceased production and closed in January 2011.

5.7. Areas beyond the proposed greenfield land for development would cause substantial environmental harm and would not have the same benefits of supporting regeneration in Keynsham. They are not considered as reasonable alternatives. Therefore there is no seasonably available alternative site to accommodate this level and nature of development of 260 homes with economic and social benefits.

Flood Zone 2

5.8. Of 260 home, 120 homes could be accommodated within FZ2 as the Table 6. Following the Sequential Test, it is not possible, consistent with wider sustainability objective, for the development of about 140 homes to be located in FZ 1 nor 2. Therefore the Exception Test needs to be applied as set out in para 102 of the NPPF.

5.9. **Exception Test**

5.10. The Core Strategy Policy KE2 sets out Town Centre / Somerdale Strategic Policy, but the Somerdale proposal will be subject to a further sequential/exception test through the Development Management process.

5.11. **Exception Test 1:** 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.

- The SFRA level 1 assessment was prepared in April 2008 and a more detailed level 2 assessment was prepared for Keynsham in July 2009. They provide the basis for the Exception Test.
- The Keynsham town centre has historically been the hub of activity within Keynsham and will continue to be the focus of the majority of future development and regeneration. The Somerdale development is essential to achieve this, providing a range of employment opportunities.
- Development will provide more housing including a proportion of affordable housing.
- Development is well linked by sustainable transport modes.
- As part of mixed used development, a new primary school, leisure facilities and local centre to be provided.
- Provide opportunities to improve green infrastructure.

5.12. **Exception Test 2)** 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, reducing flood risk overall.

5.13. The council has already undertaken SFRA level 1 and 2 and has been investigating district-wide flood risk management measures.

5.14. Master planning for the Somerdale site has been prepared by the developer and was subject to public consultation in February. They propose to raise the land and create the wet land to provide additional flood storage capacity to compensate for the increase in ground levels required for protection at the north of the site. The developer has been engaged with the EA. It is understood that the developer is in the final stages of preparing their plans for submitting a planning application which is expected in Spring 2013. The site specific flood risk assessment together with Hydraulic Modelling and the drainable strategy need to be submitted. The application has to demonstrate to meet the sequential and exception tests.

5.15. As explained in the Bath chapter, the extra provision of market housing of around of 3,600 to 4,000 homes will provide some flexibility in case there is some delay or capacity change due to flood risk.

5.16. Taking account of the above, it is considered that the development proposed in Keynsham could be carried out in accordance with the Exception Test.

6. Somer Valley

6.1. The table below summarises the housing development sites in the Somer Valley. Of 2,395 home, 1,436 homes are already built or with planning permissions. A windfall sites allowance of 260 homes will be subject to the sequential test through the Development Management process. This leaves 699 homes to be sequentially tested for development as summarised below.

Table 7 Somer Valley housing development sites

	Built / with planning permissions	Subject to the sequential test	Windfall	Total
Somer Valley	1,436 homes	699 homes	260 homes	2,395 homes

5.2 The table 8 below summarises the housing development sites with its flood risk zones.

Table 8 Somer Valley SHLAA site falls partly in FZ2 and 3 with the proportionate indicative capacities

Subject to the sequential test		**FZ1**	**FZ1 (FZ2 can be avoided**	**FZ2 area**	**FZ 2/FZ 3 area**
Urban area	399 homes	209 home (5 sites)	167 homes (MSN.9, RAD.4)	10 homes (RAD.4)	13 homes (RAD.4)
Greenfield	300 homes	300 homes			
	699 homes	676 homes			

6.2. The SHLAA site-MSN9 falls in FZ 1, 2 and 3a and affected by increased risk of flooding. however, the development is part of mixed use allocation and there is enough flexibility to apply the sequential approach directing residential development to FZ1. The edge of the SHLAA site-Rad 12 site touches FZ2 and 3 (0.05 ha of 0.59 ha) but these area can be avoided. Therefore it is included in FZ1 figure.

		Homes	Total Area (ha)	FZ1	FZ2	FZ3	FZ2 with climate change	FZ3 with climate change
Midsomer Norton								
MSN 16	St Peters Factory	115	0.25	0.25	0	0	0	0
MSN 9	Former WBB Factory	150	5.64	4.64	0.38	0.62	0	1
Radstock								
RAD 20	Radstock County Infants	14	0.33	0.33	0	0	0	0
RAD 2	Rymans Engineering	50	0.85	0.85	0	0	0	0
RAD 4	Old Bakery	40	0.65	0.24 (17 homes)	0.29	0	0.17 (10homes)	0.12 (13 homes)
RAD 12	Combe end	30	0.59	0.54	0.03	0.02	0.02	0.03
	Sub-total	399						
Greenfield Sites to be identified								
		300						
		699	**8.31**	**6.85**	**0.7**	**0.64**	**0.19**	**1.15**

6.3. The only potential housing site affected by flood risk is the SHLAA site Rad 4 (Old Bakery), a site of 0.65ha, of which 0.29ha falls within flood zone 2. The SHLAA indicates an estimated housing potential of this site as being about 40 dwellings as part of a mixed use

development. At the present time, there is reasonably available land within flood zone 2 for the use of land within Flood Zone 3a to be minimised. In the "with climate change" scenario, the use of some land within Flood Zone 3a may be necessary to accommodate the proposed level of development. The building is now vacant and, even though there is no proposal for the site yet, it is likely to be developed.

6.4. The town, together with Midsomer Norton provides important services such as shopping, employment, cultural and health facilities to local residents and the surrounding communities. Recent incremental housing development and a decline in the manufacturing sector has led to an imbalance between jobs and homes in the Somer Valley. The Old Bakery is located in the centre of Radstock and contributes well to help revitalise the town centre creating more jobs. Bringing the vacant building back in use also helps to enhance the Conservation Area. Inclusion of housing provision could contribute to achieve better urban design, better social mix and economic viability.

6.5. The SHLAA assumes that the building will be converted for a mix of commercial uses and that the site frontage to Waterloo Road and open space in FZ 1 is appropriate for residential. There is some flexibility to apply the sequential approach within the site. Any development proposal for this site need to prepare a site specific flood risk assessment and demonstrate to meet the sequential and exception tests.

6.6. Taking account of the above, it is considered that the development proposed in the Somer Valley could be carried out in accordance with the Exception Test.

7. Other areas

7.1. The SHLAA sites in the rural area are all in FZ1. Additional housing allowance will be subject to the sequential test through the Development Management process.

7.2. The area proposed in Whitchurch is all in FZ1. It passes the sequential test and will be subject to the sequential test through the Development Management process.