Bradford City Centre Area Action Paper (AAP)

Publication Version (2015)

Flood Risk Topic Paper

Contents

1. Introduction

1.1 The City of Bradford Metropolitan District Council (the Council) are producing a new Local Plan for the Bradford District. The Bradford City Centre Area Action Plan (the AAP) is being produced as part of the Bradford District Local Plan. The AAP will guide the transformation of the Bradford City Centre (the Corridor) and facilitate the delivery of this key growth area. The National Planning Policy Framework (NPPF) (paragraphs 99-102) requires Local Plans to take account of flood risk by directing development away from areas at highest risk but where development is necessary making it safe without increasing flood risk elsewhere.

1.2 The Bradford City Centre Area Action Plan identifies proposed site allocations for development within three Sub Areas. Sites outside the area covered by the Bradford City Centre AAP boundary will be allocated through the City Centre AAP and Allocations Development Plan Document and will be subject to a separate flood risk testing process.

1.3 In accordance with the NPPF, the Bradford City Centre AAP will seek to minimise flood risk by allocating land for development, to the greatest extent possible, within low risk areas. A Level 1 Strategic Flood Risk Assessment (SFRA) has been prepared by the Council to support the strategic approach to flood risk in the District. This identified that the Bradford City Centre AAP contains areas of land at risk of flooding, particularly along the Bradford Beck. A SFRA Level 2 has been prepared in order to provide a more detailed understanding of flood risk in the AAP area and to support the site allocation process in terms providing the evidence required to inform the Sequential and Exception Test.

1.4 The SFRA Level 1 recommends that a supporting stand alone document is prepared by the Council, which clearly records all decisions for each proposed development site (to avoid, substitute, control, mitigate) and the evidence that they used to make the decision. This should provide the evidence that the Sequential Test and Exception Test have been applied. This document sets out the Council's approach to taking flood risk into account in the preparation of the Bradford City Centre AAP.

2. Policy Context

National Planning Policy

2.1 The NPPF sets out how flood risk should be taken account of in the preparation of a Local Plan. NPPF Paragraph 100 sets out that 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:

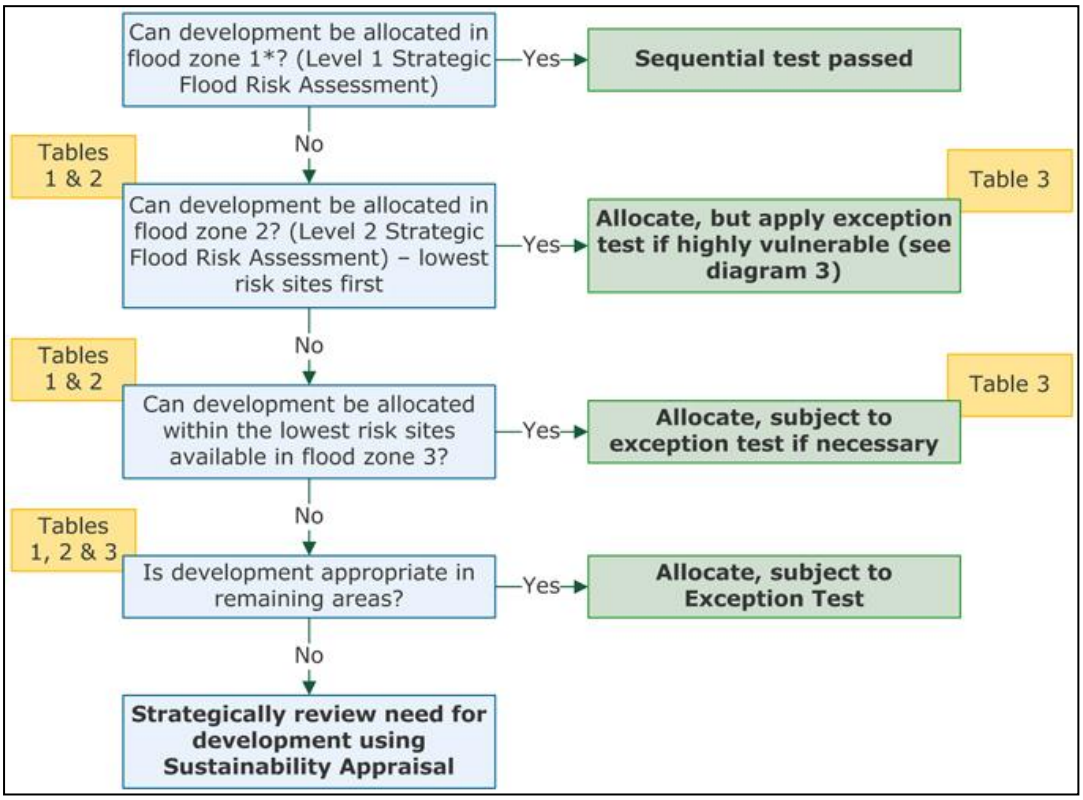
- applying the Sequential Test
- if necessary, applying the Exception Test
- safeguarding land from development that is required for current and future flood management

2.2 In relation to the latest national guidance for taking account of flood risk, the 'Technical Guidance to the NPPF (CLG, March 2012) was archived on the 7th March 2014 and has been superseded by the National Planning Practice Guidance (NPPG) on flood risk and coastal management.

Sequential Test

2.3 The Sequential Test is a decision making tool designed to ensure that areas at lower flooding are developed in preference to areas of higher risk. The NPPF states that 'the aim of the Sequential Test is to steer new development to areas with the lowest probability of flooding. Development should not be allocated if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding' (paragraph 101). Figure 1 (below) sets out how the Sequential Test should be applied when preparing a Local Plan.

Figure 1: Application of the Sequential Test for Local Plan preparation (taken from the National Planning Practice Guidance: Diagram 2)



2.4 The SFRA should be used as the basis for applying the sequential test and, where necessary, the Exceptions Test when determining land use allocations. The NPPG notes that where land outside flood risk areas cannot appropriately accommodate all the necessary development in an area, it may be necessary to increase the scope of the SFRA to provide the information necessary for application of the Exception Test, where appropriate.

Exceptions Test

2.5 The NPPF states that if, following application of the Sequential Test, it is not possible for development to be located in areas with a lower risk of flooding, the Exception Test can be applied if appropriate (Paragraph 102). For the Exception Test to be passed:

● it must be demonstrated that the development provides wider sustainability benefits to the community that outweigh flood risk, informed by a SFRA

● 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.

2.6 Table 1 and Table 2 below set out flood risk vulnerability of different land use and flood zone compatibility used to inform application of the Exceptions Test.

Table 1: Flood risk vulnerability and flood zone 'compatibility' (taken from the NPPG : Table 3)

Flood Zones	Flood Risk Vulnerability Classification				
	Essential infrastructure	Highly vulnerable	More vulnerable	Less vulnerable	Water compatible
Zone 1	✓	✓	✓	✓	✓
Zone 2	✓	Exception Test required	✓	✓	✓
Zone 3a †	Exception Test required †	✗	Exception Test required	✓	✓
Zone 3b *	Exception Test required *	✗	✗	✗	✓*

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Table 2: Flood Risk Vulnerability Classification

Essential Infrastructure • Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk. • Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood. • Wind turbines.
Highly Vulnerable • Police and ambulance stations; fire stations and command centres; 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. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').
More Vulnerable • 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

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'More Vulnerable' class; 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 works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.

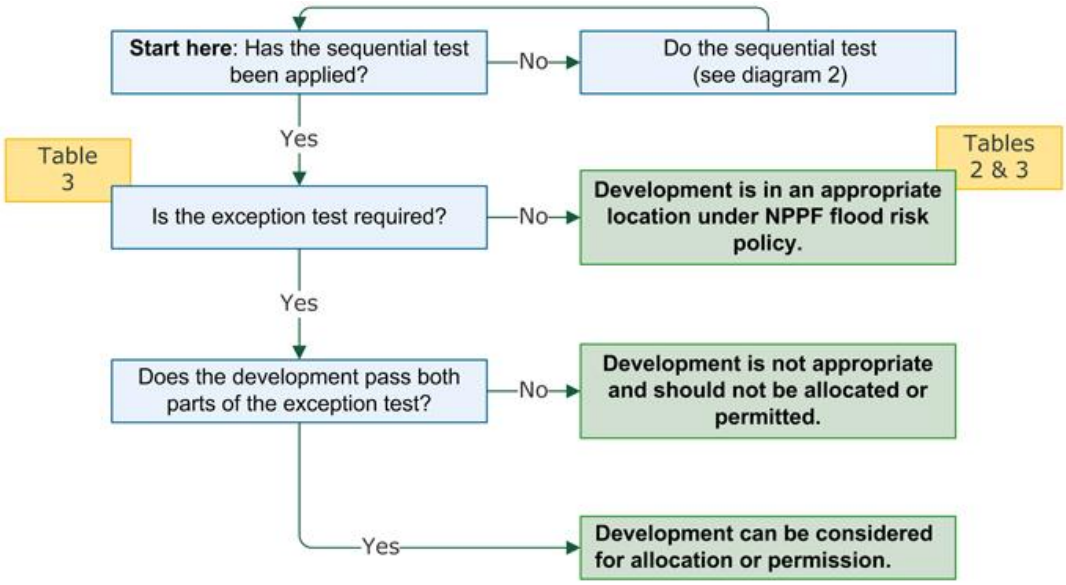
Water-Compatible Development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence 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.

2.7 Figure 2 (below) sets out how the Sequential Test should be applied when preparing a Local Plan.

Figure 2: Application of the Sequential Test for Local Plan preparation (taken from the National Planning Practice Guidance: Diagram 3)



Local Context

Bradford District Core Strategy

2.8 The Core Strategy sets out the broad aims and objectives for sustainable development within the Bradford District for the next 15 years until 2030. The Publication Draft of the Bradford District Core Strategy aims to provide for approximately 42,100 new homes in the District by 2030. The Bradford City Centre is identified as a key growth area in the Core Strategy and Urban Eco Settlement in the Leeds City Region.

2.9 The Core Strategy sets out strategic planning policies and key principles in relation to the approach to flood risk in the District. The Core Strategy only identifies broad locations for growth, through settlement and area based targets, however the Strategy does not include site allocations. Further analysis and testing of individual sites in relation to flood risk will therefore be carried out as part of subsequent Development Plan Documents which allocate land.

2.10 Core Strategy Policy EN7 in the Environment section relates to flood risk. The policy was developed in the context of the information presented in the SFRA Level 1. It identifies a range of principles to be applied in managing flood risk within the District. These include integrating sequential testing into plan-making, protecting the functional floodplain, requiring space for the storage of flood water within Flood Risk Zones 3a and 2 and supporting the provision of Sustainable Urban Drainage (SUDS). The emphasis on sequential testing is reinforced in the Housing Site Allocation Principles in Core Strategy Policy HO7, which states that a flood risk sequential approach will be applied to direct residential development to areas of lowest flood risk.

2.11 Flood risk is also identified as an important issue for the District in developing resilience to climate change, and this is recognised in both Core Strategy Policies SC2 and EN7.

Bradford City Centre AAP

2.12 The Bradford City Centre AAP is being produced as part of the Local Plan for the Bradford District. In accordance with the Core Strategy, the AAP will identify sites for over 3100 new homes by 2030. The Council consulted on the AAP Issues and Options in 2013. Since the Issues and Options the Council have commissioned a SFRA Level 2 to provide further detailed evidence in relation to flood risk in the Corridor and to support the Bradford City Centre AAP Publication Daft.

Evidence Base

2.13 The Council has used the following evidence base in applying the Sequential Test and, where necessary, the Exception Test, to potential site allocations in the AAP:

- City of Bradford Metropolitan District Council Strategic Flood Risk Assessment Level 1 (2011, as amended 2014)
- City of Bradford Metropolitan District Council Level 2 Strategic Flood Risk Assessment (2015)

City of Bradford Metropolitan District Council Strategic Flood Risk Assessment Level 1 (2011, as amended 2014)

2.14 In 2011 a Level 1 SFRA was undertaken by consultants JBA, covering the Bradford District. The updated SFRA Level 1 reflects the requirements of NPPF and supersedes the previous SFRA. The assessment used the Environment Agency Flood Zones, provided in June 2010. With agreement from the Environment Agency, the flood zones in the Bradford Beck area used in the SFRA analysis, have been produced for the Council using a more detailed model.

City of Bradford Metropolitan District Council Level 2 Strategic Flood Risk Assessment (2015)

2.15 Following initial screening of the emerging sites within the AAP at the Issues and Options Stage, a SFRA Level 2 was commissioned by the Council and undertaken by JBA Consulting covering the Bradford City Centre and City Centre AAP areas. This Level 2 SFRA follows on from the Level 1 SFRA. The purpose of the Level 2 SFRA is to provide a more detailed assessment of all relevant sources of flood risk on key sites within the two AAP areas. The Level 2 SFRA has been prepared in accordance with current best practice as set out in the NPPF and the Flood Risk and accompanying Coastal Change NPPG.

2.16 The outputs from the Bradford Beck Modelling Study (October 2013), have been used to assess fluvial risk from the Beck, as opposed to the Environment Agency Flood Map for Planning. The Bradford Beck model takes account of the sewer system and the impact of the flood relief diversion channels. The outputs from the Upper Aire Modelling Study, 2005, along with Flood Zone 2 and 3 of the Flood Map for Planning have been used to assess fluvial risk in Shipley, north of Dockfield Road where the Bradford Beck model study ends. Neither model has been amended nor updated further as part of the Level 1 SFRA.

3. Taking Account of Flood Risk within the AAP

3.1 The SFRA Level 1 illustrates the process of taking account of flood risk within Development Plan Documents and the use of SFRAs. This divides the process into four stages:

1. Strategic Sequential Test
2. Development Site Sequential Test
3. Likelihood of Passing Exception Test
4. Producing an Evidence Base

3.2 The SFRA Level 1 includes a Sequential and Exception Test Flow Diagram setting out the recommended approach when applying the two tests. This approach is set out in Figures 3 and 4 (below).

Figure 3: Sequential and Exception Tests key steps (taken from SFRAL1 2014)

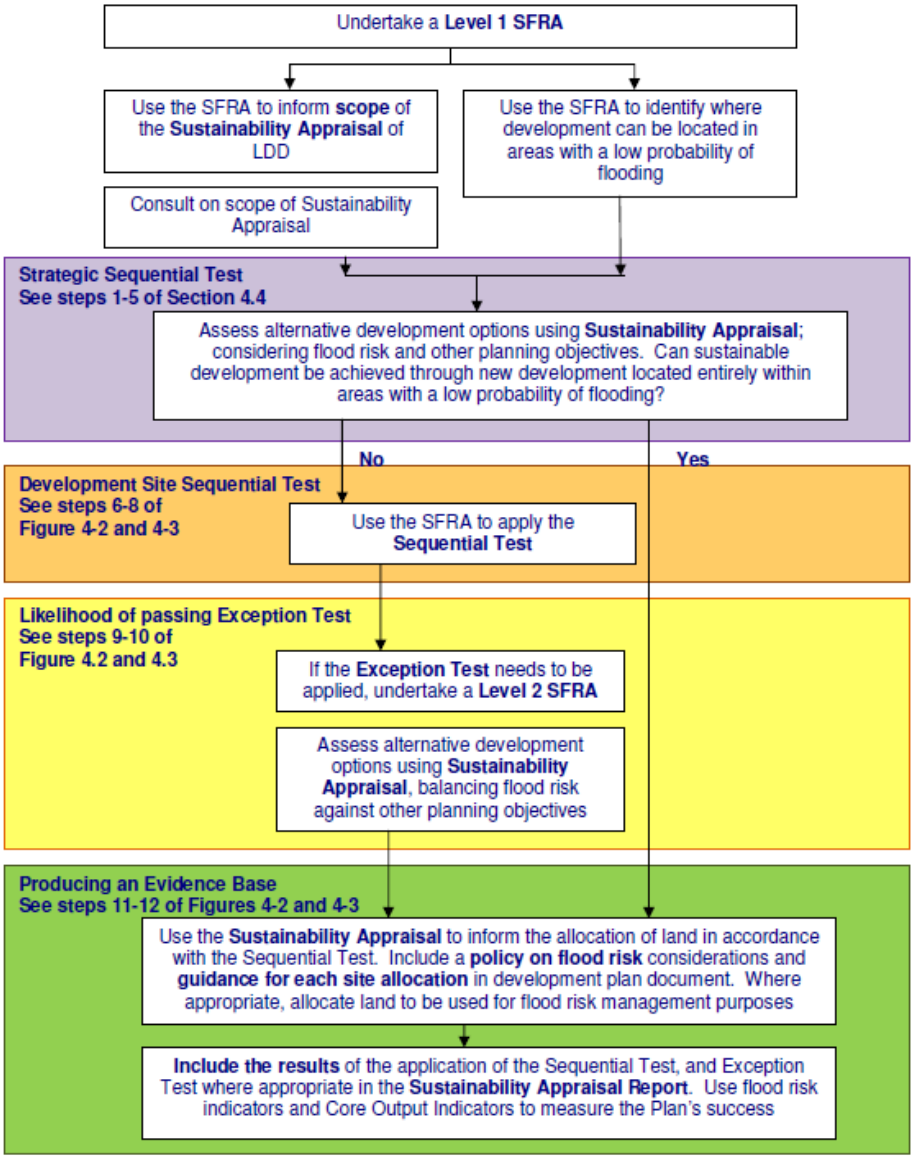
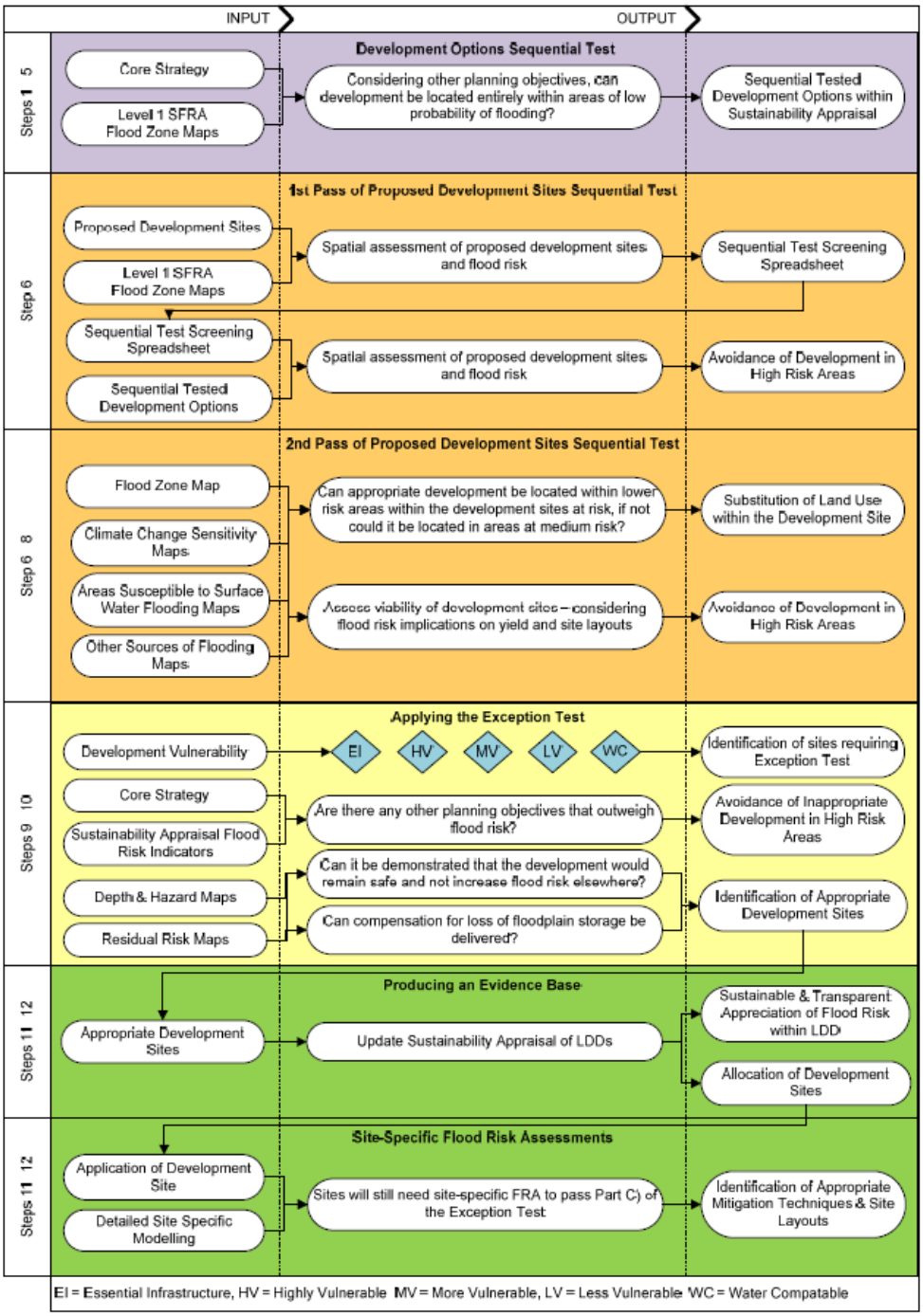


Figure 4: Sequential and Exception Test Flow Diagram (taken from SFRA L1 2014)



3.3 The SFRA Level 1 also identifies the key steps to be taken when applying the sequential and exceptions tests as part of producing Development Plan Documents (Figure 5). The following sections of this paper set out how flood risk has been considered in proposing allocations in the Bradford City Centre AAP based on the key steps identified in the SFRA Level 1 and the NPPG.

Figure 5: Sequential and Exception Test Key Steps (taken from SFRA L1 2014)

Applying the Sequential Test

Step 1 State the **geographical area** over which the Sequential Test is to be applied. This can be over the entire LPA area but will usually be reduced to communities to fit with functional requirements of development or objectives identified in DPD

Step 2 Identify reasonably available areas of strategic growth/ sites

Step 3 Identify the presence of **all sources of risk** using the evidence provided in this SFRA

Step 4 **Screen available land** for development in ascending order from Flood Risk Zone 1 to 3, including the subdivisions of Flood Risk Zone 3

This can be achieved using the information in a spatial assessment of each proposed development site provided by the LPA against Flood Zones and Environment Agency surface water susceptibility zones

Step 5 Could all development be located in lower risk areas? If not, move onto the next Steps

1st and 2nd Pass of the Proposed Development Sites Sequential Test

Follow Figure 5-4 to:

Step 6 Identify those sites which should be **avoided** where risk is considered too great and there are no critical planning objectives identified in DPD

Step 7 Identify those sites in which the consequence of flooding can be reduced through **substitution** within the site boundary

Step 8 Assess yield and layout issues for remaining high risk sites to check whether development is viable

Identify the Likelihood of passing the Exception Test

Follow Key Questions imbedded within Figure 5-5 and SFRA evidence to identify the likelihood of those sites remaining at risk passing the Exception Test.

Step 9 Assess the compatibility of the **development vulnerability** using Table 2 of NPPF technical guidance and identify the requirement of passing the **Exception Test** using Table 3 of NPPF technical guidance

Step 10 Use the SA to assess alternative development options by balancing flood risk against other planning constraints. Proposed sites should be avoided and removed if it is unlikely to pass the Exception Test i.e. if:

key Questions in Figure 5-5 suggest significant problems

development will require significant mitigation measures to make the site safe and to reduce impacts downstream

the requirement to provide floodplain compensation cannot be delivered

Producing an Evidence Base

The following steps should be used to produce the evidence that all Tests have been applied

Step 11 Produce a supporting stand alone sequential testing document recording all decisions made during Steps 1 to 10. Each proposed development site should be referenced and the decisions made to avoid, substitute, or allocate the site and the evidence used. This can be incorporated within the appendix of the SA

Step 12 Allocate development allocations within the DPD, including appropriate flood risk policies and development guidance on each allocated site. Guidance should include the need for appropriate site-specific FRAs.

The Environment Agency and other relevant stakeholders (such as Yorkshire Water or British Waterways) should be consulted on any policies drafted that inform the application of the Exception Test and the production of FRAs within the LPA area

4. Applying the Sequential Test

Background

4.1 The NPPG advises that the overall aim of the sequential test should be to steer new development to Flood Zone 1. Where there are no reasonably available sites in Flood Zone 1, local planning authorities allocating land in local plans should take into account the flood risk vulnerability of land uses and consider reasonably available sites in Flood Zone 2, applying the Exception Test if required. Only where there are no reasonably available sites in Flood Zones 1 or 2 should decision-makers consider the suitability of sites in Flood Zone 3, taking into account the flood risk vulnerability of land uses and applying the Exception Test if required.

Geographical Area (Figure 5, Step 1)

4.2 The NPPG sets out that the Sequential Test should be applied to the whole local planning authority area to increase the possibilities of accommodating development which is not exposed to flood risk. In accordance with the NPPG and SFRA Level 1 a strategic sequential flood risk test has been undertaken across the District as part of the Core Strategy.

4.3 Following on from the Strategic Sequential Test undertaken as part of the Core Strategy, a Sequential Test has also been undertaken on sites within the Bradford City Centre AAP boundary. This approach is in accordance with the SFRA Level 1, which states that the geographical area on which the sequential is undertaken will usually be reduced from the entire local authority area to fit with functional requirements of development or objectives identified in Development Plan Documents. Given that the strategic sequential test was undertaken on a District-wide basis and concluded that, due to wider sustainability benefits, development could not entirely be located in lower flood risk areas, it is considered appropriate to carry out the development sites Sequential Test within the AAP boundaries of key regeneration priority areas. The AAP boundary has therefore been used to define the area of search to inform the sequential approach to allocating development sites in the AAP.

Identify reasonable areas of strategic growth/sites (Figure 5, Step 2)

4.4 The strategic sequential test involved screening potential development sites within different settlements identified in the Strategic Housing Land Availability Assessment (SHLAA) against the SFRA Level 1 Flood Risk Zones to assess whether the level of development proposed in the Core Strategy could be accommodated in lower risk flood zones.

4.5 For the Bradford City Centre AAP the sequential test relates to all potential development sites identified in the Bradford City Centre AAP boundary. The development sites assessed have been identified from the following sources:

• Site with planning permission

• Existing sites identified in the Replacement Unitary Development Plan (RUDP 2005) which remain available;

• Sites identified as part of the SHLAA and previous stages in preparation of the AAP;

• Other sites identified through masterplans and the SCRC Strategic Development Framework (2013).

No further land with development potential was identified in the SCRC area at the time this assessment was undertaken.

Sources of Flood Risk (Figure 5, Step 3)

4.6 Sources of flood risk across the District and within the SCRC have been identified through the SFRA Level 1and SFRA Level 2. In the Bradford City Centre, flood risk is mainly fluvial, from the Bradford Beck and River Aire. There are also areas of surface water flood risk within the SCRC.

Screen Available Land (Figure 5, Step 4)

4.7 Screening of the potential AAP sites has identified that there is land affected by proposed site allocations within the following Flood Risk Zones identified in the SFRA: 1, 2, 3a and 3b (see SFRA Level 1 and 2 for definitions). The screening of the AAP Issues and Options Sites is shown in Appendix A.

Can all development be located in lower flood risk areas? (Figure 5, Step 5)

4.8 The strategic screening of potential development sites against flood zones has identified that due to wider sustainability reasons, not all sites could be located in areas of lower flood risk based on the proposed Core Strategy housing distribution. This is set out in more detail in section 5 below.

4.9 Screening of the potential development sites identified in the SCRC APP Issues and Options stage indentified that further testing of the Bradford City Centre AAP development sites would be required (supported by a SFRA Level 2) as some of the sites included land within higher risk flood zones.

5. Strategic Sequential Flood Risk Test Summary (Figures 3, 4and 5, steps 1-5)

5.1 In accordance with the recommendations in the SFRA Level 1 the strategic options for the distribution of development across the District, as set out in the Core Strategy, were assessed in regards to flood risk and the Sustainability Appraisal. This assessment considered the strategic distribution of development across the District against flood risk and other planning objectives and whether sustainable development could be achieved in the District through the Core Strategy by locating new development entirely within areas with a low probability of flooding.

5.2 The overriding aim of the Core Strategy has been to set settlement targets at a level that will allow the site allocations process to steer development to areas designated as flood zone 1. The exceptions to this approach are within Bradford City Centre and the Bradford City Centre were it was identified there is potential for new development to have an impact on flood risk and to be at risk of flooding.

5.3 Through the Core Strategy process it was considered that allocating additional development to other parts of the Regional City of Bradford, in order to avoid development within these areas of higher flood risk, would mean further increasing the proportion of land needed from the green belt. The Council therefore considered that this would be a less sustainable approach overall, when compared to the benefits of locating development in the Regional City of Bradford within the City Centre and Bradford City Centre. In addition it was also considered that accommodating development within the Canal Road Corridor and the City Centre would have significant investment and regeneration benefits.

5.4 Overall it was therefore considered through the Core Strategy that the wider sustainability benefits of an approach, which meets some of the economic and housing need of the Regional City of Bradford within these two key regeneration areas, significantly outweighed the flood risk issues in these areas.

5.5 Following on from the Strategic Sequential Test and screening of AAP sites, further detailed testing of potential sites within the AAP is required in regards to applying the sequential test and where necessary the exceptions test. This is set out below.

6. Development Sites Sequential Test (Figure 5, steps 6-8)

Bradford City Centre AAP Development Sites

6.1 The Bradford City Centre AAP will allocate land for a number of uses. This includes residential and mixed use development site allocations, with the breakdown of individual uses identified in AAP site proposal statements. The SFRA Level 2 provides a screening assessment of both fluvial and surface water flood risk to potential development sites in the Bradford City Centre AAP area. This is shown Appendix B of the SFRA Level 2 and in Appendix A of this report. The SFRA Level 2 Flood Risk Maps identify the proposed Bradford City Centre AAP sites together with all flood risk information.

Methodology

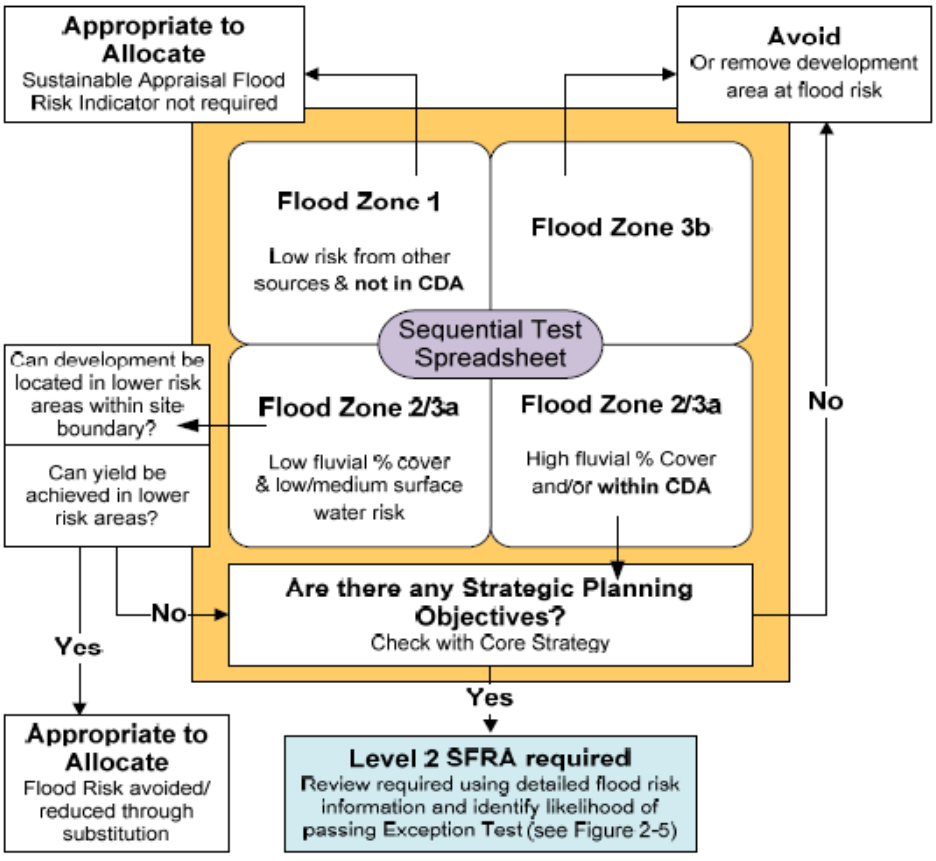
6.2 The Bradford City Centre AAP has requirements for the amount of land and number of units to be developed for residential use, which can be used as the basis for applying the sequential test. The following assumptions have been used when applying the sequential test.

Assumptions Used

- The Bradford City Centre will provide a minimum of 3500 new homes over the plan period as set out in Policy HO3 and Policy BD1 of the Core Strategy;
- The Bradford City Centre AAP will contribute to land for employment uses within the City of Bradford as set out in Policy EC3 of the Core Strategy;
- Land with extant planning permission for the uses being assessed will not fail the sequential or exception test as flood risk matters have already been considered and mitigation measures agreed as part of the site-specific flood risk assessment required as part of the planning application.

6.3 The tests relate to all development sites considered as part of the Bradford City Centre AAP Publication Draft Document. The test is based on the Application of the Sequential Test for Local Plan Preparation (Figure 1) and SFRA Level 1 proposed development sites sequential test approach (Figure 6 below)

Figure 6: Proposed development sites sequential test approach (Taken from SFRA Level 1 2014)



Sequential Test Results

6.4 The assessment includes development sites in Flood Zones 1, 2 and 3. The following sequential test considers the proposed development sites in sequence. Appendix B sets out details of the site specific sequential test. All flood risk zones applying to sites are identified with the percentage stated in Appendix A Table 4, where the site is within more than one zone. The tables below summarise the results of the AAP development sequential test.

CAN DEVELOPMENT BE ALLOCATED IN FLOOD ZONE 1?

PROPOSED DEVELOPMENT IN FLOOD ZONE 1 – 'LOW PROBABILITY' OF FLOOD RISK
The Bradford City Centre AAP includes the following proposed residential and mixed use sites in Flood Zone 1: **CH/1.5** **CH/1.6** **M/1.3** **M/1.4** **M/1.5** **V/1.4** **These proposed allocations satisfy the flood risk sequential test and are considered appropriate, subject to consideration of risk from other sources of flooding**

PROPOSED DEVELOPMENT IN FLOOD ZONE 1 – 'LOW PROBABILITY' OF FLOOD RISK (With areas at risk from surface water)
The Bradford City Centre AAP includes the following proposed residential sites in Flood Zone 1: **B/1.4** **M/1.1** **M/1.2** **CH/1.3**

CH/1.4 **CH/1.7** **CH/1.9** **CH/1.10** **CH/1.11** **V/1.3** **V/1.9** **These proposed allocations satisfy the flood risk sequential test and are considered appropriate, subject to consideration of risk from other sources of flooding**

CAN DEVE

LOPMENT BE ALLOCATED IN FLOOD ZONE 2?

PROPOSED DEVELOPMENT IN FLOOD ZONE 2
CH/1.8 **SG/1.1** **V/1.1** **V/1.2** **V/1.5** **V/1.6** **V/1.7** **V/1.10**
The Bradford City Centre AAP does not include any residential or mixed use site wholly within flood zone 2:

CAN DEVELOPMENT BE ALLOCATED IN LOWEST RISK SITES IN FLOOD ZONE 3?

PROPOSED DEVELOPMENT WITH AREAS OF SITE WITHIN FLOOD ZONES 3
The Bradford City Centre AAP includes the following proposed residential and mixed use sites with areas within flood zone 3: **B/1.5** **CH/1.1** **CH/1.13** **V/1.8** **As set out in Appendix B, the housing and mixed use sites individually pass the sequential test because further land in Flood Risk Zone 2/3 is required to meet the housing requirement and net housing target for Bradford City Centre as set out in Core Strategy. All the sites are contain brownfield land within a priority regeneration area and are sustainably located. There is no clear justification for preferring one site over another in these circumstances, subject to each site satisfying the requirements of the flood risk exception test.** **Site CH/1.13 has extant planning permission which addresses detailed site specific flood risk matters.** **These proposed allocations are therefore considered appropriate, (where proposed development safeguards the functional flood plain) subject to passing the exceptions test where necessary and consideration of risk from other sources of flooding.** **The exception test set out in the NPPF and NPPG needs to be applied for land proposed for more vulnerable uses within Flood Zone 3**

IS DEVLEOPMENT APPROPRIATE IN REMAINING AREAS?

PROPOSED DEVELOPMENT WITH AREAS OF SITE WITHIN FLOOD ZONES 3a(i)
The Bradford City Centre AAP includes the following proposed site in Flood Zone 3a(i) (with more than 25% of the total site area in Zone 3a(i)): **CH/1.12** **The proposed site satisfies the flood risk sequential test because further land in Flood Risk Zone 3ai is required to meet the housing requirement and net housing target for SCRC as set out in Core Strategy. The site is therefore considered appropriate, subject to passing the exceptions test where necessary and consideration of risk from other sources of flooding.** **Site CH/1.12 (Conditioning House) is a Grade II listed building, as such the building shall remain in-situ should any redevelopment of the site take place thus resulting in no increase of over and above that of the existing foot print within zone 3a(i). The exception test for this site must therefore consider a sequential approach to any new development.**

COULD THE DEVELOPMENT PROPOSALS FOR THE SITES IN ZONE 2, 3A AND 3AI ALTERNATIVELY BE LOCATED IN LOWER RISK FLOOD ZONES?

a) Alternative sites have been considered for their potential to contribute towards the AAP housing requirement. No other alternative sites for residential/mixed use have been identified within the AAP boundaries that are considered viable and deliverable alternatives.
b) explain why the proposals cannot be redirected to lower risk flood zones: **• All the development sites identified in lower risk flood zones have already been proposed to be allocated for residential/mixed use.** **• Rejecting potential development sites with areas in zones 2 & 3 would prejudice delivery of the Core Strategy housing requirement of over 3500 dwellings for the Bradford City Centre AAP.** **• Rejecting developable brownfield sites could result in sterilising their development potential, with the consequence that they remain derelict. This would present a negative impression of vacant land in prominent locations. Blighting the sites use for future development would significantly hinder regeneration of this area, which is identified in the Core Strategy as a regeneration priority area for the District.**

Summary of Bradford City Centre AAP development sites sequential flood risk test (Figures 3, 4 and 5, steps 6-8)

6.5 The sequential flood risk test for potential residential and mixed use development sites in the Bradford City Centre AAP has demonstrated that sites in areas with higher flood risk are required in order to meet the Core Strategy housing target for the Bradford City Centre AAP and the sites identified in the tables above are therefore considered appropriate, subject to passing the Exceptions Test.

Summary of Sites within all flood risk zones

Flood Zone 1	
Site	**Dwellings**
CH/1.5	50
CH/1.6	20
M/1.3	20
M/1.4	80
M/1.5	100
V/1.4	120
	390
Flood Zone 1 and Surface Water	
B/1.4	50
M/1.1	200
M/1.2	100
CH/1.3	100
CH/1.4	200
CH/1.7	50
CH/1.9	20
CH/1.10	20
CH/1.11	20
V/1.3	200
V/1.9	20
	980
Flood Zone 2	
CH/1.8	100
SG/1.1	250
V/1.1	400
V/1.2	400
V/1.5	80
V/1.6	220
V/1.7	100
V/1.10	100
	1650
Flood Zone 3a	
B/1.5	400
CH/1.1	600
CH/1.13	200
V/1.8	230
	1430

Flood Zone 3a(i)	
CH/1.12	**100**

6.6 Following the sequential approach, it is clear more vulnerable uses such a residential will need to be located within higher flood risk zones, dependant on passing the exception tests. This approach would will allow the AAP housing target to be met and meet the strategic objective of bringing back into use vacant brownfield land, while reducing flood risk and avoiding the functional floodplain.

8. Development Sites Exception Test

8.1 Following the application of the Sequential Test, it is not possible, consistent with wider sustainability objectives, for all the development in Bradford City Centre to be located in zones with a lower probability of flooding; the Exception Test will therefore need to be applied where appropriate.

8.2 Table 1, above, sets out the instances where an Exception Test will be required. As indicated in this table, it is necessary to apply the Exception Test when it is proposed to allocate a site in Flood Zone 3a for a "more vulnerable" use, such as residential development. An Exception Test is not required when a "less vulnerable" uses, such as offices, industry and storage or distribution uses, is proposed on a site in Flood Zone 3a.

8.3 The following proposed sites for residential and mixed use fall partly within Flood Zone 3a:

1. **B/1.5 – Former Yorkshire Water Depot**
2. **SG/1.2 – Britannia Mill and Car Park, Portland Street**
3. **CH/1.1 – Area East of Valley Road**
4. **CH/1.13 – Midland Mills**
5. **CH/1.12 – Conditioning House**

8.4 These sites are considered to have passed the Sequential Test, but require an Exception Test for more vulnerable uses in accordance with paragraph 102 of the NPPF.

8.4 In addition, a site specific flood risk assessment is required as part of a planning application which will have to 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. This could take the form of a sequential approach to layout of the site to ensure that the parts that flood to the deepest depths with the quickest inundation rates are avoided, or set aside for less vulnerable uses such as open space.

8.5 Measures are also taken to raise awareness and thereby reduce flood risk, for example, flood risk awareness and response campaigns informed by the Environment Agency's Local Flood Warning Plan. Developments in high flood risk areas will be included in generic emergency response plans, including the multiagency flood plan and community emergency plans.

8.6 The notes and observation in the Exception Test should be read alongside the Strategic Flood Risk Assessment (Level 2).

Exception Test for Site B/1.5 – Former Yorkshire Water Depot	
Flood Risk Zone: 76.65% of site within Zone 3a.	
Proposed uses subject of Exception Test: Residential Led Mixed Use	
A: Does the development provide wider sustainability benefits to the community that outweigh flood risk?	
Yes	Reason: This brown field development site is located within the city centre and close to two major railway stations and high frequency bus routes. It is accessible by a number of sustainable transport modes to a wide range of employment, shopping and leisure opportunities. The site has been cleared of former buildings, with the exception of the small office currently occupied by the Citizen Advice Bureau. Sustainability appraisal site assessment: Generally positive scores for housing provision, reusing brown field land and buildings, sustainable location and access to the highway network.
B: Has a FRA demonstrated that the development will be safe for its lifetime, without increasing flood risk elsewhere, and, where possible, reduce flood risk overall?	
Yes	The site itself does not have any historic drainage issues however it is currently fully hard covered offering little infiltration of surface water. Surface water generated within the site most likely discharges to the combined public sewerage system at an unrestricted rate. The city centre does experience capacity issues within the combined public sewerage system, especially during heavy peak rainfall events, and subsequently surface water flooding has occurred historically as a result of surcharging sewers. In line with normal practice, if infiltration methods are not practical, surface water will be required to discharge into the public sewerage network. In bringing the site forward it would therefore be necessary to restrict the peak surface water discharge rate to the existing 1:2 year plus climate change event with a reduction of 30 percent. The management of surface water discharges in this way will reduce flood risk to new and existing development downstream. Carefully planned use of sustainable drainage systems within the site are essential to play a role in achieving reduction to the amount of properties and infrastructure that are directly at risk from surface water flooding in the city centre. The following principles should be applied to any development of the site: • A sequential approach to site layout should be followed with the aim of locating the residential units outside of Flood Zone 3a • Construct multi-storey occupancy buildings whereby the ground floor is used for non-habitable space such as car parking or a less vulnerable use such as the proposed leisure or retail units which the NPPF would allow in

	Flood Zone 3a. • Opportunity to reduce risk by utilising ground floors for car parking, whereby floodwaters can flow through the building uninhibited, or for flood storage. • Emergency planning would be required to ensure the safety of people with a detailed evacuation plan that is linked to relevant flood warning alerts whilst any uses for retail of leisure should implement flood resilience measures for times of flood. • The site is currently consists of mainly of cleared depot buildings, with remaining hard standing covering much of the site. As such, there is little of no permeability thus the existing site offers little in the way of flood water retention. • Any new development on the site would require the installation of SUDs, retention tanks and open greenspace. Redevelopment of the site would not increase flooding and likely reduce floodrisk overall in the area. • Flood resilient construction should be utilised, where appropriate. For example, concrete ground floors should be used in preference to timber. Electrical sockets, fuse boxes, control equipment and wiring should be located at least 1.5 metres above floor level. Electrical cables should come down the wall to raised sockets rather than be located below ground level. • Floor levels should be raised above the 100 year flood level. • There is also a risk of flooding from other sources, such as sewers, water mains and surface water run-off. This needs to be considered during detail design. It is expected that flood risk from these sources will be reduced by setting finished floor levels above adjacent ground levels.
Conclusion	
Site B/1.5 passes the Exception Test because it has planning permission. No further flood risk assessment would be needed provided the development is carried out in accordance with the permission. If the scheme is altered or reapplication made, a new Flood Risk Assessment (FRA) will be required taking account of the advice set out above.	

Exception Test for Site SG/1.2 – Britannia Mill and Car Park, Portland Street	
Flood Risk Zone: 3a - 17.81%. 3a(i) – 29.23%. 3b – 27.48%	
Proposed uses subject of Exception Test:	
A: Does the development provide wider sustainability benefits to the community that outweigh flood risk?	
Yes	Reason: This brown field development site is located within the city centre and close to two major railway stations and high frequency bus routes. It is accessible by a number of sustainable transport modes to a wide range of employment, shopping and leisure opportunities. The site has been cleared of former industrial buildings, with the exception of the Britannia Mill which is currently vacant and would likely be demolished during the redevelopment of the site. Sustainability appraisal site assessment: Generally positive scores for housing provision, reusing brown field land and buildings, sustainable location and access to the highway network.

B: Has a FRA demonstrated that the development will be safe for its lifetime, without increasing flood risk elsewhere, and, where possible, reduce flood risk overall?	
Yes	The site is currently occupied by an old mill building, other existing structures and derelict open land currently used as car parking. Surface water generated within the site most likely discharges to the combined public sewerage system with Britannia Street or the unclassified watercourse that passes beneath Britannia Mills at an unrestricted rate. The city centre does experience capacity issues within the combined public sewerage system downstream of the site, especially during heavy peak rainfall events, and subsequently surface water flooding has occurred historically as a result of surcharging sewers. The site is also subject to pluvial (surface water) and fluvial (watercourse) flooding therefore any proposals will be required to have restrictions on the surface water discharge rates to not increase flooding but also improve flood risk to the area. In line with normal practice, if infiltration methods are not practical, surface water will be required to discharge into the nearby watercourse The allowable rate of discharge will be restricted to the existing 1:2 year plus climate change event with a reduction of 30 percent based on what currently connects to the watercourse. If a connection does not currently exist into the beck, the maximum allowable discharge will be restricted to 2 litres/ second/ hectare ensuring flows and volumes of surface water are managed to greenfield runoff characteristics. Sustainable drainage principles should be incorporated into the new sites drainage system with caution that any above ground surface water attenuation systems should not prohibit the sites current flood storage capacity. The following principles should be applied to any development of the site: • The site is currently consists of mainly of cleared industrial buildings, with remaining hard standing covering much of the site. As such, there is little of no permeability thus the existing site offers little in the way of flood water retention. • Any new development on the site would require the installation of SUDs, retention tanks and open greenspace. Redevelopment of the site would not increase flooding and likely reduce floodrisk overall in the area. • Flood resilient construction should be utilised, where appropriate. For example, concrete ground floors should be used in preference to timber. Electrical sockets, fuse boxes, control equipment and wiring should be located at least 1.5 metres above floor level. Electrical cables should come down the wall to raised sockets rather than be located below ground level. • Floor levels should be raised above the 100 year flood level. • There is also a risk of flooding from other sources, such as sewers, water mains and surface water run-off. This needs to be considered during detail design. It is expected that flood risk from these sources will be reduced by setting finished floor levels above adjacent ground levels.
Conclusion	
Site SG/1.2 passes the Exception Test because it has planning permission. No further flood risk assessment would be needed provided the development is carried out in accordance with the permission. If the scheme is altered or reapplication made, a new Flood Risk Assessment (FRA) will be required taking account of the advice set out above.	

Exception Test for Site CH/1.1 – Area East of Valley Road	
Flood Risk Zone: 81.4% of site within zone 3a.	
Proposed uses subject of Exception Test:	
A: Does the development provide wider sustainability benefits to the community that outweigh flood risk?	
Yes	Reason: This brown field development site is located within the city centre and close to two major railway stations and high frequency bus routes. It is accessible by a number of sustainable transport modes to a wide range of employment, shopping and leisure opportunities. The site has been cleared of former industrial buildings, with the exception of the a small office block and retail unit, both of which would likely be cleared during redevelopment of the site. Sustainability appraisal site assessment: Generally positive scores for housing provision, reusing brown field land and buildings, sustainable location and access to the highway network.
B: Has a FRA demonstrated that the development will be safe for its lifetime, without increasing flood risk elsewhere, and, where possible, reduce flood risk overall?	
Yes	Much of this site is currently cleared open space used for car parking. Several large industrial / retail units also still exist and therefore its is expected that the majority of the site drains unrestricted with little opportunity for surface water infiltration. Both public combined sewers and Bradford Beck run beneath the site so it is assumed that surface water discharge is split to discharge to these outfalls. The site and surrounding area are currently at risk to both pluvial (surface water) and fluvial (watercourse) flooding therefore any proposals will be required to have restrictions on the surface water discharge rates to not increase flooding but also improve flood risk to the area. In line with normal practice, if infiltration methods are not practical, surface water will be required to discharge into Bradford Beck. The allowable rate of discharge will be based on the existing 1:2 year plus climate change event with a reduction of 30 percent that currently connects to the beck. If a connection does not currently exist into the beck, the maximum allowable discharge will be restricted to 2 litres/ second/ hectare ensuring flows and volumes of surface water are managed to greenfield runoff characteristics. Sustainable drainage principles should be incorporated into the new sites drainage system with caution that any above ground surface water attenuation systems should not prohibit the sites current flood storage capacity. The following principles should be applied to any development of the site: • Flood Zone 3a flood depths however could reach up to 1.5 m in the central southern part of the site with significant hazard to people. Taking this into account a sequential approach to site layout will encourage this part of the

	site to remain for open space. • Within the majority of the remaining area of the site, flood depths are mainly between 0.25 - 0.75 m with a low to moderate flood hazard. • The need for a detailed evacuation plan linked to relevant flood warning alerts to be stated within the allocation proposal statement. • The site is currently consists of mainly of cleared industrial buildings, with remaining hard standing covering much of the site. As such, there is little of no permeability thus the existing site offers little in the way of flood water retention. • Any new development on the site would require the installation of SUDs, retention tanks and open greenspace. Redevelopment of the site would not increase flooding and likely reduce floodrisk overall in the area. • Flood resilient construction should be utilised, where appropriate. For example, concrete ground floors should be used in preference to timber. Electrical sockets, fuse boxes, control equipment and wiring should be located at least 1.5 metres above floor level. Electrical cables should come down the wall to raised sockets rather than be located below ground level. • Floor levels should be raised above the 100 year flood level. • There is also a risk of flooding from other sources, such as sewers, water mains and surface water run-off. This needs to be considered during detail design. It is expected that flood risk from these sources will be reduced by setting finished floor levels above adjacent ground levels.
Conclusion	
Site CH/1.1 passes the Exception Test because it has planning permission. No further flood risk assessment would be needed provided the development is carried out in accordance with the permission. If the scheme is altered or reapplication made, a new Flood Risk Assessment (FRA) will be required taking account of the advice set out above.	

Exception Test for Site CH/1.13 – Midland Mills	
Flood Risk Zone: 58.66% of site within zone 3a.	
Proposed uses subject of Exception Test:	
A: Does the development provide wider sustainability benefits to the community that outweigh flood risk?	
Yes	Reason: This brown field development site is located within the city centre and close to two major railway stations and high frequency bus routes. It is accessible by a number of sustainable transport modes to a wide range of employment, shopping and leisure opportunities. The site consists of Grade II listed mill buildings, which will need to be retained during the redevelopment of the site. Sustainability appraisal site assessment: Generally positive scores for housing provision, reusing brown field land and buildings, sustainable location and access to the highway network.
B: Has a FRA demonstrated that the development will be safe for its lifetime, without increasing flood risk elsewhere, and, where possible, reduce flood risk overall?	
Yes	The site is currently occupied by a Grade II listed building, Midland Mills, other

	existing structures and derelict open land. It would be expected that the majority of the site drains unrestricted with little opportunity for surface water infiltration. Several public combined sewers run within the streets that bound the site plus Bradford Beck passes beneath the site in culvert so it is assumed that surface water discharge is split to discharge to these outfalls. The site and surrounding area are currently at risk to both minor pluvial (surface water) and fluvial (watercourse) flooding therefore any proposals will be required to have restrictions on the surface water discharge rates to not increase flooding but also improve flood risk to the area. In line with normal practice, if infiltration methods are not practical, surface water will be required to discharge into Bradford Beck. The allowable rate of discharge will be restricted to the existing 1:2 year plus climate change event with a reduction of 30 percent based on what currently connects to the beck. If a connection does not currently exist into the beck, the maximum allowable discharge will be restricted to 2 litres/ second/ hectare ensuring flows and volumes of surface water are managed to greenfield runoff characteristics. Sustainable drainage principles should be incorporated into the new sites drainage system with caution that any above ground surface water attenuation systems should not prohibit the sites current flood storage capacity. The following principles should be applied to any development of the site: • The site is currently consists of mainly of cleared industrial buildings, with remaining hard standing covering much of the site. As such, there is little of no permeability thus the existing site offers little in the way of flood water retention. • Any new development on the site would require the installation of SUDs, retention tanks and open greenspace. Redevelopment of the site would not increase flooding and likely reduce floodrisk overall in the area. • Flood resilient construction should be utilised, where appropriate. For example, concrete ground floors should be used in preference to timber. Electrical sockets, fuse boxes, control equipment and wiring should be located at least 1.5 metres above floor level. Electrical cables should come down the wall to raised sockets rather than be located below ground level. • Floor levels should be raised above the 100 year flood level. • There is also a risk of flooding from other sources, such as sewers, water mains and surface water run-off. This needs to be considered during detail design. It is expected that flood risk from these sources will be reduced by setting finished floor levels above adjacent ground levels.
Conclusion	
Site CH/1.13 passes the Exception Test because it has planning permission. No further flood risk assessment would be needed provided the development is carried out in accordance with the permission. If the scheme is altered or reapplication made, a new Flood Risk Assessment (FRA) will be required taking account of the advice set out above.	

Exception Test for Site CH/1.12 – Conditioning House	
Flood Risk Zone: 21.85% of site within Zone 3a (i).	
Proposed uses subject of Exception Test: Residential Led Mixed Use	
A: Does the development provide wider sustainability benefits to the community that outweigh flood risk?	
Yes	Reason: This brown field development site is located within the city centre and close to two major railway stations and high frequency bus routes. It is accessible by a number of sustainable transport modes to a wide range of employment, shopping and leisure opportunities. The site has been cleared of former buildings, with the exception of the small office currently occupied by the Citizen Advice Bureau. Sustainability appraisal site assessment: Generally positive scores for housing provision, reusing brown field land and buildings, sustainable location and access to the highway network.
B: Has a FRA demonstrated that the development will be safe for its lifetime, without increasing flood risk elsewhere, and, where possible, reduce flood risk overall?	
Yes	The site is currently occupied by a Grade II listed building, Conditioning House, other existing structures and derelict open land. In order to allocate, the AAP should include a requirement in the site allocation statement that the measures detailed in the FRA are implemented to ensure the development and occupants are safe from flooding, in accordance with EA recommendations. These measures include the identification and provision of safe route(s) into and out of the site to an appropriate safe haven; and the implementation of flood mitigation measures on the ground floor. The EA recommend that flood proofing and mitigation measures are applied up to 600 mm above the 1;100 year plus climate change flood level. The site is currently occupied by a listed mill building, other existing structures and derelict open land. It would be expected that the majority of the site drains unrestricted with little opportunity for surface water infiltration. Several public combined sewers run within the streets that bound the site plus Bradford Beck passes adjacent the site in culvert so it is assumed that surface water discharge is split to discharge to these outfalls. The site and surrounding area are currently at risk to both minor pluvial (surface water) and fluvial (watercourse) flooding therefore any proposals will be required to have restrictions on the surface water discharge rates to not increase flooding but also improve flood risk to the area. In line with normal practice, if infiltration methods are not practical, surface water will be required to discharge into Bradford Beck. The allowable rate of discharge will be restricted to the existing 1:2 year plus climate change event with a reduction of 30 percent based on what currently connects to the beck. If a connection does not currently exist into the beck, the maximum allowable discharge will be restricted to 2 litres/ second/ hectare ensuring flows and volumes of surface water are managed to greenfield runoff characteristics. Sustainable drainage principles should be incorporated into the new sites drainage system with caution that any above ground surface water attenuation systems should not prohibit the sites current flood storage capacity. The following principles should be applied to any development of the site: • A sequential approach to site layout should be followed with the aim of

	locating the residential units outside of Flood Zone 3a • Construct multi-storey occupancy buildings whereby the ground floor is used for non-habitable space such as car parking or a less vulnerable use such as the proposed leisure or retail units which the NPPF would allow in Flood Zone 3a. • Opportunity to reduce risk by utilising ground floors for car parking, whereby floodwaters can flow through the building uninhibited, or for flood storage. • Emergency planning would be required to ensure the safety of people with a detailed evacuation plan that is linked to relevant flood warning alerts whilst any uses for retail of leisure should implement flood resilience measures for times of flood. • The site is currently consists of mainly of cleared depot buildings, with remaining hard standing covering much of the site. As such, there is little of no permeability thus the existing site offers little in the way of flood water retention. • Any new development on the site would require the installation of SUDs, retention tanks and open greenspace. Redevelopment of the site would not increase flooding and likely reduce floodrisk overall in the area. • Flood resilient construction should be utilised, where appropriate. For example, concrete ground floors should be used in preference to timber. Electrical sockets, fuse boxes, control equipment and wiring should be located at least 1.5 metres above floor level. Electrical cables should come down the wall to raised sockets rather than be located below ground level. • Floor levels should be raised above the 100 year flood level. • There is also a risk of flooding from other sources, such as sewers, water mains and surface water run-off. This needs to be considered during detail design. It is expected that flood risk from these sources will be reduced by setting finished floor levels above adjacent ground levels.
Conclusion	
Site CH/1.12 passes the Exception Test because it has planning permission. No further flood risk assessment would be needed provided the development is carried out in accordance with the permission. If the scheme is altered or reapplication made, a new Flood Risk Assessment (FRA) will be required taking account of the advice set out above.	

Appendix A – Bradford City Centre AAP Development site flood risk screening

Table 3: Screening of SCRC Issues and Options sites against SFRA 1 Flood Risk Zones

Neighbourhood	Site Ref	Existing use	Proposed use	Flood risk vulnerability category of proposed use	Increased flood risk vulnerability	SFRA L1 Flood Zone (Bradford Beck Model)				Surface water Flood risk	Comments	Sequential Test	Exception Test
					(Y= Yes N = No)	1	2	3	3b				
Central Business and Leisure District	B/1.1	Car Park	Cultural Expansion - Leisure	Less vulnerable	N	Y				N	MV in Zone 1 with no other source of flood risk.	Appropriate to allocate	Not required
	B/1.2	Cleared Site (Brownfield)	Employment	Less vulnerable	N	Y				N	LV in Zone 1 with no other source of flood risk	Appropriate to allocate	Not required
	B/1.3	Office and Car Park	Employment	Less vulnerable	N	Y (87.13 %)	Y (12.87 %)			N	MV in Zone 1 with no other source of flood risk.	Appropriate to allocate	Not required
	B/1.4	Car Park	Mixed Use	More vulnerable	Y	Y				Y (0.1m)	LV in Zone 1 with risk of surface water	Appropriate to allocate	Not required
	B/1.5	Car Park and former depot	Mixed Use	More vulnerable	Y	Y (10.45	Y (12.91	Y (76.65		Y (0.1 and 0.3m)	MV with areas of site in Zone 2	Further justification required	Level 2 SFRA required to

		buildings				%)	%)	%)			and 3. Increased vulnerability with surface water risk.	through AAP/site specific sequential test	inform Exceptions Test
	B/1.6	Vacant former cinema	Mixed Use	More Vulnerable	Y	Y (18.71 %)	Y (79.69 %)	Y(1.59 %)		Y (0.1 and 0.3m)	EI with small area of site in Zone 2 and 3. Surface water risk	Further justification required through AAP/site specific sequential test	Unlikely due to the fact it is an existing building which may be converted. However, should a new building (s) be developed a sequential approach to layout could avoid the small section of flood zone 3a on site.
Little Germany and Cathedral Quarter	CH/1.1	Temporary Car Parks, industrial buildings and retail.	Residential	More vulnerable	Y	Y (0.41%)	Y (18.19 %)	Y (81.40 %)		Y (0.1 and 0.3m)	LV with areas of the site in Zone 2. Surface water risk.	Further justification required through AAP/site specific sequential test	Level 2 SFRA required to inform Exceptions Test
	CH/1.2	Vacant former Royal Mail sorting	Mixed Use	More vulnerable	Y	Y (17.24	Y (23.70	Y (59.06		Y (0.1 and 0.3m)	MV/WC with increase in vulnerability and surface	Further justification required through	Due to site layout constraints, the only

		office				%)	%)	%)			water risk.	AAP/site specific sequential test	developable part of the site is outside flood zone 3a
	CH/1.3	Car Parks	Residential	More vulnerable	Y	Y				Y (0.1 and 0.3m)	MV/WC in Zone 1 with increase in vulnerability and surface water risk.	Appropriate to allocate	Not required
	CH/1.4	Car Parks and road side green space	Residential	More vulnerable	Y	Y				Y (0.1m)	MV/LV with area of the site in Zone 2 and Zone 3 (EA only) and suface water risk.	Appropriate to allocate	Not required
	CH/1.5	Car Park	Residential	More vulnerable	Y	Y				N	MV in Zone 1 with no other source of flood risk.	Appropriate to allocate	Not required
	CH/1.6	Vacant Office	Residential	More vulnerable	Y	Y				N	MV with areas of the site in Zone 2 and Zone 3 (EA only)	Appropriate to allocate	Not required
	CH/1.7	Temporary Car Park / cleared former industrial	Residential	More vulnerable	Y	Y				N	MV in Zone 1 with no other source of flood risk.	Appropriate to allocate	Not required

	CH/1.8	Cleared industrial. Vacant	Residential	More vulnerable	Y	Y (97.58 %)	Y (2.42%)			Y (0.1 and 0.3m)	MV in Zone 1 with increase in vulnerability and surface water risk.	Further justification required	Not required
	CH/1.9	Car Park	Residential	More vulnerable	N	Y				Y (0.1m)	WC with areas of the site in Zone 2 and Zone 3.	Appropriate to allocate	Not required
	CH/1.10	Car Park	Residential	More vulnerable	Y	Y				Y (0.1 and 0.3m)	MV in Zone 1 with increase in vulnerability and suface water risk.	Further justification required	Not required
	CH/1.11	Cleared industrial	Residential	More vulnerable	Y	Y				Y (0.1m)	MV/WC with areas of site in Zone 2 and Zone 3 and suface water risk	Appropriate to allocate	Level 2 SFRA required to inform Exceptions Test
	CH/1.12	Industrial	Residential	More vulnerable	N	Y (74.15 %)	Y (4%)	Y (21.85 %)		N	MV with small area of site in Zone 2	Further justification required through AAP/site specific sequential test	Level 2 SFRA required to inform Exceptions Test

	CH/1.13	Industrial	Residential	More vulnerable	Y	Y (18.49 %)	Y (22.85 %)	Y (58.66 %)		N	MV in Zone 1 with no other source of flood risk.	Further justification required through AAP/site specific sequential test	Level 2 SFRA required to inform Exceptions Test
Goitside	V/1.1	Office and Car Park	Residential	More vulnerable	Y	Y (98.3)	Y (1.70%)			N	MV/WC in Zone 1 with no other source of flood risk	Further justification required	Not required
	V/1.2	Car Park	Mixed Use	More vulnerable	Y	Y (30.02)	Y (69.98 %)			N	MV in Zone 1 with no other source of flood risk	Further justification required	Not required
	V/1.3	Industrial and Car Park	Mixed Use	More vulnerable	Y	Y				N	MV in Zone 1 with no other source of flood risk	Appropriate to allocate	Not required
	V/1.4	Car Park	Residential	More vulnerable	N	Y				Y (0.1m)	LV with areas of the site in Zone 2 and Zone 3 (EA only). Surface water risk.	Appropriate to allocate	Not required
	V/1.5	Industrial	Residential	More vulnerable	N	Y (57.46 %)	Y (42.54 %)			Y (0.1 and 0.3m)	LV with areas of the site in Zone 2 and Zone	Further justification required through	Not required

										3 and small area in flood zone 3b. Surface water risk.	AAP/site specific sequential test	
V/1.6	Cleared Industrial	Residential	More vulnerable		Y (76.38)	Y (23.62 %)					Further justification required through AAP/site specific sequential test	Not required
V/1.7	Cleared Industrial	Mixed Use	More vulnerable		Y (91.85 %)	Y (8.15%)					Further justification required through AAP/site specific sequential test	Not required
V/1.8	Car Sales and Filling Station	Mixed Use	More vulnerable		Y (54.92 %)	Y (44.99 %)	Y (0.09%)				Further justification required through AAP/site specific sequential test	Not required. A sequential approach to site layout can avoid the very small percentage of flood zone 3a on site.

	V/1.9	Retail (Vacant)	Mixed Use	More vulnerable		Y							
	V/1.10	Car Wash, Retail	Residential	More vulnerable		Y (59.8%)	Y (40.2%)					Appropriate to allocate	Not required
The Market	M/1.1	Car Park	Mixed Use	More vulnerable	Y	Y				N	MV in Zone 1 with no other source of flood risk.	Appropriate to allocate	Not required
	M/1.2	Car Park	Residential	More vulnerable	N	Y				N	LV in Zone 1 with no other source of flood risk	Appropriate to allocate	Not required
	M/1.3	Car Park	Residential	More vulnerable	N	Y				N	MV in Zone 1 with no other source of flood risk.	Appropriate to allocate	Not required
	M/1.4	Office (Vacant)	Mixed Use	More vulnerable	N	Y				Y (0.1m)	LV in Zone 1 with risk of surface water	Appropriate to allocate	Not required
	M/1.5	Cleared Industrial	Mixed Use	More vulnerable	Y	Y				Y (0.1 and 0.3m)	MV with areas of site in Zone 2 and 3. Increased vulnerability with surface water risk.	Appropriate to allocate	Not required

Learning Quarter	LQ/1.1	Car Park	Education including Student Accommodation	More vulnerable	Y	Y				N	MV in Zone 1 with no other source of flood risk.	Appropriate to allocate	Not required
	LQ/1.2	Car Park	Education including Student Accommodation	More vulnerable	Y	Y				N	LV in Zone 1 with no other source of flood risk	Appropriate to allocate	Not required
	LQ/1.3	Car Park	Education including Student Accommodation	More vulnerable	Y	Y (93.09 %)	Y (3.54%)	Y (3.37%)		N	MV in Zone 1 with no other source of flood risk.	Further justification required through AAP/site specific sequential test	Not required. A sequential approach to site layout can avoid the very small percentage of flood zone 3a on site.
Southern Gateway	SG/1.1	Car Park and Plumbers Merchants	Mixed Use	More vulnerable	Y	Y (46.65 %)	Y (53.35 %)			N	MV in Zone 1 with no other source of flood risk.	Further justification required through AAP/site specific sequential test	Not required
	SG/1.2	Industrial (Vacant) and Car Park	Leisure	Less vulnerable	N	Y (9.4 %)	Y (16.08 %)	Y (47.04 %)	Y (27.48 %)	N	LV in Zone 1 with no other source of flood risk	Further justification required through AAP/site specific sequential	Level 2 SFRA required to inform Exceptions Test

												test	
	SG/1.3	Car Park	Station Improvements	Essential Infrastructure	Y	Y				N	MV in Zone 1 with no other source of flood risk.	Appropriate to allocate	Not required

Table 4: Screening of SCRC AAP Publication Draft sites against SFRA 2 Flood Risk (taken from Appendix B SFRA Level 2)

Flood Zone 3b
Flood Zone 3ai
Flood Zone 3a
Flood Zone 2
Flood Zone 1 + Surface Water
Flood Zone 1

Main Table

					Flood Zone Coverage										updated Flood Map for Surface Water						
					Flood Zone 1		Flood Zone 2		Flood Zone 3a		Flood Zone 3ai		Flood Zone 3b		1 in 30 year		1 in 100 year		1 in 1000 year		
Site Reference	Existing Use	Neighbourhood	Proposed Use	Area (ha)	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)	%	Area (ha)	%	Development Viability
B/1.1	Car Park and Central Library	Bowl	Expansion area	0.91	0.91	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.00	0.18	0.02	2.64	Development should be permitted
B/1.2	No. 1 City Park	Bowl	Employment	0.41	0.41	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Development should be permitted
B/1.3	One Public Estate Site, car park	Bowl	Employment	1.01	0.88	87.13	0.13	12.87	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.21	20.43	Development should be permitted subject to site-specific FRA
B/1.4	Exchange Court car park	Bowl	Mixed use	0.86	0.86	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	1.31	0.03	3.22	0.14	16.20	Development should be permitted
B/1.5	Former YW Depot	Bowl	Mixed use	1.07	0.11	10.45	0.14	12.91	0.82	76.65	0.00	0.00	0.00	0.00	0.26	24.19	0.25	23.24	0.48	44.75	Exception Test required
B/1.6	Former Bradford Odeon	Bowl	Mixed use	0.53	0.10	18.71	0.42	79.69	0.01	1.59	0.00	0.00	0.00	0.00	0.18	33.97	0.02	3.45	0.02	3.00	Development should be permitted subject to site-specific FRA
CH/1.1	Former Carpet Warehouse (Channel Urban Village)	Channel	Residential	3.17	0.01	0.41	0.58	18.19	2.58	81.40	0.00	0.00	0.00	0.00	0.88	27.79	1.31	41.26	0.79	24.99	Exception Test required
CH/1.2	Sorting Office	Channel	Mixed use	2.12	0.37	17.24	0.50	23.70	1.25	59.06	0.00	0.00	0.00	0.00	0.04	2.04	0.68	32.27	1.05	49.69	Exception Test likely, depending on site layout
CH/1.3	Cathedral Quarter Phase 1	Channel	Residential	0.97	0.97	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	2.96	Development should be permitted
CH/1.4	Cathedral Quarter Phase 2	Channel	Residential	1.18	1.18	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.32	Development should be permitted subject to site-specific FRA
CH/1.5	Burnett Street Car Park	Channel	Residential	0.29	0.29	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Development should be permitted
CH/1.6	Olicana House, Chapel Street	Channel	Residential	0.13	0.13	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Development should be permitted
CH/1.7	East Parade Car Park	Channel	Residential	0.14	0.14	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.62	Development should be permitted
CH/1.8	Land West of Wharf Street	Channel	Residential	0.48	0.47	97.58	0.01	2.42	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.03	6.88	Development should be permitted subject to site-specific FRA
CH/1.9	Vacant Plot bounded by Church Bank, Vicar Lane and Cu	Channel	Residential	0.13	0.13	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	Development should be permitted
CH/1.10	Vacant Plot bounded by Church Bank, Peckover Street at	Channel	Residential	0.08	0.08	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.22	0.00	0.01	Development should be permitted
CH/1.11	Gate Haus 2	Channel	Residential	0.13	0.13	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	4.09	0.01	10.12	Development should be permitted
CH/1.12	Conditioning House, derelict land	Channel	Residential	0.55	0.41	74.15	0.02	4.00	0.00	0.27	0.12	21.58	0.00	0.00	0.00	0.00	0.09	16.42	0.15	26.83	Excpetion Test required
CH/1.13	Midland Mills, derelict land	Channel	Residential	0.93	0.17	18.49	0.21	22.85	0.55	58.66	0.00	0.00	0.00	0.00	0.02	2.66	0.24	25.67	0.39	42.35	Exception Test required
LQ/1.1	University of Bradford Car Park, Longside Lane	Learning Quarter	Employment	0.54	0.54	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	1.81	Development should be permitted
LQ/1.2	University of Bradford Car Park, Longside Lane / Shearbric	Learning Quarter	Employment	0.52	0.52	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	4.66	Development should be permitted
LQ/1.3	University of Bradford Car Park, Great Horton Road	Learning Quarter	Employment	0.80	0.75	93.09	0.03	3.54	0.03	3.37	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.02	2.55	Development should be permitted subject to site-specific FRA
M/1.1	Former Rawson Market and Car Park, Simes Street	Market	Mixed use	0.54	0.54	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.47	Development should be permitted
M/1.2	Car Park on Site of Former Carlton Grammar School, Gra	Market	Residential	0.51	0.51	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.14	Development should be permitted
M/1.3	Stone Street Car Park	Market	Residential	0.10	0.10	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Development should be permitted
M/1.4	Former Yorkshire Building Society Head Quarters, High P	Market	Mixed use	0.12	0.12	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Development should be permitted
M/1.5	Former Tetley Street Shed, Tetley Street	Market	Mixed use	0.24	0.24	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Development should be permitted
SG/1.1	Clifford Street Car Park	Southern Gateway	Residential	0.54	0.25	46.65	0.29	53.35	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.13	0.01	2.22	0.10	18.96	Development should be permitted subject to site-specific FRA
SG/1.2	Britannia Mill and Car Park	Southern Gateway	Employment	1.20	0.11	9.40	0.19	16.08	0.21	17.81	0.35	29.23	0.33	27.48	0.91	75.92	0.16	13.59	0.04	3.41	Further on site specific analysis required
SG/1.3	Britannia Street Car Park and City Fabrications Site	Southern Gateway	Employment	0.93	0.93	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.02	1.68	0.03	3.64	0.17	18.49	Development should be permitted
V/1.1	Former Provident Financial Headquarters	Valley	Residential	1.15	1.14	98.30	0.02	1.70	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.04	3.12	0.08	6.97	Development should be permitted subject to site-specific FRA
V/1.2	Former Gas Works and Foundry, Thornton Road / Listerhi	Valley	Mixed use	1.17	0.35	30.02	0.82	69.98	0.00	0.00	0.00	0.00	0.00	0.00	0.02	1.38	0.14	12.28	0.51	43.24	Development should be permitted subject to site-specific FRA
V/1.3	Globus Textiles, Listerhills Road / Smith Street / Longside	Valley	Mixed use	1.43	1.43	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.01	0.78	Development should be permitted subject to site-specific FRA
V/1.4	Wigan Street Car Park	Valley	Residential	0.61	0.61	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	Development should be permitted
V/1.5	Former Yorkshire Stone Yard and Mill, Thornton Road / La	Valley	Residential	0.30	0.17	57.46	0.13	42.54	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.23	0.00	0.66	0.04	13.74	Development should be permitted subject to site-specific FRA
V/1.6	Former Bee Hive Mills, Smith Street	Valley	Residential	1.08	0.82	76.38	0.25	23.62	0.00	0.00	0.00	0.00	0.00	0.00	0.09	8.46	0.18	16.31	0.25	23.62	Development should be permitted subject to site-specific FRA
V/1.7	Vacant Site South of Sunbridge Road, bounded by Tetley	Valley	Mixed use	0.52	0.48	91.85	0.04	8.15	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.08	0.01	2.64	Development should be permitted subject to site-specific FRA
V/1.8	Car Sales / Filling Station Site, Thornton Road	Valley	Mixed use	1.04	0.57	54.92	0.47	44.99	0.00	0.09	0.00	0.00	0.00	0.00	0.01	0.55	0.02	2.05	0.15	14.92	Development should be permitted subject to site-specific FRA
V/1.9	Sunwin House, Godwin Street / Sunbridge Road	Valley	Mixed use	0.39	0.39	100.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.43	Development should be permitted
V/1.10	Thornton Road / Water Lane	Valley	Residential	0.44	0.26	59.80	0.18	40.20	0.00	0.00	0.00	0.00	0.00	0.00	0.01	2.73	0.05	11.45	0.10	23.46	Development should be permitted subject to site-specific FRA

APPENDIX B: DETAILED FLOOD RISK SEQUENTIAL TEST FOR THE POTENTIAL SITES IDENTIFIED IN THE SCRC AAP PUBLICATION DRAFT

The assessment details the process used to undertake the sequential test for the Bradford City Centre AAP. The assessment focuses on the following principal uses which formed the basis of the proposed allocations:

- Housing and mixed use
- Other uses proposed/acceptable on specific sites (retail, leisure, education uses, hotel)

The process adopts the principle set out in the NPPF (para 100 to 101) which advises that LPAs should use the sequential test to “steer new development to areas with the lowest probability of flooding.”

It takes account of specific requirements set out for the AAP in the Bradford Core Strategy over the plan period as follows:

- Over 3500 new homes (Policy HO3, Policy BD1)
- Other uses have no specific area requirement, but reference is made to the need for retail, employment uses and community uses to support new development in the area under Core Strategy Policies BD1, EC3 and EC5.

The sequential test is set out as a series of steps undertaken in accordance with Diagram 2 of the NPPG Flood Risk Guidance. Sites are discounted in order of their risk of flooding (lowest flood zone 1 sites first) until the assumed requirement is met. Following this process, any uses identified in the higher risk flood zones are assessed against Table 3 in the NPPG Flood Risk Guidance.

Uses in the higher risk flood zones which are not deemed appropriate by Table 3 and which are not needed to meet the requirement for that use fail the sequential test. Sites which may be needed to meet a requirement for a particular use, but are not deemed to be appropriate by Table 3, either require an Exception Test to be undertaken or are deemed inappropriate depending on the Flood Risk Zone the site is located within and the level of vulnerability of the proposed use.

APPENDIX C

CAN DEVELOPMENT BE ALLOCATED IN FLOOD ZONE 1?

1. Identified residential (and mixed use) sites located in flood zone 1.

A number of the potential residential or mixed use (which include residential) sites in the AAP are located in flood zone 1, having a less than 0.1% annual probability of flooding. As such, these sites are sequentially preferred in the NPPF. These sites are the first sites to be deducted from the AAP requirement. The results are set out in the table below:

Site Reference	Site name	Site Area (ha)	Proposed Use	Dwellings	Flood Zone	Results of Sequential Test
AAP Dwelling Requirement				**3500**		
CH/1.5	Burnett Street Car Park	0.29	Residential	50	Zone 1	Appropriate to allocate
CH/1.6	Olicana House, Chapel Street	0.13	Residential	200	Zone 1	Appropriate to allocate
M/1.3	Stone Street Car Park	0.10	Residential	100	Zone 1	Appropriate to allocate
M/1.4	Former Yorkshire Building Society Head Quarters, High Point, New John Street	0.12	Mixed use	100	Zone 1	Appropriate to allocate
M/1.5	Former Tetley Street Shed,	0.24	Mixed Use	200	Zone 1	Appropriate to allocate

	Tetley Street					
V/1.4	Wigan Street Car Park	0.61	Residential	50	Zone 1	Appropriate to allocate
B/1.4	Former Yorkshire Water Depot	0.86	Mixed Use	20	Zone 1	Appropriate to allocate
M/1.1	Car Park, Simes Street	0.54	Mixed Use	20	Zone 1	Appropriate to allocate
M/1.2	Car Park on Site of Former Carlton Grammar School, Grammar School Street	0.51	Residential	20	Zone 1	Appropriate to allocate
CH/1.3	Cathedral Quarter Phase 1	0.97	Residential	200	Zone 1	Appropriate to allocate
CH/1.4	Cathedral Quarter Phase 2	1.18	Residential	20	Zone 1	Appropriate to allocate
CH/1.7	East Parade Car Park	0.14	Residential	50	Zone 1	Appropriate to allocate
CH/1.9	Vacant Plot bounded by Church Bank, Vicar Lane and Currer Street	0.13	Residential	200	Zone 1	Appropriate to allocate
CH/1.10	Vacant Plot bounded by Church	0.08	Residential	100	Zone 1	Appropriate to allocate

	Bank, Peckover Street and Currer Street					
CH/1.11	Gate Haus 2	0.13	Residential	100	Zone 1	Appropriate to allocate
V/1.3	Globus Textiles, Listerhills Road / Smith Street / Longside Lane	1.43	Mixed Use	200	Zone 1	Appropriate to allocate
V/1.9	Sunwin House, Godwin Street / Sunbridge Road	0.39	Mixed Use	50	Zone 1	Appropriate to allocate
Total Dwellings				**1370**		
Remaining AAP housing requirement to find				**2130**		

The potential residential and mixed use allocations in flood zone 1 can provide an estimated capacity of 1370 dwellings. When these sites are discounted from the AAP total requirement, there remains a shortfall 2130 dwellings. Therefore further sites will be needed to accommodate the AAP housing requirement.

CAN DEVELOPMENT BE ALLOCATED IN FLOOD ZONE 2?

Site Ref	**Site name**	**Site Area (ha)**	**Proposed Use**	**Dwellings**	**% in zone 2**	**% in zone 3a**	**% zone 3b**	**Results of Sequential Test**
Remaining AAP balance carried forward				**2130**				
CH/1.8	Land West of Wharf Street	0.48	Residential	100	2.42	0	0	Appropriate to allocate. Development permitted

								subject to a site specific floodrisk assessment.
SG/1.1	Clifford Street Car Park	0.54	Residential	250	53.35	0	0	Appropriate to allocate. Development permitted subject to a site specific floodrisk assessment.
V/1.1	Former Provident Financial Headquarters, Sunbridge Road	1.15	Residential	400	1.70	0	0	Appropriate to allocate. Development permitted subject to a site specific floodrisk assessment.
V/1.2	Former Gas Works, Thornton Road / Listerhills Road	1.17	Mixed Use	400	69.98	0	0	Appropriate to allocate. Development permitted subject to a site specific floodrisk assessment.
V/1.5	Yorkshire Stone Yard, Thornton Road / Lower Grattan Road	0.30	Residential	80	42.54	0	0	Appropriate to allocate. Development permitted subject to a site specific floodrisk assessment.
V/1.6	Former Bee Hive Mills, Smith Street	1.08	Residential	220	23.62	0	0	Appropriate to allocate. Development permitted subject to a site specific floodrisk assessment.
V/1.7	Vacant Site South of	0.52	Mixed Use	100	8.15	0	0	Appropriate to allocate.

	Sunbridge Road, bounded by Tetley Street and Fulton Street							Development permitted subject to a site specific floodrisk assessment.
V/1.10	Thornton Road / Water Lane	0.44	Residential	100	40.20	0	0	Appropriate to allocate. Development permitted subject to a site specific floodrisk assessment.
Total Dwellings				**1650**				
Remaining AAP housing requirement to find				**480**				

The potential residential and mixed use allocations in flood zone 2 can provide an estimated capacity of 1650 dwellings. When these sites are discounted from the AAP total requirement, there remains a shortfall 480 dwellings. Therefore further sites will be needed to accommodate the AAP housing requirement.

CAN DEVELOPMENT BE ALLOCATED IN LOWEST RISK SITES IN FLOOD ZONE 3?

3. Identified residential (and mixed use) sites with areas of site in flood zones 3

A number of the residential or mixed use allocations (incorporating residential uses) proposed in the AAP are located with areas in flood zone 3, having between a 1% and 5% annual probability of flooding. The NPPF and NPPG advise that such sites should be the next to be considered in sequential terms where insufficient land has been identified on sites entirely within flood zone 1 or 2. It should be noted that sites within this category include land within flood zone 1, 2, 3a and 3b (the percentage is indicated in the table below) but are included within flood zone 3 for the purposes of this assessment because it is assumed land identified as the functional floodplain (3b) will not be required to be developed to achieve the dwelling capacities assumed for the sites.

Results are set out in the table below:

Site Ref	**Site name**	**Site Area (ha)**	**Proposed Use**	**Dwellings**	**% in zone 2**	**% in zone 3a**	**% zone 3b**	**Results of Sequential Test**
Remaining AAP balance carried forward				**1650**				

B/1.5	Former Yorkshire Water Depot	1.07	Mixed Use	400	12.91	76.65	0	Appropriate to allocate subject to an exception test.
CH/1.1	Area East of Valley Road	3.17	Residential	600	18.19	81.40	0	Appropriate to allocate subject to an exception test.
CH/1.13	Midland Mills	0.33	Residential	200	22.85	58.66	0	Appropriate to allocate subject to an exception test.
V/1.8	Car Sales / Filling Station Site, Thornton Road	1.04	Mixed Use	230	44.99	0.09	0	Appropriate to allocate. Development permitted subject to a site specific floodrisk assessment.
Total Dwellings				**1430**				
Remaining AAP housing requirement to find				**-950**				

* Identified sites with planning permission

The potential housing / mixed use allocations with small areas of the site in flood zone 3A can provide a further estimated capacity of 1430 dwellings. When these sites are discounted from the total requirement the Core Strategy Housing Requirement has been met.

There is a surplus of dwellings when compared to the Core Strategy housing requirement. However, each of these sites individually pass the sequential test because land with areas in 3 is required to meet the housing requirement for the City Centre as set out in Core Strategy. It should also be noted that the housing requirement for the AAP is a minimum target. All the sites contain brownfield land within a defined regeneration area and are sustainably located. There no planning or sustainability justification for sequentially preferring one site over another in

these circumstances subject to each site satisfying the requirements of the flood risk exception test

IS THE DEVELOPMENT APPROPRIATE IN REMAINING AREAS?

4a. Identified residential site in flood zones 3ai

A proposed residential allocation in the AAP is located in flood zone 3ai, having 5% annual probability of flooding. It should be noted that Zone 3ai is defined in the SFRA L2 as "*Developed land within Flood Zone 3 where water would flow or be stored in times of flooding if not already constrained by development. In NPPF terms these areas would constitute Flood Zone 3a, however following discussion with the Environment Agency it was agreed that Flood Zone 3a should be subdivided so as to indicate those areas of higher risk… Flood Zone 3ai includes the areas of land that would be in Flood Zone 3b if not already developed. Flood Zone 3ai should therefore be used as an indicator of flood risk, from a modelled 1 in 20 year event, to existing development sites".*

Site Ref	**Site name**	**Site Area (ha)**	**Proposed Use**	**Dwellings**	**% in zone 3a**	**% in zone 3ai**	**% zone 3b**	**Results of Sequential Test**
Remaining net AAP balance to find				**-950**				
CH/1.12	Conditioning House	0.55	Residential	100	0	21.58	0	Appropriate to allocate subject to exceptions test
Total Dwellings				**100**				
Remaining net AAP housing requirement to find				**-1050**				

*Sites with planning permission

The potential residential allocation in flood zone 3ai can provide a further estimated capacity of 100 dwellings.

The site contains an existing buildings which has prior approval for a change of use from office to residential which is supported by a site specific FRA