

# Sequential Flood Test 2022





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## 1.0 INTRODUCTION

- 1.1 This report sets out the Sequential Test and Exception Test for flood risk in South Tyneside to support the site allocations identified in the Draft Local Plan 2021-2039.
- 1.2 These tests draw upon the Level 1 Strategic Flood Risk Assessment (SFRA) undertaken by specialist consultants on behalf of South Tyneside Council and follows the procedural arrangements on flood risk set out in the National Planning Policy Framework (NPPF) and National Planning Practice Guidance (NPPG).

## 2.0 NATIONAL PLANNING POLICY CONTEXT

- 2.1 The National Planning Policy Framework (NPPF) (2021) sets out the flood risk requirements which need to be considered as part of the planning process. The NPPF requires strategic policies to be informed by a Strategic Flood Risk Assessment (SFRA) and advice from the Environment Agency and the Lead Local Flood Authority.
- 2.2 The SFRA forms an important part of the evidence base of the Plan and takes account of all the potential sources of flood risk across the entirety of the Plan area, and also takes account of the potential impacts of climate change.
- 2.3 Local Plans should also apply a sequential test to inform the selection of sites for development and steer new development to areas with the lowest risk of flooding (Para. 161). If it is not possible for development to be located in zones with a lower risk of flooding an exception text should be applied.
- 2.4 The Planning Practice Guidance (PPG) 'Flood Risk and Coastal Change' describes the application of the SFRA and sequential test for Local Plan preparation (Appendix 2) and details the requirements to be considered as part of the Plan.

### The Sequential Test

- 2.5 The NPPF requires that when allocating land for development, the Sequential Test should be applied to demonstrate that there are no reasonable alternative sites with a lower probability of flooding for the type of development or land use proposed.
- 2.6 In applying the Sequential Test, preference should be given to land that is located in Flood Zone 1. Only when there are not sufficient reasonably available sites for the type of development proposed in flood zone 1, then consideration should be given to locating development within flood zone 2. If all development required cannot be accommodated in flood zone 1 and 2, only then can sites in flood zone 3 be considered. The PPG definition of flood zone is provided in Table 1.

Table 1 PPG - Flood Risk Zones	
Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

2.7 If following the application of the Sequential Test it is not possible to allocate land for development on areas with a lower probability of flooding an Exception Test will be required.

#### Exception Test

2.8 The Exception Test is set out in paragraph 164 of the NPPF. It aims to demonstrate and ensure that flood risk will be satisfactorily managed, while allowing development to go ahead in situations where sites at lower risk of flooding are not available. There are two parts to the Test.

**Part One** : 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 first part of the Test); and;

**Part Two** : 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 (the second part of the Test).

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

## 3.0 OVERVIEW OF FLOOD RISK IN SOUTH TYNESIDE

### Historic Flooding

- 3.1 South Tyneside has a long history of flood risk, with some areas suffering more frequently than others. Some areas have suffered the effects of long, persistent rainfall events, whereas for others it has been shorter but heavier extreme storm events. Flooding is usually the result of excess surface water and local watercourses, such as burns and small rivers that run close to residential areas, reaching capacity and over-flowing.
- 3.2 Damage has also resulted from tidal flooding such as the high tides experienced in December 2013, which affected businesses on Wapping Street, South Shields. Parts of the River Tyne around Mill Dam and at Hebburn were also affected by this tidal surge. It is considered unlikely, according to the 2011 SFRA, that any land use changes along the River Tyne could have a significant impact on tidal flood levels.
- 3.3 Two of the most severe rainfall events in South Tyneside were experienced in 2012. Over 400 residential properties and 33 businesses were affected by flooding, as well as a number of road closures. Following this event, the borough suffered further severe rainfall on 5th August 2012. This event saw approximately 100 properties flooded and businesses on Monkton Business Park, Boldon Business Park and Ocean Road as well as a number of road and school closures. Areas particularly affected by internal flooding as a result of the 2012 flood events were Wuppertal Court in Jarrow, Fellgate Estate and Lukes Lane Estate, Hebburn. The main source of flooding to residential development is associated with the River Don.
- 3.4 Further information on historic flooding can be found in the Strategic Flood Risk Assessment (2021) and the South Tyneside Flood and Coastal Risk Management Strategy (2017 - 2022).

### Types of Flood Risk in South Tyneside

- 3.5 Although flooding can happen anywhere, at any time and under a variety of circumstances, there is always a source, or combination of sources, from which the flooding occurred. A combination of data analysis, historical mapping, studies and modelling has been carried out and four different sources of flooding have been identified. These include surface water, groundwater, fluvial (river) and coastal flooding.

### Surface Water Flooding

- 3.6 Surface water flooding occurs when the volume of rainwater falling does not drain away through the existing drainage systems or soaks into the ground but lies on or flows over the ground instead. This type of flooding is usually short-lived and associated with heavy downpours of rain.
- 3.7 A Preliminary Flood Risk Assessment was undertaken in 2011 and highlighted 152 historic flooding incidents. For a rainfall event with a 1 in 200 chance of occurring, it estimated that approximately 4,000 residential and 100 business (or critical services) properties are at risk from surface water flooding to a depth of 0.3m. It is surface water flooding that is the main contributor to the problems encountered in many events across the Borough.

### **Ground Water Flooding**

- 3.8 This occurs when the level of water in the ground exceeds the surface. This type of flooding can occur after a period of prolonged and sustained heavy rainfall. Areas at risk are those where the groundwater table is at a shallow depth.

### **River Flooding (Fluvial)**

- 3.9 Fluvial flooding occurs when a river cannot cope with the volume of water draining into it from the surrounding land. The Environment Agency is responsible for flooding in main rivers. The River Tyne and Part of the River Don are classed as main rivers; therefore it is the responsibility of the EA to maintain these to prevent the increase of flood risk. Tributaries of the River Don flow through the Borough and are managed by South Tyneside Council. These include the Monkton Burn, Bedes Burn and Calf Close Burn. These Burns can back up and contribute to flooding to nearby housing estates.

### **Coastal Flooding**

- 3.10 Coastal flooding occurs when extreme weather combines with high tides, causing the sea level to rise and breach any sea defences, forcing water onto the land. South Tyneside has recently completed a multi-million pound project to replace the existing coastal defence at Littlehaven. The previous sea wall suffered many years of erosion causing the car park behind it to become flooded on many occasions such that it was close to collapse. The new sea wall will ensure that this part of the coastline is protected from coastal erosion and flooding for many years to come.
- 3.11 However, as climate change and sea-level rise become more of a threat, there are other parts of our coastline which are at risk from erosion and subsequent flooding.

### **Sewer Flooding**

- 3.12 Sewer flooding occurs either when the sewer network becomes blocked or if it is overwhelmed by the amount of water entering it. It can occur during storm events when large volumes of surface water run-off enter the network and the capacity of the system is unable to cope. Depending on the layout of the network this can either be just surface water or a combination of surface water and foul. When this happens and effluent enters a property, the water and sewerage company – Northumbrian Water, has a responsibility to investigate and take appropriate action.

### **Highway Flooding**

- 3.13 Highways are at risk of flooding due to the large amount of impermeable surfaces. They have an extensive drainage network and flooding of the highway occurs when the quantity of rainfall and/or overland flows of water is in excess of the drainage network's capacity. In some cases this can lead to the road being impassable by traffic, resulting in a road closure.
- 3.14 As a highways authority, South Tyneside Council is responsible for clearing gullies and drains in public roads. The vast majority of gullies are scheduled to be cleaned annually, however gullies in higher risk areas or areas more susceptible to flooding have a higher frequency of cleaning. Highways England maintains motorways and major A roads, while the responsibility for maintenance of private roads remains with the landowner.

### South Tyneside Local Plan 2021 – 2039

- 4.1 South Tyneside Council is preparing an emerging Local Plan for the Borough. The Plan proposes a preferred strategy for growth and development up to 2039. The Plan follows the NPPF's standard methodology and seeks to provide a minimum of 5,778 homes over the Plan period.
- 4.2 The Plan also allocates land for employment growth. For general employment needs, the Plan seeks to deliver a minimum of 18.3 hectares. The Plan also makes provision for specialist Port and River-Related employment land with a policy to protect 18.3 hectares.
- 4.3 A large number of sites have been considered as part of the preparation for the Plan. These sites have been considered through the Strategic Housing Land Availability Assessment (2022) and the Employment Land Review (2019) and work undertaken by South Tyneside Council (STC) Officers to update the assessment of sites associated with the ELR.
- 4.4 These documents form part of the evidence base for the Plan and, in consideration with other evidence base documents, have informed the selection of sites carried forward as draft allocations in the Plan.

### Sustainability Appraisal

- 4.5 The National Planning Practice Guidance states '*A local planning authority should demonstrate through evidence that it has considered a range of options in the site allocation process, using the Strategic Flood Risk Assessment to apply the Sequential Test and the Exception Test where necessary. This can be undertaken directly or, ideally, as part of the sustainability appraisal. Where other sustainability criteria outweigh flood risk issues, the decision making process should be transparent with reasoned justifications for any decision to allocate land in areas at high flood risk in the sustainability appraisal report.*'
- 4.6 The Sustainability Appraisal assesses the environmental, social and economic effects of Local Plan policies and proposed development against sustainability objectives.
- 4.7 The SA for the Plan includes the following sustainability objective, 'Objective 1: Adapt to and mitigate the impacts of climate change in South Tyneside'. This objective is supported by the following sustainability questions:
  - Will it help to deliver energy efficient and low carbon developments?
  - Will it reduce energy consumption?
  - Will it increase renewable energy production?
  - Will it help to reduce greenhouse gas emissions?
  - Will it mitigate flood risk, the potential for surface water flooding or sea level rise?
- 4.8 Each policy within the draft Local Plan has been assessed against these criteria.



- 4.9 As part of the Plan preparation, each site has been considered through the Strategic Land Availability Assessment and the Employment Land Review and has been subject to a Site-Specific Sustainability Appraisal. The Sustainability Appraisal framework for the Site-Specific Sustainability Appraisal was adapted to take into account quantitative criteria which could affect the sustainability effects should the site be developed.
- 4.10 For Sustainability Appraisal Objective 1, each site has been considered in relation to flood risk. The data used to undertake this assessment was informed by the previous 2018 Strategic Flood Risk Assessment. Figure 1 shows the Site-Specific Sustainability Appraisal framework for this objective.
- 4.11 This process provides an integrated approach to considering flood risk through the site selection process for the Plan.

**Figure 1 Site-Specific Sustainability Appraisal Criteria – Objective 1**

Sustainability Objective		Site Sustainability Assessment Criteria		
1	Adapt to and mitigate the impacts of climate change in South Tyneside	Does the site fall within a flood risk zone?		
		No flood risk	◆	
		Surface Water Flooding	+/-	
		Flood Risk Zone 2	-	
		Flood Risk Zone 3A or 3B	--	

**Local Plan 2021- 2039 Policies**

- 4.12 Within the Plan there are a number of policies which are relevant to this report:
- Policy S2: Strategy for sustainable development to meet identified needs – identifies what the Plan will do to deliver sustainable development and to meet the needs of South Tyneside by 2039
  - Policy SP3: Spatial Strategy for sustainable development – this policy sets out the spatial policy to help direct development to the most sustainable locations.
  - Policy SP4: Housing Allocations in the Main Urban Area – identifies sites that are allocated for housing within the existing urban area
  - Policy SP5: Urban and Village Sustainable Growth Areas – identifies sites that will be removed from the Green Belt and allocated for housing
  - Policy SP6: Fellgate Sustainable Growth Area - this policy identifies land south of Fellgate as a key strategic site for the development of up to 1000 homes
  - Policy SP7: South Shields Riverside Regeneration Area
  - Policy SP8: Tyne Dock Regeneration Site
  - Policy SP9: South Shields Town Centre Regeneration Site
  - Policy SP10: Salem Street Housing-led Regeneration Site

- Policy SP11: Queen Street Housing-led Regeneration Site
- Policy SP13: Regeneration Improvement Areas
- Policy SP14: Employment Land for General Economic Development
- Policy SP15: Wardley Colliery
- Policy SP16: Provision of Land for Port and River-Related Development
- Policy NE8: Flood Risk and Water Management & Policy.

## 5.0 THE SEQUENTIAL TEST – EVIDENCE BASE AND METHODOLOGY

### The Sequential Test evidence base

- 5.1 There are two key documents which have informed the undertaking of the Sequential Test:
- South Tyneside Strategic Flood Risk Assessment (2021);
  - South Tyneside Flood and Coastal Management Strategy (2017 – 2022)

#### South Tyneside Strategic Flood Risk Assessment (2021)

- 5.2 The South Tyneside SFRA Level 1 was undertaken by JBA Consulting in 2021. This report updated the 2018 SFRA Level 1. The Level 1 Strategic Flood Risk Assessment focused on collecting readily available flood risk information from a number of key stakeholders. The Strategic Flood Risk Assessment findings were then used to inform the preparation of the Plan.
- 5.3 The SFRA identified a number of strategic recommendations for those sites which were assessed in the report. Table 2 sets out the strategic recommendations.

Strategic Recommendation A	Consider withdrawing the site based on significant level of fluvial or surface water flood risk
Strategic Recommendation B	Exception Test required if site passes Sequential Test
Strategic Recommendation C	Consider site layout and design around the identified flood risk if site passes Sequential Test
Strategic Recommendation D	Site-specific FRA required
Strategic Recommendation E	site permitted on flood risk grounds due to little perceived risk, subject to consultation with the Local Planning Authority / Lead Local Flood Authority.

#### South Tyneside Flood and Coastal Risk Management Strategy (2017 -2022)

- 5.4 The South Tyneside Flood and Coastal Risk Management Strategy (2017 – 2022) sets out how South Tyneside Council as the Lead Local Flood authority is managing flood risk issues. South Tyneside’s strategy reflects the content of the National Flood and Coastal Erosion Risk Management Strategy and includes a 5-year action plan that details the significant actions needed to reduce the risk to the Borough.

### The Sequential Test Methodology

- 5.5 The application of the Sequential Test in this report has been undertaken to broadly conform to the approach in the NPPG, drawing principally on the evidence provided by the Level 1 Strategic

Flood Risk Assessment. The NPPG states that the Sequential Test should steer development to areas of low flood risk (Flood Risk Zone 1). Where there are no reasonable sites within this area to accommodate development, Local Planning Authorities should take into account the flood risk vulnerability of land uses (See Appendix x) and consider reasonable availability of sites in Flood Risk Zone 2, and then Flood Risk Zone 3, applying the Exception Test if required.

5.6 A summary of the levels of vulnerability and the proposed development type that is of particular relevance in the context of this Sequential Test Report is set out below. Table 5.1 below cross-references the vulnerability classification to the application of the Sequential Test by showing when the Exception Test is required.

- More vulnerable includes hospitals, dwelling houses and nightclubs
- Less vulnerable includes shops, service industries restaurants, cafes and offices.
- Water-compatible development includes docks, marinas and wharves.

5.7 Table 3 below is a summary of the flood risk vulnerability classification which is set out in the National Planning Practice Guidance.

<b>Table 3 Flood Risk Vulnerability Classification.</b>					
<b>Flood Zones</b>	<b>Essential infrastructure</b> e.g. Essential utility or transport infrastructure	<b>Highly vulnerable</b> e.g. Police & Ambulance Stations	<b>More vulnerable</b> e.g. hospitals, dwelling houses and nightclubs	<b>Less vulnerable</b> e.g. shops, service industries, restaurants.	<b>Water compatible</b> e.g. docks, marinas and wharves
<b>Zone 1</b>	✓	✓	✓	✓	✓
<b>Zone 2</b>	✓	Exception Test required	✓	✓	✓
<b>Zone 3a</b>	Exception Test required	×	Exception Test required	✓	✓
<b>Zone 3b</b>	Exception Test required	×	×	×	✓
✓ Development is appropriate × Development should not be permitted					

5.8 In determining which flood risk vulnerability classification is applicable to each site, the Council has utilised the local knowledge of the Borough Council’s Spatial Planning and Environmental Protection teams and has liaised with JBA Consulting.

- 5.9 Paragraph 100 of the NPPF states that local planning authorities should take advice from relevant flood risk management bodies such as lead local flood authorities and internal drainage boards. Northumbrian Water provided comments on the draft Level 1 Strategic Flood Risk Assessment

#### **How the search area has been defined**

- 5.10 Guidance from the Environment Agency on the application of the Sequential Test states *'Identify the geographical area of search over which the test is to be applied - this will usually be over the whole of the Local Planning Authority (LPA) area but may be reduced where justified by the functional requirements of the development or relevant objectives in the Local Plan.'* This section details how the search area has been identified for the sites in the Plan.
- 5.11 The search area for alternative sites to urban housing sites at risk from flooding is the main conurbation of South Tyneside and the villages. The search area for housing sites at risk from flooding located in the Green Belt is alternative locations in the Green Belt.
- 5.12 The Borough's supply of employment land is constrained by the Green Belt. The search area for alternative sites to employment sites at risk from flooding is the main conurbation of South Tyneside and the villages.

#### **How climate change has been taken into account**

- 5.13 The Sequential Test Table at Appendix 1 includes a column 'At risk from fluvial / tidal climate change' with an assessment of very low, medium, or high risk. In the absence of detailed modelling of individual sites, South Tyneside Council Officers have used Flood Zone 2 as a guide i.e. as a proxy for the full extent of Flood Zone 3 in the event of flood extents changing due to climate change.

## 6.0 SUMMARY OF RESULTS

- 6.1 The results of the Sequential Test are set out at Appendix 1. The Sequential Test results show there is no requirement to apply the Exceptions Test at this stage.

### Proposed housing allocations

- 6.2 The majority of proposed residential allocations are wholly within Flood Zone 1 and therefore pass the Sequential Test. Exceptions are Land at North Farm West (Plan ref GA4, SHLAA ref SBC003, approx. no of homes 263), Land south of St John's Terrace and Natley Avenue (Plan ref GA6, SHLAA ref SBC087, approx. no of homes 63), Land at Cleadon Lane Industrial Estate (Plan ref H.40, SHLAA ref SBC010, approx. no of homes 212) and Holborn - South Shields Riverside (Plan ref SP7, SHLAA ref SOS014, approx. no of homes 348).

#### *Land at North Farm West, East Boldon*

- 6.3 2.68% of the proposed allocation is in Flood Zone 3b (functional floodplain). The flood risk is on the periphery of the site and does not affect its developability. Although the fluvial flood risk from climate change is medium, the extent of FZ2 is only 0.93%. The Exception Test is not required.

#### *Land south of St John's Terrace and Natley Avenue*

- 6.4 0.31% of the proposed allocation is in Flood Zone 3b (functional floodplain). The flood risk is on the periphery of the site and does not affect its developability. The Exception Test is not required. Although the fluvial flood risk from climate change is medium, the extent of FZ2 is only 0.19%. The Exception Test is not required.

#### *Cleadon Lane Industrial Estate*

- 6.5 36.88% of the site is within Flood Zone 3b (functional floodplain) as currently designated. Avant Homes have submitted a planning application to develop the site for 245 homes. A Flood Zone challenge has been submitted by Envireau Water on behalf of the applicant. Until the Flood Zone challenge has been determined, it is not considered that a Level 2 Strategic Flood Risk assessment and an Exception Test is necessary for the site.

#### *Holborn - South Shields Riverside*

- 6.6 16.7% of the proposed allocation is in Flood Zone 3b (functional floodplain). The docks are being filled in. The risk will be removed with these works. The overall site is a residential-led mixed use regeneration site. The residential component (approximately 348 homes) was granted planning permission on 22.11.2021. The Exception Test is not required.

### Proposed employment allocations

- 6.7 The majority of proposed employment allocations are wholly within Flood Zone 1 and therefore pass the Sequential Test. Exceptions are Tyne Dock Enterprise Park (former McNulty Offshore), Commercial Road, the Former Dow Chemical site and Cleadon Lane Industrial Estate.

#### *Tyne Dock Enterprise Park*

6.8 The area is within the Port of Tyne estate. The Employment Land Review (2019) acknowledges that the Port of Tyne is a 'key economic asset' of strategic importance. There are no reasonable alternative locations for the Port of Tyne. The area of flood zone 3b comprises approximately 5% of the site on its periphery. Any development proposal will need to avoid this area. The Exception Test is not required.

*Former Dow Chemicals*

6.9 The Former Dow Chemicals site is a key part of the Borough's employment land offer. There are no reasonable alternative locations for the provision of employment land on this scale. The area of flood zone 3b comprises approximately 7% of the site along the river frontage. Any development proposal will need to avoid this area. The Exception Test is not required.

*Cleadon Lane Industrial Estate*

6.10 Approximately 12% of the site is in Flood Zone 3b as currently designated. A Flood Zone challenge has been submitted by Envireau Water for Cleadon Lane Industrial Estate. Until the Flood Zone challenge has been determined, it is not considered that a Level 2 Strategic Flood Risk assessment and an Exception Test is necessary for the site.

**Conclusion**

6.11 Application of the Sequential Test has demonstrated that the proposed development allocations pass the Sequential Test, because there are no other suitable locations for development in the borough in areas of lower flood risk for the amount of development proposed in the Plan.

**Appendix 1: Table showing site-by-site application of sequential flood test**

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
SP6	SFG072	Fellgate Sustainable Growth Area	192	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
SP7	SOS014	South Shields Riverside Regeneration Area	4.44	65.15	8.02	10.64	16.17	No	High risk	More Vulnerable	A	16.7% of the site is in FZ3b. The docks are being filled in. The risk will be removed with these works. The overall site is a residential-led mixed use regeneration site. The residential component (approximately 348 homes) was granted planning permission on 22.11.2021. The Exception Test is not required.
SP9	SIS005	South Shields Town	1.15	100	100	0	0	0	No	Very low	Less	D



Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
		Centre College Regeneration Site								risk	Vulnerable	
H.1	SIS018	Land at Chatsworth Court	0.08	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
H.2	SOS001	South Shields and Westoe Sports Club and playing fields	2.8	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.3	SOS007	Site of former South Tyneside College – South Shields Campus	6.72	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.4	SOS009	Former Brinkburn Comprehensive School	7.82	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.5	SOS040	Land at former Chuter Ede Education Centre	7.8	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
H.6	SOS043	Former Temple Park Infant School	0.7	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.7	SOS044	Connolly House, Reynolds Avenue	0.4	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
H.8	SOS050	Land at Bradley Avenue	1.3	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.9	SOS083	Land at Biddick Hall Drive	0.12	100	0	0	0	0	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
H.10	SOS087	Land behind Ryedale Court	0.48	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.11	SOS093	Land at Horton	0.13	100	0	0	0	No	Very	More	E	The site is completely within FZ1. The

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
		Avenue							low risk	Vulnerable		Sequential Test is passed.
H.12	SOS119	Land at Cheviot Road		100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
H.13	SOS151	Land at Bonsall Court			0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.14	SOS221	Land at Lizard Lane	0.35	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
H.15	SOS222	Land at Dean Road	0.42	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
H.16	SOS230	Land at Essex Gardens	0.13	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
H.17	SOS231	Land at Brockley Avenue	0.02	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
H.18	SFG043	Land at Trent Drive	0.23	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
H.19	SFG044	Land at Heathway, Hedworth	0.07	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
H.20	SFG045	Land at Heathway/Greenlands, Hedworth	0.18	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
H.21	SFG046	Land at Kings Meadow, Hedworth	0.51	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
H.22	SFG048	Land at Calf Close	0.08	100	0	0	0	No	Very	More	E	The site is completely within FZ1. The

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
		Walk							low risk	Vulnerable		Sequential Test is passed.
H.23	SFG068	Land to North and East of Holland Park Drive	0.99	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.24	SJA008	Land at Salcombe Avenue	0.9	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.25	SJA013	Perth Green Youth Centre, Perth Avenue	1.2	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.26	SJA019	Land at previously Martin Hall, Prince Consort Road	0.4	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.27	SJA020	Land at previously Nolan Hall, Concorde Way	0.5	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
H.28	SJA021	Land at Leamside	0.37	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.29	SJA049	Land at Falmouth Drive	1.3	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.30	SJA053	Land at Peel Gardens	0.23	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.31	SJA103	Land at Kirkstone Avenue	0.1	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.32	SHB012	Ashworth Frazer Industrial Estate and Hebburn Community Centre	2.83	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.33	SHB013	Land to North of	0.1	100	0	0	0	No	Very	More	D	The site is completely within FZ1. The

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
		former day care centre							low risk	Vulnerable		Sequential Test is passed.
H.34	SHB045	Land south-west of Prince Consort Road	1.13	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.35	SHB046	Father James Walsh Day Centre, Hedgeley Rd	0.65	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.36	SHB092	Land off Mountbatten Avenue	0.44	100	0	0	0	Yes	Very low risk	More Vulnerable	C	The site is completely within FZ1. Surface water risk can be managed through development. The Sequential Test is passed.
H.37	SHB121	Land at Lilac Walk	0.17	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.38	SBC025	The Disco Field, Henley	2.2	100	0	0	0	No	Very	More	D	The site is completely

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
		Way							low risk	Vulnerable		within FZ1. The Sequential Test is passed.
H.39	SBC121	Open space at Dipe Lane/Avondale Gardens	0.42	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
H.40	SBC010	Land at Cleadon Lane Industrial Estate	6.5	38.57	7.58	16.94	36.88	No	Medium risk	More Vulnerable	A	Avant Homes have submitted a planning application to develop the site for 245 homes. A Flood Zone challenge has been submitted by Envireau Water on behalf of the applicant. Until the Flood Zone challenge has been determined, it is not considered that a Level 2 Strategic Flood Risk and an Exception Test is necessary for the



Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
												site.
RG1	SOS080	Tyne Dock housing-led Regeneration Site	1.4	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
RG2	SIS062	Salem Street housing-led regeneration site	0.3	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
RG3	SIS063	Queen Street housing-led regeneration site	0.33	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
RG4	SIS009	Hebburn New Town housing-led regeneration Site	2.2	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
RG5	SIS062	Winchester Street housing-led regeneration site	0.8	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
RG6	SIS006	Land off Prince Georg Square housing-led regeneration site	0.3	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
RG7	SIS009	Land off Burrow Street housing-led regeneration site	0.29	100	0	0	0	No	Very low risk	More Vulnerable	E	The site is completely within FZ1. The Sequential Test is passed.
GA1	SBC100	Land south of Cleadon Park	3.42	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
GA2	SBC101	Land West of Sunnyside Farm	5.97	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
GA3	SHB034	Land at South Tyneside College, Hebburn Campus	5.7	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
GA4	SBC003	Land at North Farm	9.52	95.98	0.93	0.39	2.68	No	Medium	More	C	2.68% of the site is in FZ3b. The flood risk is

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
		West							risk	Vulnerable		on the periphery of the site and does not affect its developability. Although the fluvial flood risk from climate change is medium, the extent of FZ2 is only 0.93%. The Exception Test is not required.
GA5	SBC084	Former MoD bunkers, medical stores and associated land	7.62	100	0	0	0	Yes	Very low risk	More Vulnerable	C	The site is completely within FZ1. Surface water risk can be managed through development. The Sequential Test is passed.
GA6	SBC087	Land south of St John's Terrace and Natley Avenue	1.56	99.48	0.19	0	0.31	No	Medium risk	More Vulnerable	C	0.31% of the site is in FZ3b. The flood risk is on the periphery of the site and does not affect its developability. The Exception Test is not

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
												required. Although the fluvial flood risk from climate change is medium, the extent of FZ2 is only 0.19%. The Exception Test is not required.
GA7	SBC102	Land to North of Town End Farm	22.4	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
GA9	SBC051	Land at West Hall Farm	10.27	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
GA10	SWH009	Land at Wellands Farm	9.1	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
GA11	SWH013	Land west of Cleadon Lane, Whitburn	3.9	100	0	0	0	Yes	Very low risk	More Vulnerable	C	The site is completely within FZ1. Surface water risk can be managed through

Local Plan	SHLAA	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
												development. The Sequential Test is passed.
GA12	SWH025	Land at Whitburn Lodge	1.0	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
GA13	SWH026	Land to North of Shearwater	1.65	100	0	0	0	No	Very low risk	More Vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.

Local Plan ref	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
ED1	Land East of Pilgrims Way, Bedesway	0.43	100	0	0	0	No	Very low risk	Less vulnerable	E	The site is completely within FZ1. The Sequential Test is

Local Plan ref	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
											passed.
ED1	West of Pilgrims Way (east of Mitsumi), Bede Ind Est	1.41	100	0	0	0	No	Very low risk	Less vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
ED2	North of Tesco, Towers Place, Simonside Ind Est	1.45	100	0	0	0	No	Very low risk	Less vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
ED3	South of Heddon Way, Middlefields Ind Est	0.68	100	0	0	0	No	Very low risk	Less vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
ED4	Land to rear of Western Approach Trade Park, Wilson Street.	0.31	100	0	0	0	No	Very low risk	Less vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
ED6	Land at Wagonway Industrial Estate, Hebburn	0.5	100	0	0	0	No	Very low risk	Less vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
ED8	Land East of Lukes Lane, Monkton Fell (West) Hebburn	3.7	100	0	0	0	No	Very low risk	Less vulnerable	D	The site is completely within FZ1. The Sequential Test is

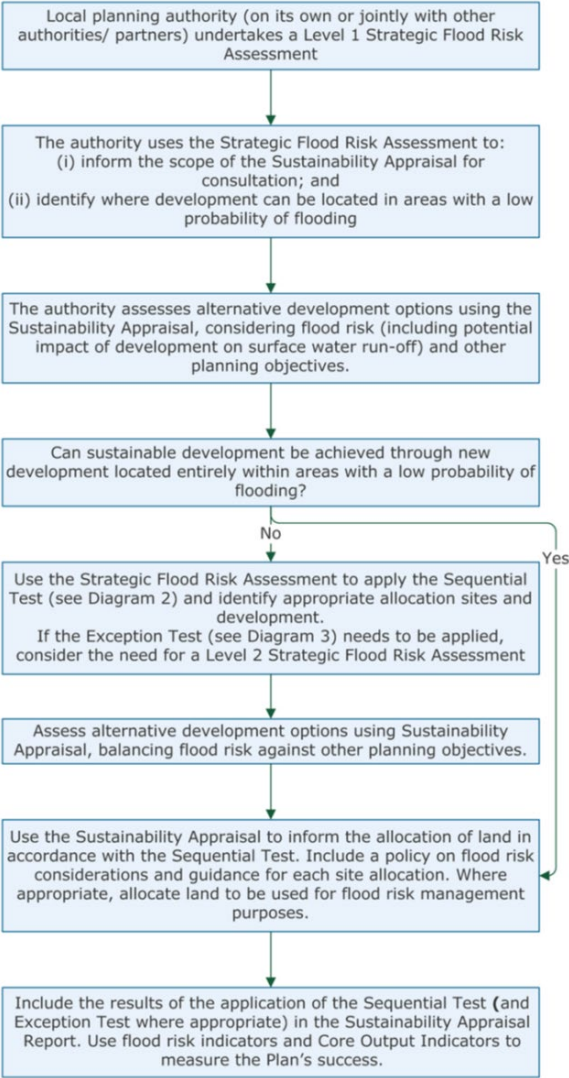
Local Plan ref	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
											passed.
ED9 / SP15	Wardley Colliery	12.7	100	0	0	0	No	Very low risk	Less vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
ED10	Northern end of Boldon BP	0.6	100	0	0	0	No	Very low risk	Less vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
ED10	Land west of 16 Brooklands Way, Boldon Business Park	0.61	100	0	0	0	No	Very low risk	Less vulnerable	D	The site is completely within FZ1. The Sequential Test is passed.
ED11	Cleadon Lane Industrial Estate	2.3	79.68	8.18	0.01	12.1	No	Medium risk as at existing risk	More vulnerable	A	A Flood Zone challenge has been submitted by Envireau Water on behalf of the applicant. Until the Flood Zone challenge has been determined, it is not considered that a Level 2 Strategic Flood Risk and an Exception Test is necessary for the site.
SP16	Tyne Dock Enterprise Park (former NcNulty	5.6	78.58	12.76	3.19	5.45	No	High	Less	C	The area is within the Port of Tyne estate. The

Local Plan ref	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
	Offshore), Commercial Road							risk	vulnerable		Employment Land Review (2019) acknowledges that the Port of Tyne is a 'key economic asset' of strategic importance. There are no reasonable alternative locations for the Port of Tyne. The area of flood zone 3b comprises approximately 5% of the site on its periphery. Any development proposal will need to avoid this area. The Exception Test is not required.
SP16	Former Dow Chemicals, Jarrow	14	89.44	2.09	1.03	7.43	No	High risk	Less vulnerable	C	The Former Dow Chemicals site is a key part of the Borough's employment land offer. There are no reasonable alternative locations for the provision of employment land on this scale. The area of flood zone 3b comprises approximately 7% of the site along the river



Local Plan ref	Site Name	Area	% in Flood Zone 1	% in Flood Zone 2	% in Flood Zone 3a	% in Flood Zone 3b	Significant Surface Water Risk	At Risk from Fluvial / Tidal Climate Change	Flood Risk Vulnerability Classification	SFRA Recommendation	Officer Comments
											frontage. Any development proposal will need to avoid this area. The Exception Test is not required.

**Appendix 2: Taking flood risk into account in the preparation of a Local Plan (National Planning Practice Guidance Flow Chart)**



### **Appendix 3: Flood risk vulnerability classification (National Planning Practice Guidance - Paragraph 066 Reference ID-7-066-20140306)**

#### *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