North Tyneside Council

Working in partnership with CAPITA

North Tyneside Local Plan Pre Submission Draft

Flooding Sequential Test

October 2015

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1 Introduction

1.1 This report sets out the Sequential Test and Exception Test of flood risk in North Tyneside specifically focussed on the proposed development sites that have been allocated in the North Tyneside Local Plan. The distribution of the potential development sites for North Tyneside, can be split into the following:

- The Main Urban Area
- Wallsend
- North Shields
- Coastal Area
- North West Communities

1.2 The Sequential Test has been used to inform the Sustainability Appraisal (SA) and in turn the site selection process.

1.3 The following documents have been used to aid the preparation of this document:

- National Planning Policy Framework (NPPF)
- Technical Guidance to the National Planning Policy Framework
- National Planning Practice Guidance (NPPG)
- North Tyneside Strategic Flood Risk Assessment 2010
- North Tyneside Surface Water Management Plan 2012
- North Tyneside Water Cycle Study 2013
- North Tyneside Local Flood Risk Management Strategy 2014
- North Tyneside Strategic Housing Market Assessment 2015 (SHMA)
- North Tyneside Strategic Housing Land Availability Assessment 2015 (SHLAA)
- North Tyneside Sustainability Appraisal 2015 (SA)
- Employment Land Review 2015

1.4 The above documents can be accessed at: http://www.northtyneside.gov.uk/browse.shtml?p_subjectCategory=809.

2. National Context

2.1 Nationally flooding has become an increasingly important subject as there has been a rise in the number of flood events. The National Planning Policy Framework (NPPF) which now post dates PPS25: Development and Flood Risk sets outs the national policy for new development and flood risk. When producing development plans, consideration needs to the given to present and future flood risk. The NPPF sets out that a Sequential Test for flooding is required when deciding which land is to be allocated in the North Tyneside

Local Plan. The aim of the Sequential Test is to guide development to areas with the lowest probability of flooding. Therefore preference is given to the allocation of development that is within Flood Zone 1 (FZ 1), as this would represent the lowest probability of flooding from fluvial and/or tidal sources. If the quantum of development cannot be accommodated within these areas, reasonably available sites within Flood Zone 2 (FZ 2) can be considered (with an Exception Test applied where required). Only where there are no reasonably available sites with lesser flood risk should sites within Flood Zone 3 (FZ 3a and 3b) be considered (with an Exception Test applied where required).

2.2 This Sequential Test is informed by information contained in the North Tyneside Council Strategic Flood Risk Assessment (SFRA) which takes into account all the sources of flooding in the borough, and this is the North Tyneside Level 1 Flood Risk Assessment 2010. If after the application of the Sequential Test it is not possible or consistent with the wider sustainability objectives of the North Tyneside Local Plan for development to be located in areas where there is a lower probability of flooding, the NPPF sets out that an Exception Test can be applied where necessary. The Exception Test for sites applies if the site satisfies the following:

- The development provides wider sustainability benefits to the community that outweigh flood risk informed by the 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 the flood risk elsewhere and where possible, will reduce flood risk overall.

2.3 Site specific flood risk assessments set out the site specific information illustrating the variation of flooding and likely performance of flood risk management infrastructure necessary to ensure that development would be safe for its lifetime without increased flood risk and where possible, reduce overall flood risk.

3. Local Context and the North Tyneside Local Plan

3.1 The North Tyneside Local Plan contains a series of policies which are relevant to this report:

- Policy S/1.1 sets out the spatial policy to help direct development to the most sustainable locations. It sets out development priorities, such as employment development, housing, retail, leisure, tourism and cultural facilities to be built within the main urban area.
- Policy S/2.2 sets out the provision of land for employment development across the plan period, and how the employment sites set out in the plan have been selected.
- Policy S/4.3 sets out the distribution of potential development sites across North Tyneside and outlines the process of the selection for each of the

sites that are outlined. This policy sets out a breakdown of the potential development sites into 'Strategic Sub Areas', which are outlined as the Main Urban Area, Wallsend, North Shields, Coastal Areas and North West Communities.

- Policy S3.1 sets out a strategy to pursue growth and regeneration of the existing town centres and retail provision
- Within the North Tyneside Local Plan there are a suite of policies related to water management and flooding. The two main flood related policies in the North Tyneside Local Plan are DM 5.12 Development and Flood Risk and DM 5.13 Flood Reduction. There is also DM 5.14 Surface Water Run Off and DM 5.15 Sustainable Drainage.

3.2 Flood risk is high on the local agenda as there have been serious storm events over the past 5 years, 'Thunder Thursday' being the most notable example. One preconception in relation to development and flood risk is that flood risk will be increased by new development. Policies DM 5.12 and DM 5.14 are the main flooding policies in the North Tyneside Local Plan, with the principle point being that development should not increase flood risk, and where possible, betterment will be sought. Throughout the development of the Local Plan, the views of the relevant agencies such as Northumbrian Water Ltd (NWL) and the Environment Agency (EA) have been sought and incorporated into the site selection processes. Overall development can offer an opportunity to add on site flood mitigation and ways to control surface water, which in turn can have a positive impact on surrounding areas.

3.3 The North Tyneside Local Plan sets out the preferred policies and proposals to guide planning decisions and establish the framework for the sustainable growth and development of North Tyneside up to 2032. The Local Plan covers a range of objectives which included outlining the number of new homes that are needed and where they should be located; the amount and proposed location of new employment land; the protection and improvement of important open areas and provision of new ones; the provision of new infrastructure and improvement of town centres and community facilities in the Borough.

Quantum of growth proposed in the North Tyneside Local Plan

3.4 The Local Plan proposes to deliver 17,388 **new homes** from 2011/2012 to 2031/2032. Discounting existing commitments, the borough would look to deliver 10,577 new homes to 2032.

3.5 Based on existing evidence, the North Tyneside Local Plan would propose to deliver 146 hectares of **employment land** by 2032, as well as 36 hectares of reserved land (the majority would be on sites already identified through the Local Plan process) where the priorities for growth will be within the A19 Corridor and on the North Bank of the Tyne. Overall provision of employment land is forecast to provide some 707 additional jobs per year.

3.6 In terms of **retailing,** the North Tyneside Local Plan proposes to deliver some 15,249sq.m net new comparison floorspace and some 6,378sq.m net of new convenience retail shopping. This is based on more up to date evidence contained within the North Tyneside Retail and Leisure Study Update 2014.

3.7 The above figures set out the proposed quantum of growth for North Tyneside. Throughout the site selection flooding has been thoroughly taken into account with planners and also flooding and drainage engineers reviewing the effect development would have in relation to each of the sites set out in the North Tyneside Local Plan. This document specifically looks at the flood risk associated to each development site. Further details on other considerations, such surface water and more specific drainage impacts have been taken into account throughout the Sustainability Appraisal 2015 (SA).

3.8 This document has informed the following documents in the Local Plan Consultation Draft 2015:

- Sustainability Appraisal (SA)
- Employment Land Review (ELR)
- Strategic Land Availability Assessment 2014 (SHLAA)
- Infrastructure Delivery Plan 2015 (IDP)
- Flooding Policies within the North Tyneside Local Plan 2015.

North Tyneside Local Plan and Flood Risk

3.9 The NPPF sets out a need for a Strategic Flood Risk Assessment (SFRA) to support the Local Plan; with North Tyneside Strategic Flood Risk Assessment Level 1 being prepared in 2010. The SFRA forms an important part of the evidence base of the Local Plan, and takes account of all of the potential sources of flood risk across the entirety of the Local Plan area, and also takes into account the potential impact of climate change. Where there is a need to apply the Exception Test, the scope of an SFRA will be widened to consider the impact of flood risk management infrastructure on frequency impact, speed of onset, depth and velocity of flooding within flood zones considering a range of flood risk management scenarios.

3.10 North Tyneside SFRA Level 1 and Level 2 was undertaken by JBA Consulting in 2010. Appendix A of the SFRA Level 1 report took into account the previous development sites from the then Core Strategy Preferred Options 2010. A Sequential Test Update (August 2013) was completed to take account of any changes in site allocation and more recent flood risk evidence, including the new NPPF and remodelled Flood Zones along the Ouseburn. It is on this basis the North Tyneside Sequential Test Report is being revised and updated.

3.11 The NPPG sets out five levels of vulnerability to flooding in relation to the proposed development type. This is set out in full in the Appendix A of this

document. As a summary, some of the key development types are outlined below, with their flood risk classification:

- Essential Infrastructure such as mass evacuation routes that require the crossing of an area of known flood risk is classed as 'Essential Infrastructure'
- Residential dwellings and schools are classed as 'More Vulnerable'
- Offices and employment development such as general industry, storage and distribution are classed as 'Less Vulnerable'.

Table 1: A summary of the flood risk vulnerability classification which is set out in the National Planning Policy Guidance (NPPG).

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 *	✗	✗	✗	✓*

(Development is appropriate = ✓) (Development should not be permitted = ✗)

4. Sources of Flooding in North Tyneside

Fluvial

4.1 The River Tyne, and its tributaries, is the principle watercourse in North Tyneside. As the water levels in the River Tyne are dependant on the tidal levels, new development is not likely to significantly impact on flood risk at the Tyne.

4.2 The River Tyne forms the southern boundary of North Tyneside, and a number of its tributaries flow through the borough including Wallsend Burn, Willington Gut and Redburn Dene. Killingworth, Longbenton and Benton are situated on the west side of the borough. This area falls within the Ouseburn catchment, one of the Tyne's major tributaries. Two former Critical Ordinary Watercourses (COWs), Forest Hall Letch and Longbenton Letch, drain the area as they flow west to the Ouseburn. There is a significant flood alleviation scheme proposed in the Killingworth area in response the localised flooding issues around Forest Hall Letch, Longbenton Letch and Killingworth Lake. Currently Killingworth Lake flows back into the public sewer network, which then flows through to the Howdon Sewerage Treatment Works (STW). The proposed works set out in the Killingworth and Longbenton Sustainable

Sewerage Scheme shows how the lake could be connected to existing watercourses, allowing water to be redirected into the Ouseburn River which would then carry the water directly into the River Tyne. This is a scheme that involves coordinated works between the Council, NWL and the EA and would reduce the amount of water entering the public sewer, freeing up headroom at the STW and reduced overall flood risk within the drainage area.

4.3 Further to this, the Tyne and Wear Rivers Trusts as well as the Environment agent have been working with Local Authorities and other stakeholders to develop an 'Vision for the Ouseburn', which is being prepared to promote improvements to water quality and biodiversity reaches of the Ouseburn. This work is something that is being prepared in tandem with the development planned within the Upper Ouseburn and Lower Ouseburn.

4.4 There are other notable watercourses which run through North Tyneside. The Seaton Burn originates southeast of Dinnington, flowing east through Big Waters nature reserve before entering North Tyneside underneath the A1. The watercourse flows through Dudley and is joined by Sandy's Letch from the north, forming part of the North Tyneside northern boundary with Northumberland before flowing further north into Northumberland, entering the North Sea at Seaton Sluice.

4.5 Brierdene Burn forms southwest of Backworth, flowing under the A19 north through rural land. It is joined by a number of small drains originating from Shiremoor and South Wellfield before flowing through Whitley Bay Golf Course and out into the North Sea. Although there are a number of watercourses that flow through North Tyneside, there is a limited flood history caused by fluvial sources.

Tidal

4.6 The River Tyne is the only source of tidal flooding in North Tyneside. Predominantly along the banks of the Tyne the banks are high enough to contain the floodwater to a 1 in 1000 year event (no higher than Flood Zone 2). It is recommended that sites that are developed close to, or on the banks of the Tyne are assessed in terms of flooding and that the impact of climate change is considered, particularly in areas where there are known flooding issues.

Surface Water

4.7 This is the most comment cause of flooding in North Tyneside, relating to surface water discharge and ordinary watercourses.

4.8 Recently the area suffered from exceptional rainfall in June and September 2012 which resulted in widespread surface water flooding. The return period for the short duration two hour June 28th event was recorded as 1 in 160 year flood event recorded in Whitley Bay. Flooding was experienced at a number of locations including Dudley, Shiremoor, Briar Vale and key road networks

including the A1056/A189 Weetslade Roundabout, A189/A188 Salters Lane Roundabout and Burnside Road.

4.9 A second large flood event occurred between 23rd and 25th September 2012. More than 100mm of rainfall was recorded across a number of north east catchments. The September event was a longer duration event of sustained heavy rainfall which fell on already very saturated ground. A number of areas that had flooded in the June event also flooded in September.

4.10 Some areas, such as Dudley, have recorded flood incidents in 2001, 2005, 2007, 2008 and twice in 2012. Flooding at Dudley is likely caused by flows within the channel from an Ordinary Watercourse behind Dudley Lane exceeding the capacity of the channel. Other areas with a significant flood history from surface water flooding include Shiremoor, Longbenton, Murton, Oak Grove and Aysgarth Avenue.

4.11 As part of the mitigation against issues related to surface water, the Local Flood Risk Management Strategy 2014 was developed to assess risk and outline priorities for works to improve flood mitigation. There is also a general need across North Tyneside for new development to attenuate surface water on site through the use of SuDS to reduce run off rates that are currently being experienced. This is set out in Policy DM 5.14 and DM 5.15.

4.12 The Infrastructure Delivery Plan 2015 (IDP) provides further information about some significant flood mitigation and surface water management projects that are planned for the Borough throughout the plan period.

Climate Change

4.13 The Sequential Test assesses the flood risk based on current flood risk areas. Climate change will need to be taken into account in the site specific flood risk assessment and detailed design if there is potential for the development site to be affected.

5. Methodology for Undertaking the Sequential Test

5.1 The methodology to this Report is based upon the amalgamation of approaches applied by other Local Planning Authorities, which are recognised as best practice. These include:

- the North East regional template for sequential testing based on the Stockton-on-Tees Stockton Site Allocations DPD Preferred Options approach;
- the discounting approach used for Leeds Aire Valley Leeds Area Action Plan;
- JBA Consulting methodology within North Tyneside Strategic Flood Risk Assessment 2010 Level 1, as well as both Newcastle and Gateshead's Sequential Tests for the Core Strategy and Urban Core Plan;

- National Planning Practice Guidance (NPPG) and NPPF Technical Guidance.

5.2 This Sequential Test is based on the current evidence base in terms of Strategic Housing Land Availability Assessments 2015 (SHLAA), Employment Land Review 2015 (ELR) and the Strategic Housing Market Assessment 2014 (SHMA) and will be updated during the development of the Local Plan.

5.3 It is important to read the Sequential Test alongside both the Surface Water Management Plan (SWMP) 2012 and the Outline Water Cycle Study (WCS) 2013.

5.4 Table 2 details the steps that have been applied to undertaking the Sequential Test of the proposed development sites indentified within the Local Plan Pre Submission Draft 2015.

Table 2: Showing the process of the Sequential Test

Applying the Sequential Test during the SA of Development Options	
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 within the Local Plan 2015
STEP 2	Identify reasonably available areas of strategic growth
STEP 3	Identify the presence of **all sources of risk** using the evidence provided in the SFRA 2010
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
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 1 using the Sequential Test Spreadsheet to:*
STEP 6	Identify those sites which should be **avoided** where risk is considered too great and there is no strategic planning objectives identified in the Local Plan 2015
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 viability of development
Identify the Likelihood of passing the Exception Test	*Follow Key Questions imbedded within Figure 1 and Level 2 SFRA evidence (if produced) 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 1 (page 6) and identify the requirement of passing the **Exception Test**
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 1 attributes a significant negative response*
- *Where development will require significant mitigation measures to make the site safe*
- *Where the requirement of loss of floodplain compensation cannot be delivered*

6. Results of the Sequential Test

Step 1: Geographical Area

6.1 This sequential test applies to the whole borough of North Tyneside.

Step 2: Identify Areas of Growth

6.2 The Strategic Housing Land Availability Assessment 2015 (SHLAA) identifies all potential sources of housing sites.

6.3 The Employment Land Review 2015 (ELR) identifies the required sites for employment land for allocation within the Local Plan 2015.

6.4 Taking these sources of information into account, the Local Plan Pre Submission Draft 2015 specifically identifies the proposed development sites. Within the Local Plan Policy S2.2 sets out the employment land proposals and S4.3 details the proposed housing sites. A Policies Map accompanies the Local Plan Pre Submission Draft which spatially illustrates the proposals within the Local Plan.

Step 3: Identify the presence of all sources of flood risk

6.5 The borough can be affected by a number of different types of flooding such as sewer flooding, groundwater flooding, surface flooding and fluvial flooding.

6.6 The extent of flooding from fluvial sources is defined by the Technical Guidance to the NPPF:

- Flood Zone 1 'Low Probability' - Land with a 1 in 1000 annual probability of flooding in any year (<1%).
- Flood Zone 2 'Medium Probability' – Land assessed as having between 1 in 100 and 1 in 1000 annual probability of flooding in any year (1% - 0.1%).
- Flood Zone 3a ' High Probability' – Land with 1 in 100 or greater probability of flooding in any year (>1%).
- Flood Zone 3b 'Functional Floodplain' – Land where water has to be stored in times of flood.

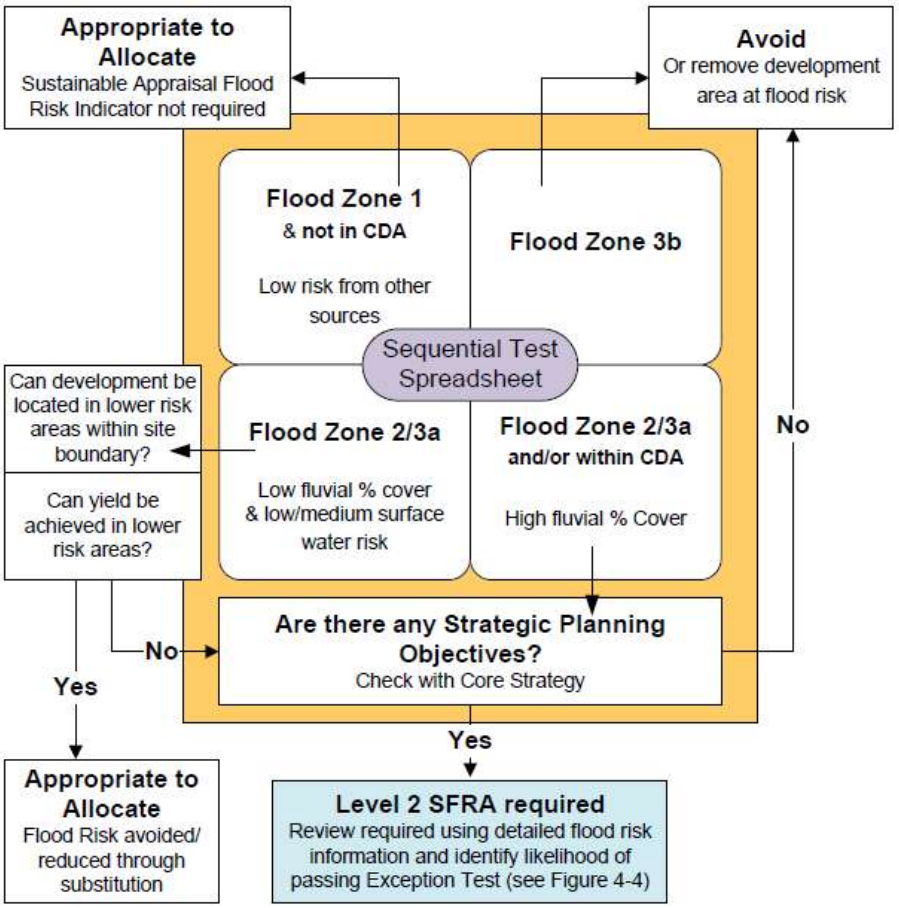
6.7 The Environment Agency (EA) has undertaken pluvial modelling at a national scale and produced mapping identifying those areas susceptible to surface water flooding. There is mapping showing this data for specific development sites later in this document for the sites that require the 2nd Pass of the Sequential Test. All of the pluvial modelling maps. Alongside the information showing all known site constraints has fed into the site assessments through the Sustainability Appraisal 2015 (SA). Further, local pluvial modelling was

undertaken for the SWMP. Although there are still some limitations to this modelling (see SWMP for details) it is more accurate than the national EA modelling. Both versions have been used for the sequential test but more weight should be given to the local modelling.

Step 4: Screen Available Land

6.8 The Sequential Test Spreadsheet sets out the first pass of the Sequential Test using Figure 1 below to assess each site.

Figure 1: 1st and 2nd Pass of Proposed Development Sites Sequential Test (from SFRA, 2010)



Steps 5 and 6: Can All Development Needs Be Met within Flood Zone 1 and Completing the First Pass of the Sequential Test

6.9 With the exception of those sites set out in Table 3, all other development sites proposed within Policies S2.2 and S4.3 fall within Flood Zone 1.

Table 3: The proposed development site that fall without Flood Zone 1

Policy Reference	Site Name	Zone 2	Zone 3a	Zone 3b
S2.2(E008)	Gosforth Business Park, Salter Lane,	✗	✗	✓

	Longbenton			
S2.2(E010)	Balliol East, Benton Road, Longbenton	✓	✓	✓
S4.3(3)	Annitsford Farm, Annitsford	✓	✓	✓
S4.3(22-26)	Killingworth Moor , Killingworth	✓	✓	✓
S4.3(68)	Land at 26-37 Clive Street, North Shields	✓	✓	✓
S4.3(74)	Site 18R, Royal Quays, North Shields	✓	✓	✗
S4.3(99)	Rosehill Road (Persimmon), Ropery Lane, Wallsend	✓	✓	✗
S4.3(141)	Site of the former Seaton Burn First School	✓	✓	✗

6.10 Whilst not forming part of the formal element of this Sequential Test, it is appropriate at this juncture to recognise that the SWMP identified certain locations as 'Critical Drainage Areas'. Such areas are recognised as being sensitive to an increase in the rate of surface water runoff and/or volume from new development and there are generally known local flooding problems associated with these areas. Where sites are for major development and lie within a Critical Drainage Area, this itself will trigger further investigation of flood risk, undertaken through a site specific FRA. This applies to one site:

- Policy S4.3(35-41) - Land at Murton

6.11 There are other areas of limited surface water vulnerability within some of the housing sites in Flood Zone 1. It is expected that any applicant would provide detail of the use of sustainable urban drainage systems (SuDS) and be aware of this vulnerability on site, in line with the NPPF and changes that have been made to the NPPG. However this is something that would be taken into account in more detail through the planning application process where the Lead Local Flood Authority (LLFA) would be consulted to outline site specific issues and resolutions. Every proposed site in the Local Plan Pre Submission Draft 2015 has been reviewed by the Lead Local Flood Authority (LLFA) and they have offered comment to set out the types of mitigation that would be suitable for each site. Further information for each site can be found in the Sustainability Appraisal 2015 (SA).

Step 6 (continued): Completing the Second Pass of the Sequential Test

6.12 The reason for the inclusion of the sites in the list below is that they have been noted as having a percentage of the land within the parcel in Flood Zone 3a and/or 3b.

6.13 Tables 4 and 5 below shows all relevant flood related information for the seven housing sites and two employment sites that would require a second sieve of the Sequential Test.

Table 4: Showing the Housing sites that fail the First Pass of the Sequential Test

Policy Reference	Site Name	Potential Homes	% in Zone 2	% in Zone 3a	% in Zone 3b	Surface Water 1 in 75 year %	Surface Water 1 in 200 year %
S4.3(3)	Annitsford Farm, Annitsford	400	24.39	6.46	0.10	16.03	4.63
S4.3(22-26)	Killingworth Moor , Killingworth	2,000 max	1.33	0.48	1.06	16.87	5.15
S4.3(35-41)	Murton	3,000 max	-	-	-	8.27	1.34
S4.3(68)	Land at 26-37 Clive Street, North Shields	12	42.86	37.28	28.87	5.98	3.22
S4.3(74)	Site 18R, Royal Quays, North Shields	50	48.09	0.58	-	8.38	1.7
S4.3(99)	Rosehill Road (Persimmon), Ropery Lane, Wallsend	30	0.41	0.41	-	25.13	7.8
S4.3(141)	Site of the former Seaton Burn First School	6	50	33.33	-	-	-

Table 5: Showing the Employment sites that fail the First Pass of the Sequential Test

Policy Reference	Site Name	Potential Employment (ha)	% in Zone 2	% in Zone 3a	% in Zone 3b	Surface Water 1 in 75 year %	Surface Water 1 in 200 year %
S2.2(9)	Gosforth Business Park, Salter Lane, Longbenton	10.9	-	-	0.27	27.91	8.53
S2.2(11)	Balliol East, Benton Road, Longbenton	22.97	1.58	1.42	1.40	15.10	8.04

6.14 The information in the tables above shows that a number of the proposed development sites which have within Flood Zone 3a and 3b have minor percentage cover, and therefore the site design and layout will be the principle mitigation against flood risk. The Level 1 SFRA produced in 2010 set out how to apply the Exception Test. Within this it recommended that:

"sites are avoided if the percentage cover in these zones is greater than 20% in Flood Zone 3a and 3b and/or 40% in Flood Zone 2. If the development site is still required NTC should look at the vulnerability of the proposed development and substitute lower vulnerable development if appropriate within the site boundary. Only if is not achievable should the Exception Test be applied (if applicable)."

6.15 This would apply to the following sites:

- S4.3 (68) Land at 26-37 Clive Street, North Shields
- S4.3 (74) Site 18R, Royal Quays, North Shields
- S4.3 (141) Site of Former Seaton Burn Primary School

6.16 As set out in the North Tyneside SFRA Level 1, the Exception Test would have to be applied to the above sites. It is important to note that the above sites are all relatively small in scale compared to some of the proposed allocations. All of the sites are brownfield and are therefore previously developed. Any development to come forward would have to satisfy the flooding policies set out the Local Plan for brownfield development which sets out a requirement for the maximum discharge for the site post development must be 50% of the discharge level prior to development; the reason for this policy is to ensure that where possible, betterment is achieved. Further information related to each of the sites will be detailed in the Exception Test towards the end of this document.

6.17 The Level 1 SFRA then goes on to add:

> *"If the percentage cover of the site at risk is lower than 20% in Flood Zone 3a and/or 40% in Flood Zone 2 it is expected that a sequential approach to site layout could be adopted to remove vulnerable development from flood risk areas. Open green space could also be placed within flood risk areas within the final master plan. This should be linked in with the risk of surface water flooding."*

6.18 This would apply to the following sites:

S4.3 (3) Annitsford Farm , Annitsford
S4.3 (22-28) Killingworth Moor, Killingworth
S4.3 (99) Rosehill Road (Persimmon), Ropery Land, Wallsend
S4.3 (35-41) Murton
S2.2 (9) Gosforth Business Park, Salter Lane, Longbenton
S2.2 (11) Balliol East, Benton Road, Longbenton

6.19 Those sites still allocated for development in flood risk areas must be accompanied by a site-specific FRA with the planning application. This will also be required for those sites required to pass the Exception Test. At this stage, we are only able to set out the likelihood of the above sites passing the Exception Test.

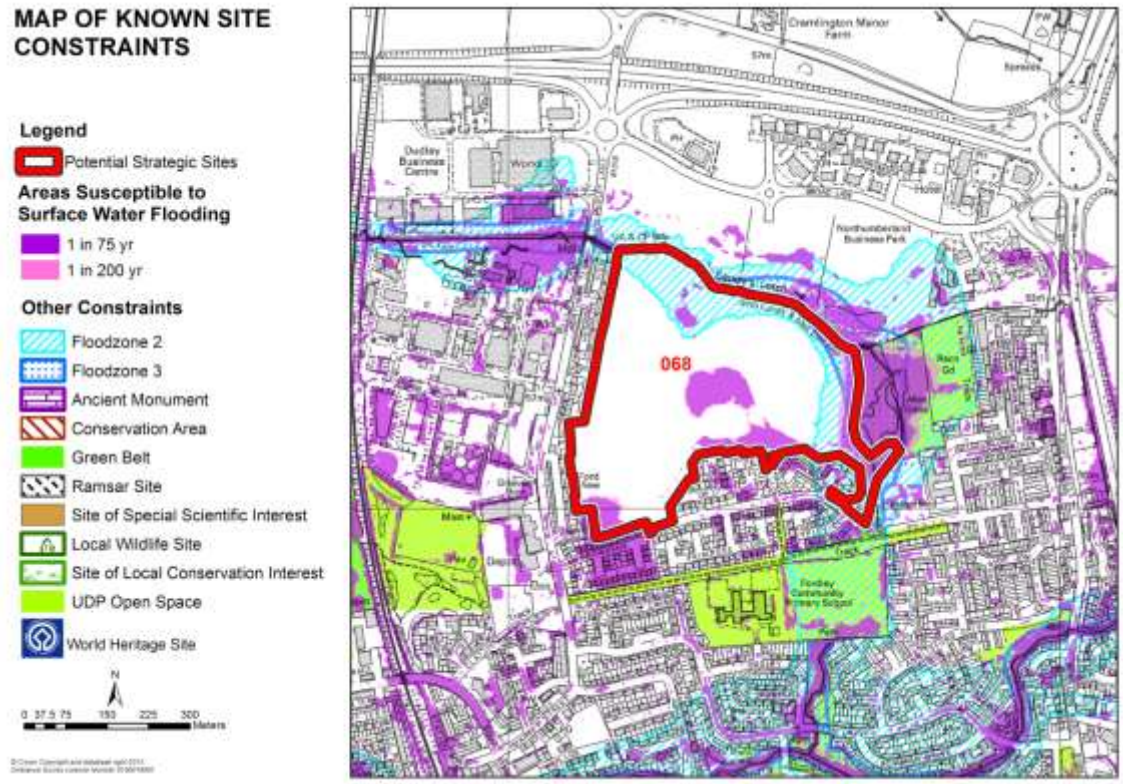
Steps 6 – 9 Sites where a sequential approach to site layout can be applied

6.20 These steps are considered to be mutually conducive to assessing each of the listed sites and have therefore been grouped together. The following offers an appraisal of each site to allow analysis of how flood issues could be mitigated through site design.

Policy S4.3(3) - Annitsford Farm

6.21 Annitsford Farm is located in the north west of the borough close to the junction of the A19 and A1. It is presently in agricultural use. It is proposed the site could contribute some 400 homes. The site is well served by public transport, and lies within a close proximity to Cramlington Town Centre and the local centre within Dudley.

Map 1: Showing the known site constraints for Annitsford Farm.



6.22 Annitsford Farm was previously included as a site in the Local Plan Consultation Draft 2013 and the Local Plan Consultation Draft 2015, and comments have been submitted from the key stakeholders in relation to flooding, the Environment Agency (EA) and Nortumbria Water Limited (NWL). Their comments are detailed below.

Environment Agency	The site is adjacent to Sandy's Letch watercourse and is partially within Flood Zone 3 and 2 (High/Medium Flood Risk). Should this site be allocated we consider that it should be supported by a Flood Risk Sequential and Exception Test. Development that encroaches on watercourses has a potentially severe impact on their ecological value and the land alongside watercourses is particularly valuable for wildlife and it is essential this is protected. We consider that there is a need to provide coherent ecological networks that are more resilient to current and future pressures. In developing the site there are opportunities to

	incorporate biodiversity in and around the development. On this basis, we consider that any allocation should ensure the protection of the watercourse through providing an appropriate buffer zone to the watercourse that is free from development. As outlined urban diffuse pollution is a particular pressure on the water quality of urban watercourses in North Tyneside. We consider that any development will need to manage surface water quality. On this basis, we would recommend that a Foul and Surface Water Drainage Strategy will be required that demonstrates there is adequate foul and surface water capacity for the development the aim of reducing flood risk and ensuring no deterioration of water quality. A We consider that in developing the site there is the need for an overall ambition to limit surface water drainage from the proposed development site in order to manage wider flood risks. The mechanisms for flooding within the area are complex and on this basis we consider that consideration is given to a range of flood risk scenarios.
Northumbria Water Limited	Both a Water Main and Public Sewer crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement. A transferred drain crosses the site which may convey effluent requiring extended easements.

6.23 As set out by the Environment Agency, the site does require an Exception Test. Map 1 shows the extent of the Flood Zones within the boundary of the site. It is clear that the flood zone areas are located to the north and east of the site, on and over lapping the boundary of the site with other areas. The flood zones are attributed to the Sandy's Letch watercourse. As set out by the EA, development should be located a suitable distance from the watercourse to ensure that any development does not adversely impact on local wildlife.

Table 6: Showing development area of Annitsford Farm from SHLAA 2014

Site Name	Site Area (ha)	Developable Site Area (ha)	% of site developable	Potential Homes
Annitsford Farm, Annitsford	17.54	13.16	75	400

6.24 Housing sites are set out in the National Planning Policy Guidance (NPPG) as being classed as 'More Vulnerable' in terms of a sites overall vulnerability to flooding; the full table showing this is Table 1 of this document. It is therefore suitable for housing development to be located on the majority of the site, with only 6.56% of the site being located within Flood Zone 3a and b. The area surrounding the letch could contribute towards the open space area of the site, and this buffer around the letch would militate against the potential

biodiversity impact and also ensure that the flood plain around the letch remains functional.

6.25 Annitsford has potential to provide a significant proportion of the borough's housing needs and create a sustainable mixed use community. The overall strategic aim for the site is it to contribute a significant number of affordable homes, which would be of benefit to North Tyneside. The long term vision is to create and consolidate a distinctive place creating a sustainable community and new housing. The location affords the site with good access to both Dudley and Cramlington town centres, and is an extension of these existing communities.

6.26 Suitable SuDS in the form of swales, attenuation ponds and permeable paving would be, in principle, the mitigation required on site. An agreed buffer surrounding the watercourse would also have to be established. There are clearly areas of the site that are at risk of flooding, from fluvial and surface water, but these areas are clearly defined on Map 1. Taking this into account, locating development away from area of flood risk will be achievable through site design, whilst still delivering the proposed housing yield for the site as only 75% of the site would be required to achieve the proposed yield of 400 homes.

6.27 A Flood Risk Assessment (FRA) has been completed by Arup for this site and it sets out that parts of the site are at risk from flooding from fluvial sources from Sandy's Letch. The development pattern that has been proposed for the site avoids the areas of the site that are within Flood Zone 3a and 3b. As part of the preparation of the FRA, discussion have taken place with the EA as they are responsible for the management of the Sandy's Letch watercourse which is located towards the north and eastern boundary of the site. The developable area has been agreed with the EA based on keeping development to areas that are 1.2m above the nearest extent of Flood Zone 3. The 1.2m allowance incorporates 600mm in order to account for the potential impacts of climate change of fluvial flood levels (in addition to 600mm freeboard).

6.28 There is always a risk of surface water flooding. Surface water flood risk will be managed by appropriate landscape design and by positioning sensitive site elements on relatively high ground of the site and by designing to ensure efficient run off to the local drainage system and SuDS features. Future climate change may increase the flood risk to the development site. Climate change will be accounted for in the site design in relation to the surface water and drainage aspects of flood risk management.

6.29 Drainage design needs to be conducted so that surface waters are directed away from vulnerable components of the site. Drainage should be designed so that flood risk is not increased elsewhere as a result of the development (ideally via the use of SuDS features).

6.30 It is recommended that properties should be made more resilient to the potential impacts of surface water flooding by raising entry and floor levels above local ground levels. This is especially the case in flatter areas of the site.

6.31 The EA has requested that they would expect the discharge to the Letch to be attenuated to the existing greenfield rate (should a discharge to Sandy's Letch be needed). Ideally storage on site would consist of ponds/wetlands/swales etc to provide sustainable drainage. Permeable paving should be considered as well. If during extreme rain events any additional above ground storage (in roads for example) is required, this should not impede access for any residents.

6.32 Ground Information for the site is limited to historical records, which are currently being collated into an Arup desk study report (this is currently in preparation). These records make no reference to groundwater at the site. There is no evidence to suggest that groundwater would be a problem at the site at present. However, this should be verified during later stages of design using site investigation information that would be required in order to undertake detailed design of the development.

6.33 The FRA that has been prepared for the Annitsford Farm site shows that whilst a third of the site lies within Flood Zone 2, 3a or 3b, this could be mitigated through site design. The FRA also shows that that the main source of flood risk on the site is from Sandy's Letch, and as such the EA have been consulted as agreement of build levels was required, and has been agreed.. Surface water flooding is something that can impact on any development site but mitigation has been taken into account as part of the FRA. Suitable SuDS in the form of swales, attenuation ponds and permeable paving would be, in principle, the mitigation required on site.

6.34 Taking the above into account it is considered that the Annitsford Farm site would pass the Sequential Test and allocated as a housing site within the Local Plan. Adopting a sequential approach to site layout would ensure that housing is located away from flood zones areas, and the FRA assessments has illustrated the surface water management and SuDS features to support the sustainable drainage of future development.

Policy S4.3(22-26) and AS4.4(b), Killingworth Moor, Killingworth

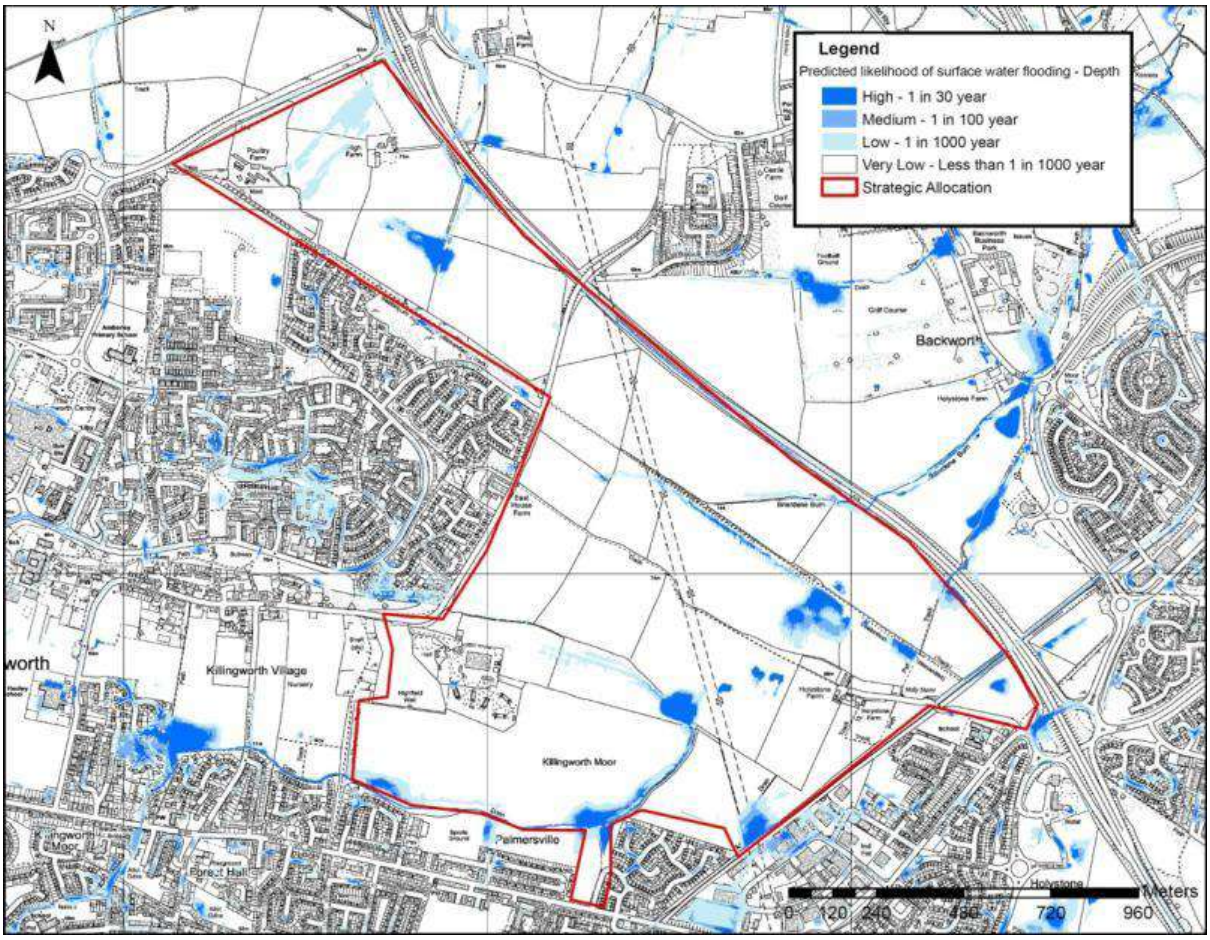
6.35 The Killingworth Moor Strategic allocation is located to the east of the existing Killingworth township. Killingworth Moor strategic allocation is proposed on land previously identified as safeguarded land, and would contribute approximately 2,000 homes to the Local Plan 2015.

6.36 Development on this site will provide a mix of housing tenures, types and sizes and alongside the Murton allocation would require new educational

facilities through a new primary and secondary school to support the growth delivered by the proposals.

6.37 Map 2 shows all of the known site constraints for the Killingworth Moor strategic allocation. The mapping shows the five parcels which make up the entirety of the allocation.

Map 2: Map showing the Environment Agency Surface Water data.



6.38 The vision is to create a sustainable mixed use community over the next 20+ years and consolidate a distinctive place in the wider Killingworth area, which would provide housing, recreation and transport. Killingworth Moor has potential to provide a significant proportion of the borough's housing requirements (2,000 units maximum) to 2032. It provides an opportunity to integrate the Killingworth Moor into the wider area, improve links to Killingworth and surrounding countryside and for a new community to benefit from the range of services and facilities in Killingworth and the wider Borough.

6.39 Development of this site would have a positive impact on social, environmental and economic objectives set out in the Local Plan Pre Submission Draft 2015. It would encourage outdoor recreation and walking by

improving the amount of public open space on what was previously arable land. The site enjoys good access to jobs, facilities and services in the immediate area. Whilst the area is at risk of fluvial flooding from the Longbenton Letch which is located to the south of the site, the percentage of the site that is located in Flood Zone 3a and 3b is 1.68%.

6.40 During the preparation of the Sustainability Appraisal (SA) the site specific issues were viewed wholly. As set out in the comments from the flooding engineers at the Council, development on this site would require an FRA to be prepared. This would be prepared alongside the development of a concept plan as required by Policy S4.4(b) to agree *inter alia* the co-location of the range of required uses in partnership with the landowners and key agencies.

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6.41 The data shows that the area of the site that is located in Flood Zone 3 is concentrated around the letch. This is likely to be one of the options for site access. It sets out in National Planning Practice Guidance (NPPG) that for 'Essential Infrastructure' to be developed at this location, the Exception Test would be required. It states:

In Flood Zone 3b (functional floodplain) essential infrastructure that has to be located here and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

6.42 Additionally, there is a major scheme proposed in the Killingworth area. There have been localised flooding issues around Forest Hall Letch, Longbenton Letch and Killingworth Lake. Currently Killingworth Lake flows back into the public sewer network, which then flows through to the Howdon Sewerage Treatment Works (STW). This scheme planned is known as the Killingworth and Longbenton Sustainable Sewerage Scheme, and it shows how the lake could be connected to existing watercourses, allowing water to be redirected into the Ouseburn River which would then carry the water directly into the River Tyne. This is a scheme that involves coordinated works between the Council, NWL and the EA and would reduce the amount of water entering the public sewer, and would free up headroom at the Howdon STW. It is likely that as well as freeing up headroom at Howdon STW, this would likely lower localised flood risk.

6.43 The Killingworth Moor strategic allocation was previously included as a site in the Local Plan Consultation Draft 2013 and Local Plan Consultation Draft 2015, and comments have been submitted from the key stakeholders in relation to flooding, the Environment Agency (EA) and Northumbria Water Limited (NWL). Their comments are listed below.

Environment Agency	These sites (Sites 22 to 28) are adjacent to watercourses including the Seaton Burn. Development that encroaches on watercourses

	has a potentially severe impact on their ecological value and the land alongside watercourses is particularly valuable for wildlife and it is essential this is protected. We consider that there is a need to provide coherent ecological networks that are more resilient to current and future pressures. In developing these site there are opportunities to incorporate biodiversity in and around the development. On this basis, we consider that there are opportunities to masterplan a wider green infrastructure strategy including the protection of the watercourses through providing an appropriate buffer zone to the watercourse that is free from development. As outlined urban diffuse pollution is a particular pressure on the water quality of urban watercourses in North Tyneside. We consider that any development will need to manage surface water quality. On this basis, we would recommend that the opportunity is taken to masterplan a Foul and Surface Water Drainage Strategy will be required that demonstrates there is adequate foul and surface water capacity for the development the aim of reducing flood risk and ensuring no deterioration of water quality . We consider that in developing the site there is the need for an overall ambition to limit surface water drainage from the proposed development site in order to manage wider flood risks. The mechanisms for flooding within the area are complex and on this basis we consider that consideration is given to a range of flood risk scenarios.
Northumbria Water Limited	***Comment for site High Farm, Killingworth:*** A Water Main crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement. ***Comment for site Killingworth Moor A:*** Both a Water Main and Public Sewer crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement. ***Comment for site Killingworth Moor B:*** A Public Sewer crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement. ***Comment for site Killingworth Moor C:*** A Public Sewer crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement. The site is also near to a Sewage Pumping Station (SPS), therefore in accordance with Sewers for Adoption 6th Edition, habitable buildings should be no closer than 15 metres to the SPS. ***Comment for site A19 Corridor 1, Killingworth:*** Both a Water Main and Public Sewer crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement. ***Comment for site Land at Castle Square, Backworth:*** A Public Sewer crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement. ***Comment for site A19 Corridor 3, Backworth:*** No conflict.

6.44 The responses set out by the NWL and the EA have been taken into account during the preparations of the Local Plan Pre Submission Draft 2015. As set out by the EA, development should be located a suitable distance from the watercourse to ensure that any development does not adversely impact on biodiversity or the water quality of the letch. This is in accordance with work that has been prepared as part of the Green Infrastructure Strategy which has

been released for consultation alongside this document. Additionally the EA have also included sites S4.3 Castle Square, Backworth and S4.3 A19 Corridor 3 in their consultation response. These two sites are located entirely within Flood Zone 1 and therefore are excluded from the 2nd pass of the Sequential Test. More detailed site information for these specific sites is set out in the Sustainability Appraisal 2015 (SA).

Table 7: Showing the developable area of Killingworth Moor from SHLAA 2015

Site Name	Site Area (ha)	Developable Site Area (ha)	% of site developable	Potential Homes
Killingworth Moor , Killingworth	190.45	142.84	75	2,000

6.45 Due to the small percentage of the site that is at risk from flooding, the principle mitigation for the site would be through site design to avoid the areas which are located within flood zones. Housing sites are set out in the National Planning Policy Guidance (NPPG) as being classed as 'More Vulnerable' in terms of a sites overall vulnerability to flooding, with this being visible in Table 1. Table 7 above shows that the deliverable area of the site is 75%. This would mean that the remainder of the site could be substituted with less vulnerable uses, such as new public open space. The area surrounding the letch could contribute towards the open space area of the site, and this buffer around the letch would mitigate against the potential biodiversity impact and also ensure that the flood plain around the letch remains functional.

6.46 An indicative masterplan has been developed for the site which can be viewed within the Local Plan Pre Submission Draft 2015 document. A Flood Risk Assessment was completed by Capita in August 2015 which has influenced the masterplanning process. This FRA now forms part of the evidence base for the Local Plan; and it sets out site conditions and ways in which surface water can be effectively managed across the site. The FRA also sets out locations on the site which would be best suited to SuDS infrastructure with two options being developed for on site SuDs. Both of which set out ways in which a reduction in the surface water run off can be achieved over the current greenfield run off rate. Alongside this work, masterplanners have been working with the Council, developers and landowners to develop an indicative site layout, which has taken into account the recommendations of the FRA. The indicative masterplan for Killingworth Moor can be found within the Local Plan.

6.47 Setting out a framework for surface water management has been one of the key considerations through the development of the FRA. Within the FRA the following ways of managing surface water have been considered:

- Ways of maximising the use of existing topography and the existing drainage regime, and identifying areas where infiltrating SuDS practices may be best suited on site;
- The use of sustainable attenuation to manage runoff;
- Ways of managing discharge for the lifetime of the development to a betterment over existing runoff rates (including the effects of climate change in the future);
- Through the drainage strategy outlining pond locations and capacity/size estimates to demonstrate sufficient land is set aside in the future to manage surface water runoff; and
- Outlining an assessment of the suitability of incorporating infiltrating SuDS practices into the design.

6.48 Flood risk and surface water drainage issues have also been a key influence throughout the development of the drainage strategy which is set out within the FRA. Killingworth Moor and the surrounding area lie within a CDA, and recent experience of flooding has demonstrated that the surrounding areas can flood under existing (largely Greenfield) conditions at the site. This is where the surface water from the discharges in a largely uncontrolled manner. Taking into account other existing surface water separation schemes proposed for the area, most notably the proposed Killingworth & Longbenton Sustainable Surface Water Management Scheme, providing betterment over existing conditions was identified as a key priority to ensure flood risk is appropriately mitigated.

6.49 Through the FRA surface water attenuation features were sized based on restricting post-developed flows to less-than-Greenfield runoff rates. As surface water discharge limits from the site were not available, allowable discharge rates were limited to not exceed one half of the existing Greenfield ('half Greenfield') runoff rates. The sizing of attenuation features was undertaken based upon managing surface water runoff from the site up to a 1 in 100 year return period (plus climate change) event and shows that on site SuDS mitigation can deliver below greenfield run off rates.

6.50 For development to take place Policy AS 4.4(b) Strategic Site Allocation would need to be satisfied. Within this it outlines the requirement for a comprehensive masterplan to be prepared collaboratively with the Council. This masterplanning process, using the indicative masterplan which has been developed sets out the need for a coordinated approach to surface water management to effect the delivery of the on site mitigation measures set out within the FRA.

6.51 Overall the proposed development of Killingworth Moor would contribute significant benefits to North Tyneside in the form of new housing, new public open space and the creation of a new school. A sequential approach the site

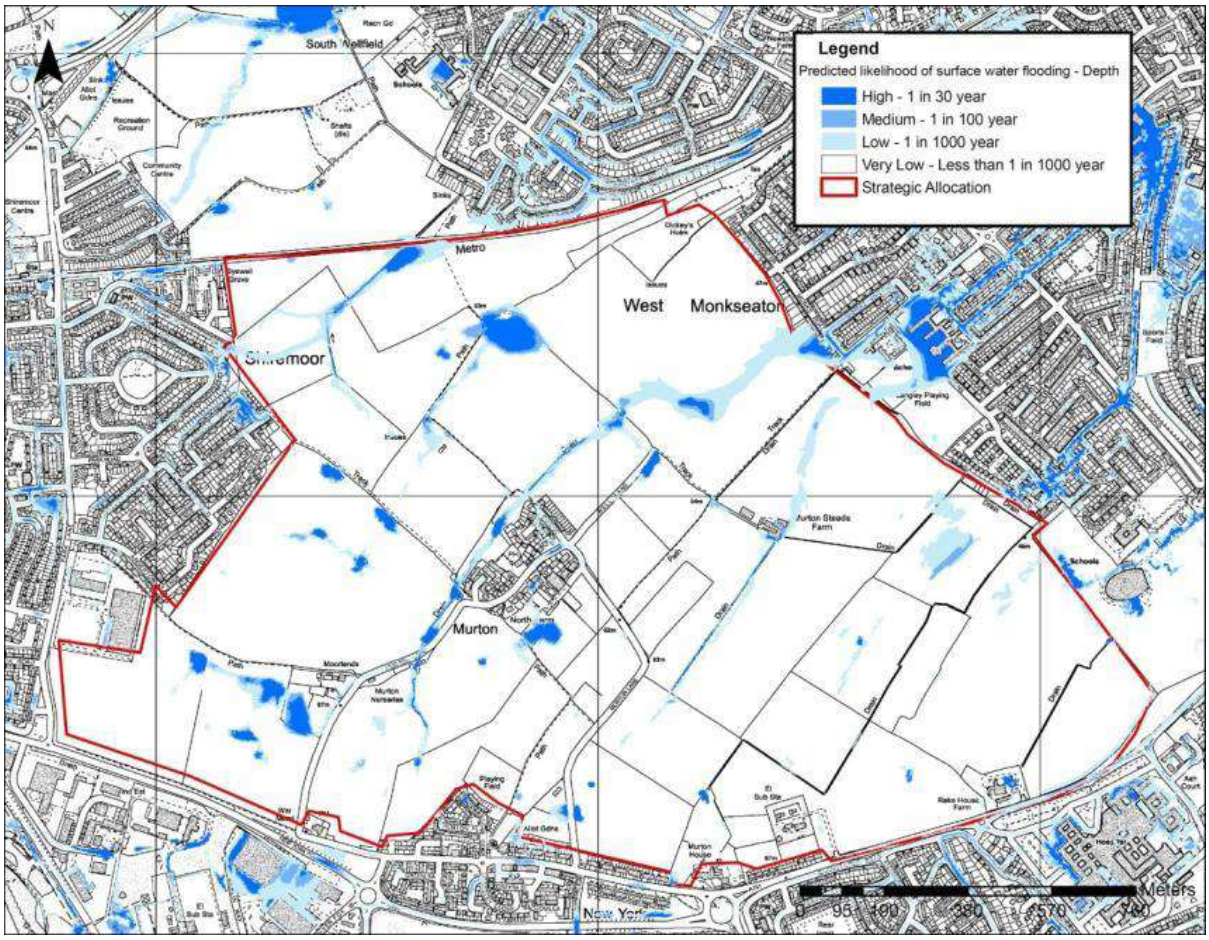
layout is being developed, with an indicative collaborative masterplan for the site already created which takes into account the findings of the FRA assessment and how above greenfield run off rates can be achieved on site. Taking this into account the allocation of Killingworth Moor for housing would have significant sustainable benefits for the North Tyneside, and through the FRA consideration has been given to onsite conditions and how flood plain storage capacity would be retained on site to satisfy the Exception Test.

Policy S4.3 and AS4.4(a), Map Ref 35-41, Murton

6.52 The Murton strategic allocation is located to the east of Shiremoor and west of Monkseaton and Briar Vale. The Murton strategic allocation is proposed on land previously identified as safeguarded land, and would contribute approximately 3,000 new homes to the Local Plan. Development on this site will provide a mix of housing tenures, types and sizes and alongside the Killingworth Moor allocation would require new educational facilities through a new primary and secondary school to support the growth delivered by the proposals.

6.53 Map 3 overleaf shows all of the known site constraints for the Murton strategic allocation.

Map 3: Showing the Environment Agency Surface Water data for Killingworth Moor.



6.54 The fields that surround Murton have been identified as a Critical Drainage Area (CDA). Surface water flooding or the combination between watercourses and surface water drainage is the greatest risk with a number of sites situated on direct surface water flow paths, or within flood zones and Critical Drainage Areas (CDAs). Large dense developments could have significant implications on current risk to the surrounding community and further downstream if runoff is not controlled or current flood risk is not reduced. As outlined in the Infrastructure Delivery Plan (IDP), there are schemes planned to reduce flood risk in this area at present. Further details of these schemes can be accessed from the IDP. Surface water susceptibility zones are not specifically included in the Sequential Test, however it was recommended in the North Tyneside Strategic Flood Risk Assessment (SFRA) a suite of flood maps should be prepared. As part of the Sustainability Appraisal (SA), site surface water flood risk has been explored in more detail.

6.55 Whilst the Murton site is not identified as having areas within Flood Zones 2, 3a or 3b, the site is situated upstream from areas where there is a high risk of surface water and sewer flooding, and it is therefore important to thoroughly understand surface water flows and site drainage. Currently the site has natural drainage capacity which is unmanaged, and extreme rainfall events can contribute to surface water flooding downstream. These flow paths also correlate with historically flooded properties identified by North Tyneside Council and Northumbria Water Limited. With this in mind a FRA has been prepared and will be discussed in more details below.

6.56 The Council is currently working with NWL on a feasibility study which will aim to remove surface water from the system by re-routing water to Marden Quarry Lake. During flood conditions the overflow water from the Quarry would run straight out to sea via a new separate surface water sewer and then out to sea via an existing outfall, relieving pressure on the Howdon Sewerage Treatment Works (STW). The proximity of potential housing development at Murton allows surface water drainage from the southern section of the site to be connected to a culvert at Rake Lane which connects to the Marden Quarry. This would provide a drainage outlet for the new development and also ease the pressure at Howdon STW.

6.57 The vision is to create a sustainable mixed use community over the next 20+ years and consolidate a distinctive place in the wider Murton area, which would provide housing, recreation and transport. Killingworth Moor has the potential to provide a significant proportion of the borough's housing requirements (3,000 units maximum) to 2032, more than any other individual site in the Local Plan Pre Submission Draft 2015. Through site masterplanning, a suitable buffer will be around Murton Village to ensure that the character of the village is not significantly impacted. Access to open space will be greatly increased through the creation of new green infrastructure on site as at present the land is used for arable purposes. This

would create a new community to benefit from the range of services and facilities that the wider Borough has to offer. Development of this site would have a positive impact on social, environmental and economic objectives set out in the Local Plan Pre Submission Draft 2015. The site enjoys good access to jobs, facilities and services in the immediate area.

6.58 The Murton Strategic allocation was previously included as a site in the Local Plan Consultation Draft 2013 and the Local Plan Consultation Draft 2015, and comments have been submitted from the key stakeholders in relation to flooding, the Environment Agency (EA) and Nortumbria Water Limited (NWL). Their comments are listed below.

Environment Agency	These sites (Sites 35 to 41) are adjacent to a number watercourses. Development that encroaches on watercourses has a potentially severe impact on their ecological value and the land alongside watercourses is particularly valuable for wildlife and it is essential this is protected. We consider that there is a need to provide coherent ecological networks that are more resilient to current and future pressures. In developing these site there are opportunities to incorporate biodiversity in and around the development. On this basis, we consider that there are opportunities to masterplan a wider green infrastructure strategy including the protection of the watercourses through providing an appropriate buffer zone to the watercourse that is free from development. As outlined urban diffuse pollution is a particular pressure on the water quality of urban watercourses in North Tyneside. We consider that any development will need to manage surface water quality. On this basis, we would recommend that the opportunity is taken to masterplan a Foul and Surface Water Drainage Strategy will be required that demonstrates there is adequate foul and surface water capacity for the development the aim of reducing flood risk and ensuring no deterioration of water quality . We consider that in developing the site there is the need for an overall ambition to limit surface water drainage from the proposed development site in order to manage wider flood risks. The mechanisms for flooding within the area are complex and on this basis we consider that consideration is given to a range of flood risk scenarios.
Northumbria Water Limited	The Murton allocations are of great interest as we believe that they afford a great opportunity to remove the flows from local watercourses from the public sewerage system. This is of particular relevance to the Briar Vale area of Monkseaton where a culverted watercourse currently discharges to the public sewerage system. We believe that our current approach where we are working in collaboration with your Flood Risk Management Team, the Environment Agency and developers is one which should help reduce flood risk in Monkseaton and secure a long term, sustainable drainage outlet for this proposed development. It is important that we maintain the current momentum and that all parties continue to recognise that this solution can only be delivered by what we all bring to the table. The development at Murton is such that assessment of the impact on a site by site basis may not be appropriate as the cumulative effect of the sites needs to be considered in

	greater detail. What we can be confident about though is that the removal of the local watercourse from the sewerage system at Briar Vale will be the key to providing capacity for this development. It is recommended that the requirement to consider an overall foul and surface water strategy for the cumulative impact of all of these sites is built into the scope of a drainage master planning exercise which we would be happy to support. We would welcome early clarity on who will be leading this master planning exercise and would be happy to share our drainage area models with the Council where this would assist.

6.59 The responses set out by NWL and the EA have been taken into account during the preparations of the Local Plan Pre Submission Draft 2015. As set out by the EA, development should be located a suitable distance from the watercourse to ensure that any development does not adversely impact on biodiversity or the water quality of the letch's. This is in accordance with work that has been prepared as part of the Green Infrastructure Strategy 2015 which has been released for consultation alongside this document.

6.60 From the consultation responses from the EA an NWL, neither have objected to the principle of this allocation. NWL have commented positively on the opportunity the Murton development would give to ensure that opportunities to improve surface water drainage issues in the area are fulfilled.

6.61 For development to take place Policy AS 4.4(a) Strategic Site Allocation would need to be satisfied. Within this it outlines the requirement for a comprehensive masterplan to be prepared collaboratively with the Council. The data set out in Table 4 it shows the site does have areas which are susceptible to surface water flooding. Through this masterplanning further work will be undertaken to set out the details of any flood mitigation that would be delivered on site. Appropriate remediation and mitigation measures would need to be agreed to address the site's ground condition. In August 2015 Capita completed the Murton Gap Flood Risk Assessment (FRA) which assesses the sites ground conditions and outlines ways in which betterment can be achieved over the existing greenfield run off rates.

6.62 Setting out a framework for surface water management has been one of the key considerations through the development of the FRA. Within the FRA the following ways of managing surface water have been considered:

- Identifying two options to manage surface water on site, one in which the existing drainage regime is maintained, and another which emphasises the use of Green Infrastructure as part of an amenity feature;
- The use of sustainable attenuation to manage runoff;
- Managing discharge for the lifetime of the development to a betterment over existing runoff rates (including the effects of climate change in the future);
- For the purpose of the drainage strategy, pond locations and capacity/size estimates have been made, to demonstrate sufficient land is set aside in the future to manage surface water runoff; and

- An assessment of the suitability of incorporating infiltrating SuDS practices into the site design.

Table 8: Showing the developable area of Murton from SHLAA 2014

Site Name	Site Area (ha)	Developable Site Area (ha)	% of site developable	Potential Homes
Murton	238.64	178.99	75	upto 3,000

6.63 The principle mitigation for the site would be through site design to avoid the areas susceptible to surface water flooding. Housing sites are set out in the National Planning Policy Guidance (NPPG) as being classed as 'More Vulnerable' in terms of a sites overall vulnerability to flooding, with this being visible in Table 1. Table 8 above shows that the deliverable area of the site is 75%. This would mean that the remainder of the site could be substituted with less vulnerable uses, such as new public open space. Proposed settlement buffers would contribute towards the open space area of the site, and could be used for the installation of SuDS feature to attenuate surface water on site.

6.64 Overall the proposed development of the Murton site would contribute significant benefits to North Tyneside in the form of new housing, new public open space and the creation of a new school. A sequential approach the site layout is being developed, with an indicative collaborative masterplan for the site already created which takes into account the findings of the FRA assessment and how above greenfield run off rates can be achieved on site. Taking this into account the allocation of Murton for housing would have significant sustainable benefits for the North Tyneside, and through the FRA consideration has been given to onsite conditions.
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Policy S4.3, Map Ref 68, Land at 26-37 Clive Street, North Shields

6.65 The site is located close to the River Tyne and as such, it is at risk from fluvial flooding. For the site to pass the Exception Test, the proposed development would have to ensure safe access and egress off Clive Street with ground floor finished levels set at the agreed minimum finished floor level based on 1 in 200 year return period for an undefended scenario plus climate change where possible.

Map14: Showing the known site constraints for Land at 26-37 Clive Street

6.66 As the site is currently brownfield, the amount of impermeable area associated with the proposed development would be no greater than the existing site; therefore development would not generate greater flows to that of the existing site which will not increase flood risk.

6.67 The proposed drainage infrastructure associated with the development would have to incorporate on-site attenuation which would help to reduce discharge rates from the site and reduce the risk of flooding overall.

6.68 A Level 2 SFRA would be required, as well an Exception Test which would have to satisfy the following:

- the development provides wider sustainability benefits to the community that outweigh flood risk informed by the 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 the flood risk elsewhere and where possible, will reduce flood risk overall.

Environment Agency	No site specific comment.
Northumbria Water Limited	Both a Water Main and Public Sewer crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement.

6.69 As shown in the comments above, there has been no objection to the inclusion of the site within the Local Plan Pre Submission Draft 2015.

Table 9: Showing the developable area of Land at 26-37 Clive Street from SHLAA 2015

Site Name	Site Area (ha)	Developable Site Area (ha)	% of site developable	Potential Homes
Land at 26-37 Clive Street, North Shields	0.3	0.3	100	12

6.70 The site would contribute 12 units to the Local Plan 2015. Currently this site is underused and the site redevelopment would contribute towards the ongoing successful regeneration of the Fish Quay in North Shields. Whilst flooding issues would have to be mitigated, it would be possible to adjust the orientation of the properties to ensure that the safe access and egress to the residential development is maintained throughout the life of the development. Property level protection could also be effectively implemented to ensure flood issues are effectively mitigated.

Policy S4.3, Map Ref 74, Site 18R, Royal Quays, North Shields

6.71 The site is located close to the River Tyne and as such, it is at risk from fluvial flooding. For the site to pass the Exception test, the proposed development would have to ensure safe access and egress off Clive Street with ground floor finished levels set at the agreed minimum finished floor level based on 1 in 200 year return period for an undefended scenario plus climate change where possible.

Map 15: Showing the known site constraints for Site 18R

6.72 As the site is currently brownfield, the amount of impermeable area associated with the proposed development would be no greater than the existing site and therefore development would not generate greater flows than the existing site.

6.73 The proposed drainage infrastructure associated with the development would have to incorporate on-site attenuation which to reduce discharge from the site and reduce the risk of flooding overall.

6.74 A Level 2 SFRA would be required, as well an Exception Test which would have to satisfy the following:

- the development provides wider sustainability benefits to the community that outweigh flood risk informed by the 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 the flood risk elsewhere and where possible, will reduce flood risk overall.

Environment Agency	No site specific comment.
Northumbria Water Limited	A Public Sewer crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement. The site is also near to a Sewage Pumping Station (SPS), therefore in accordance with Sewers for Adoption 6th Edition, habitable buildings should be no closer than 15 metres to the SPS.

6.75 As shown in the comments above, there has been no objection to the inclusion of the site within the Local Plan Pre Submission Draft 2015.

Table 10: Showing the developable area of Site 18R from SHLAA 2015

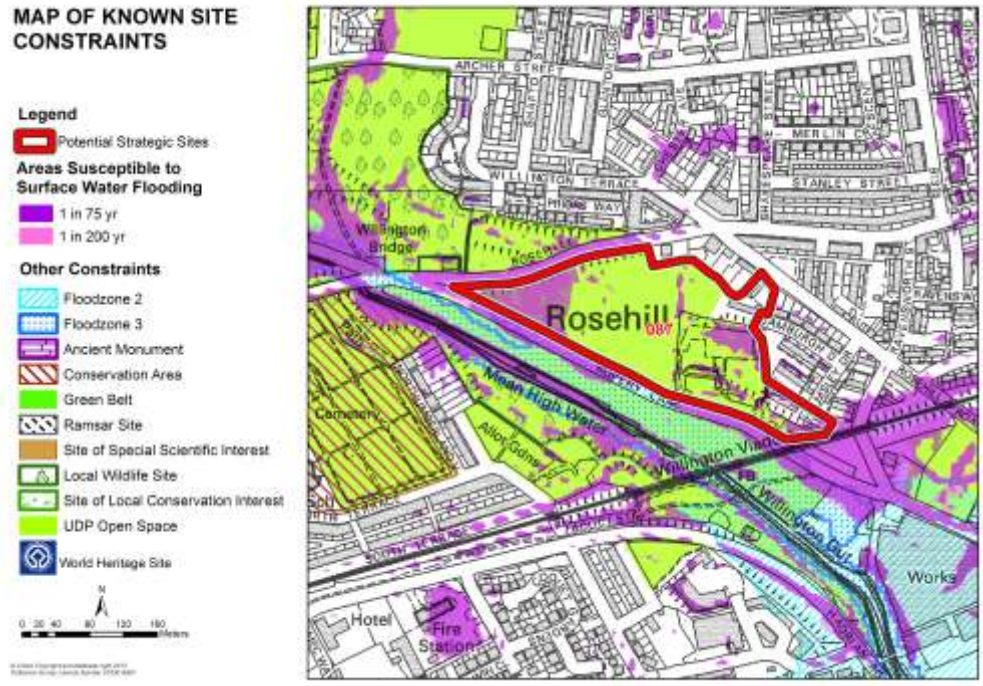
Site Name	Site Area (ha)	Developable Site Area (ha)	% of site developable	Potential Homes
Site 18R, Royal Quays, North Shields	1.39	1.25	92	50

6.76 The site would contribute 50 units to the Local Plan 2015. Currently this site is underused and the site redevelopment would contribute towards the ongoing successful regeneration of the Fish Quay in North Shields. Whilst flooding issues would have to be mitigated, it would be possible to adjust the orientation of the properties to ensure that the safe access and egress to the residential development is maintained throughout the life of the development. Property level protection could also be effectively implemented to ensure flood issues are effectively mitigated.

Policy S4.3, Map Ref 99, Rosehill Road (Persimmon), Ropery Lane, Wallsend

6.77 The proposed site is located close to Willington Gut watercourse and fluvial flood risk is from this source. The main part of the site that is in Flood Zone 2 and 3a is in the north west corner of the site. Part of the mitigation for the site would be for the site to be designed to avoid the area of flood risk. Due to the topography of the site and the site discharging directly into Willington Gut any development would have to ensure that the run off rate of the site would be equal to the current greenfield run off rates. To ensure this, suitable SuDS would be appropriate to attenuate surface water on site to control the rate of discharge to Willington Gut.

Map16: Showing the known site constraints for Rosehill Road (Persimmon)



6.78 Rosehill Road was previously included as a site in the Local Plan Consultation Draft 2013 Local Plan Consultation Draft 2015, and comments have been submitted from the key stakeholders in relation to flooding, the Environment Agency (EA) and Northumbria Water Limited (NWL). Their comments are listed below.

Environment Agency	No site specific comment.
Northumbria Water Limited	Both a Water Main and Public Sewer crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement.

6.79 As shown in the comments above, there has been no objection to the inclusion of the site within the Local Plan Pre Submission Draft 2015.

Table 11: Showing the developable area of Rosehill Road from SHLAA 2015

Site Name	Site Area (ha)	Developable Site Area (ha)	% of site developable	Potential Homes
Rosehill Road (Persimmon), Ropery Lane, Wallsend	4.28	1	23.36	30

6.80 Taking all of the issues into account it is thought that the site would contribute to the aims of the Local Plan Pre Submission Draft 2015, and that flood risk on site could be mitigated effectively by designing the site layout around the Flood Zone areas. It is likely that this site would pass with Exception Test.

Policy S4.3, Map Ref 141, Site of the former Seaton Burn First School

6.81 The site is located close to the Seaton Burn, and parts of the site are located in Flood Zone 2, 3a and 3b. This could be mitigated through site design to ensure that development is located away from the Flood Zones.

Map17: Showing the known site constraints for Former Seaton Burn First School

Table 12: Showing the developable area of Former Seaton Burn First School from SHLAA 2015

Site Name	Site Area (ha)	Developable Site Area (ha)	% of site developable	Potential Homes
Site of the Former Seaton Burn First School	1.83	1.65	90.16	6

6.82 A Level 2 SFRA would be required, as well an Exception Test which would have to satisfy the following:

- the development provides wider sustainability benefits to the community that outweigh flood risk informed by the 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 the flood risk elsewhere and where possible, will reduce flood risk overall.

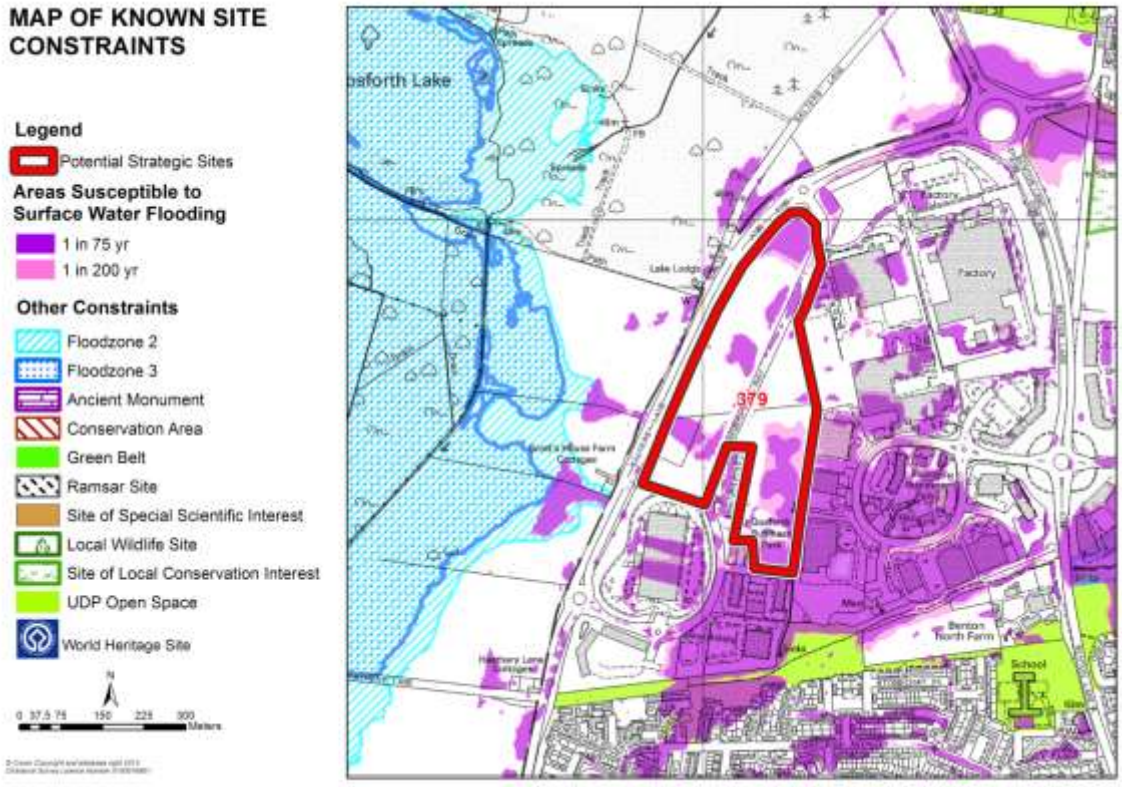
Environment Agency	No site specific comment.
Northumbria Water Limited	No site specific comment.

6.83 No specific comment has been provided for this site. Nevertheless, as with all of the sites that are outlined within the Local Plan Pre Submission Draft 2015, the North Tyneside Council Flooding and Drainage engineers have been given the opportunity to comment about the impact that development would have on the site and the surrounding areas, and they have also offered examples of the potential mitigation for the site. This is set out in more detail in the Sustainability Appraisal (SA).

Policy S2.2, Map Ref 9, Gosforth Business Park, Salter Lane, Longbenton

6.84 The site is located in the west part of North Tyneside, adjacent to the Salters Lane. The site is proposed for employment development and this would be an extension of the existing Gosforth Business Park.

Map18: Showing the known site constraints for Gosforth Business Park.



6.85 Gosforth Business Park was previously included as a site in the Local Plan Consultation Draft 2013 and the Local Plan Consultation Draft 2015, and

comments have been submitted from the key stakeholders in relation to flooding, the Environment Agency (EA) and Northumbria Water Limited (NWL). Their comments are listed below.

Environment Agency	No site specific comment.
Northumbria Water Limited	Both a Water Main and Public Sewer crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement.

6.86 The site has a strong relationship to Gosforth and Balliol Business Parks and would be a beneficial extension. As set out in the Local Plan Pre Submission Draft 2015, the site would contribute 10.26ha which is significant contribution to the overall amount of employment land for proposed development. Due to its location, it is well placed in terms of transport and is within an area that is surrounded by other employment uses and would be a sustainable solution.

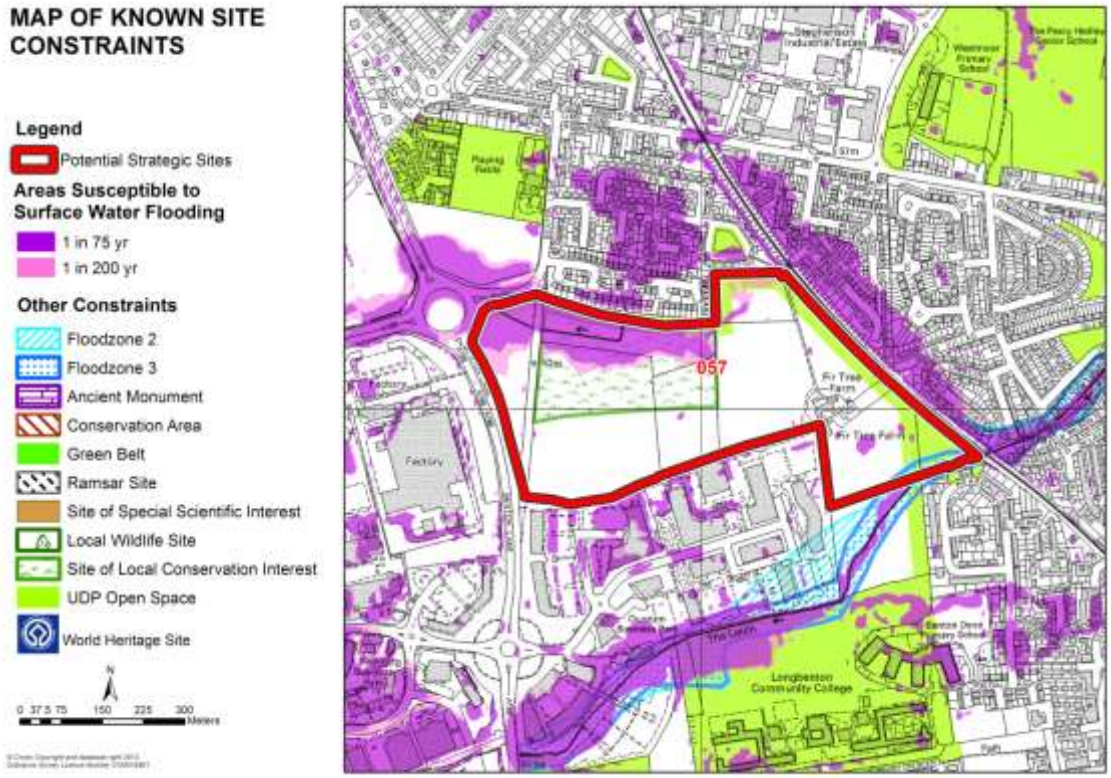
6.87 Map 18 shows that to the west of the some areas of the site a susceptible to surface water flooding, with areas to the south east of the site in the existing Gosforth Business Park also highlighted as being susceptible. A very small percentage the site is located in Flood Zone 3b (0.27%). Due to the small area of the site that is at flood risk, the principle site mitigation would be to design the site around the areas of flood risk. The site is currently greenfield and would have to accord with flood policies DM 5.12 and DM 5.13. Due to the existing surface water issues on site and in the areas to the south and south east, development could incorporate SuDS features such as attenuation areas or swales to mitigate to impact of surface water. Betterment would be sought to ensure that development would positively benefit the surrounding sites.

6.88 Taking all of the issues into account it is thought that the site would contribute to the aims of the Local Plan Pre Submission Draft 2015 significantly, and that flood risk on site could be mitigated effectively by designing the site layout around the Flood Zone areas.

Policy S2.2, Map Ref 11, Balliol East, Benton Road, Longbenton

6.89 As set out in the LPCD, the site has been designated as an employment site. This would be an extension to the Balliol Business Park.

Map 19: Showing the known site constraints for Balliol East.



6.90 Balliol East was previously included as a site in the Local Plan Consultation Draft 2013 and the Local Plan Consultation Draft 2015. Comments have been submitted from the key stakeholders in relation to flooding, the Environment Agency (EA) and Northumbria Water Limited (NWL). Their comments are listed below.

Environment Agency	The site is adjacent to Longbenton Letch watercourse. Development that encroaches on watercourses has a potentially severe impact on their ecological value and the land alongside watercourses is particularly valuable for wildlife and it is essential this is protected. We consider that there is a need to provide coherent ecological networks that are more resilient to current and future pressures. In developing the site there are opportunities to incorporate biodiversity in and around the development. On this basis, we consider that any allocation should ensure the protection of the watercourse through providing an appropriate buffer zone to the watercourse that is free from development. As outlined urban diffuse pollution is a particular pressure on the water quality of urban watercourses in North Tyneside. We consider that any development will need to manage surface water quality. On this basis, we would recommend that a Foul and Surface Water Drainage Strategy will be required that demonstrates there is adequate foul and surface water capacity for the development the aim of reducing flood risk and ensuring no deterioration of water quality. We consider that in developing the site there is the need for an overall ambition to limit surface water drainage from the

	proposed development site in order to manage wider flood risks. The mechanisms for flooding within the area are complex and on this basis we consider that consideration is given to a range of flood risk scenarios.
Northumbria Water Limited	Both a Water Main and Public Sewer crosses the site and Northumbrian Water Ltd (NWL) would require it to be diverted or placed within a suitable easement.

6.91 The site has a strong relationship to Gosforth and Balliol Business parks and would be a beneficial extension. As set out in the Local Plan Pre Submission Draft 2015, the site would contribute 25.79ha which is significant contribution to the overall amount of employment land making its delivery strategically important in relation to the overall strategic aims of the Local Plan 2015. Due to its location, it is well placed in terms of transport and is within an area that is surrounded by other employment uses and would be a sustainable solution.

6.92 Map 19 shows the extent of the Flood Zones within each part of the site. It is clear that the flood zone areas are located in the south east corner of the site. The flood zones are attributed to Longbenton Letch watercourse. As set out by the EA, development should be located a suitable distance from the watercourse to ensure that any development does not adversely impact on biodiversity or the water quality of the letch.

6.93 Due to the small percentage of the site that is at risk from flooding, the principle mitigation for the site would be through site design to avoid the areas which are located within flood zones. Employment sites are set out in the National Planning Policy Guidance (NPPG) as being classed as 'Less Vulnerable' in terms of a sites overall vulnerability to flooding, with this being visible in Table 1. It is therefore suitable for employment development to be located on the majority of the site, with only 2.82% of the site being located within Flood Zone 3a and b. The area surrounding the letch could contribute towards the open space area of the site, and this buffer around the letch would militate against the potential biodiversity impact and also ensure that the flood plain around the letch remains functional.

6.94 Further to the inclusion of the all of the sites in the Sequential Test, each site has been assessed through the Sustainability Appraisal (SA).

6.95 Taking all of the issues into account it is thought that the site would be contribute to the aims of the Local Plan 2015 significantly, and that flood risk on site could be mitigated effectively.

Step 10: Following the application of the Sequential Test sites will be assessed through the Sustainability Appraisal

6.96 Following the application of the Sequential Test each of the sites in Local Plan Pre Submission Draft 2015 have also been assessed through the

Sustainability Appraisal 2015 (SA) which can be found as part of the evidence base. Through the SA each of the proposed development sites have been assessed for alternative land uses.

6.97 As has been outlined through this document, substituting less vulnerable uses to flooding as set out in Table 1 is a suitable approach to site design. Where the area of the site that is within Flood Zone 2, 3a or 3b is a small percentage; site layout can be used as effective mitigation against flooding issues.

7. Conclusion

7.1 The Sequential Test has illustrated that all of the proposed development sites set out in the Local Plan Pre Submission Draft 2015 either pass the Sequential Test or pass the Exception Test.

7.2 In accordance with national planning policy, North Tyneside Council has used the SFRA and site/area specific flood risk assessments plans to steer development away from the highest risk flood areas for the Local Plan Pre Submission Draft 2015. Where development cannot be avoided within flood risk areas, our flood risk studies demonstrate that sustainable development can be achieved incorporating appropriate mitigation measures which has been reflected within the Local Plan Consultation Draft 2015 policies. By sequentially testing proposed development sites, this will ensure that where possible development is directed to the most sustainable locations with the lowest flood risk.

7.3 Over the following months further masterplanning work will be carried out for the two strategic allocations; S4.2/ Killingworth Moor and S4.2/ Murton. Whilst there is an indicative masterplan for the sites set out within the Local Plan Pre Submission Draft 2015, for development to take place Policy AS 4.4(a) and AS4.4(b) would need to be satisfied. Within this it outlines the requirement for a comprehensive masterplan to be prepared collaboratively with the Council.

Appendix A

National Planning Practice Guidance (NPPG): Flood Risk Vulnerability Classification
Accessed from:

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.

National Planning Practice Guidance (NPPG): Flood Zone and Flood Risk Tables

Accessed from Paragraph: 067Reference ID: 7-067-20140306

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.

Notes to table 3:

- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

Appendix B: Sequential Test Spreadsheet

LPCD	Site Name	Browfield or Greenfield	Site area (ha)	% 200-yr shall	% 200-yr deep	% 75yr shall	% 75-yr deep	% Zone 2	% Zone 3	% Zone 3b	Critical Drainage Area(s)
2	Grieves Row	BF	2.83	17.34%	1.36%	17.41%	1.26%	-	-	-	-
3	Annitsford Farm	GF	17.54	11.80%	7.56%	16.03%	4.63%	24.39 %	6.46%	0.10%	-
5	Harvey Combe	BF	11.00	11.48%	72.53%	85.84%	60.46%	-	-	-	West Moor West
6	Stephenson Industrial Estate West	BF	7.30	5.83%	0.27%	5.18%	0.23%	-	-	-	West Moor East & West Moor West
7	Stephenson Industrial Estate East	BF	5.42	3.72%	0.03%	3.12%	0.02%	-	-	-	West Moor East & West Moor West
9	Gosforth Business Park	GF	10.90	15.84%	20.92%	27.91%	8.53%	-	-	0.27%	-
10	Longbenton Foods	BF	10.13	9.63%	0.74%	9.02%	0.45%	-	-	-	-
11	Balliol East	GF	22.97	7.38%	12.48%	15.10%	8.04%	1.58%	1.42%	1.40%	West Moor East & West Moor West
12	St Stephen's Primary School	BF	2.08	3.40%	0.02%	2.87%	0.02%	-	-	-	-
13	Percy Hedley School	BF	0.62	18.92%	0.94%	17.42%	0.41%	-	-	-	Longbenton
15	St Bartholomew's Primary School	BF	1.22	-	-	-	-	-	-	-	Longbenton
17	Station Road West	GF	23.24	3.35%	0.37%	3.12%	0.24%	-	-	-	Longbenton & Wallsend North
19	Bellway Industrial Estate	BF	9.21	16.27%	2.07%	15.21%	1.52%	-	-	-	Longbenton
20	North Tyne Industrial Estate	BF	22.00	21.62%	9.62%	25.86%	7.24%	-	-	-	Longbenton
21	Devonshire Drive	Mixed	1.69	14.14%	3.97%	16.33%	3.55%	-	-	-	Longbenton
27	Land at Castle Square	GF	2.03	0.06%	-	0.04%	-	-	-	-	Backworth
28	A19 Corridor 3	GF	15.65	1.09%	0.00%	0.78%	0.00%	-	-	-	Backworth
29	Backworth Business Park & Cottages	Mostly GF	8.28	8.05%	2.20%	7.66%	1.68%	-	-	-	Backworth
30	Land at Backworth Metro	GF	3.96	9.71%	7.12%	14.30%	6.17%	-	-	-	-
34	Plot 11	GF	2.05	10.33%	0.00%	9.81%	0.00%	-	-	-	West Monkseaton
42	Moorhouses Reservoir	BF	3.28	7.10%	-	3.56%	0.00%	-	-	-	Percy Main North
45	Charlton Court	Mostly GF	1.40	25.18%	6.95%	23.56%	2.89%	-	-	-	-
46	Foxhunters	BF	2.72	15.62%	2.67%	14.66%	2.18%	-	-	-	-
48	Former site of Marine Park and Cocquet Par	BF	0.59	0.62%	-	0.36%	-	-	-	-	-

50	Whisky Bends	BF	0.02	-	-	-	-	-	-	-	-
51	High Point Hotel	BF	0.17	-	-	-	-	-	-	-	-
52	Land at Shap Road	GF	1.24	0.79%	-	0.01%	-	-	-	-	-
53	Wallington Court	BF	0.36	83.81%	15.26%	96.08%	15.43%	-	-	-	-
58	Tanners Bank West (S)	BF	1.85	35.40%	20.29%	59.92%	32.42%	-	-	-	-
59	Tanners Bank East	BF	1.17	28.57%	10.42%	34.15%	9.27%	-	-	-	-
60	Stephenson House	BF	0.10	15.12%	-	3.59%	-	-	-	-	-
61	Norfolk Street & Stephenson Street Car Par	BF	1.03	5.61%	-	1.68%	-	-	-	-	-
62	Land at Albion Road	BF	0.25	3.56%	-	2.21%	-	-	-	-	-
63	Tynemouth Victoria Jubilee Infirmary	BF	1.48	10.67%	-	6.63%	-	-	-	-	-
64	Albion House	BF	0.79	21.32%	-	14.09%	0.00%	-	-	-	-
65	Bingo Hall, North Shields	BF	0.12	6.78%	-	3.44%	-	-	-	-	-
66	Land at North Shields Metro	BF	0.52	59.03%	7.83%	50.79%	6.33%	-	-	-	-
67	Land at Waldo Street	BF	0.11	27.14%	3.24%	35.03%	6.76%	-	-	-	-
68	Land at 26-37 Clive Street	BF	0.30	8.44%	2.67%	5.98%	3.22%	42.86 %	37.28%	28.87%	-
69	Fleur De Lis	BF	0.14	27.20%	-	15.18%	-	-	-	-	-
70	Dock Road Industrial Estate	BF	4.25	11.69%	3.44%	11.13%	2.58%	-	-	-	-
71	Metro Sidings at Waterville Road	BF	1.24	5.47%	0.01%	3.09%	0.00%	-	-	-	-
72	Gasometer at Minton Lane	BF	1.63	39.69%	19.26%	48.52%	17.49%	-	-	-	-
73	Land at Minton Lane	BF	0.75	37.45%	4.18%	31.71%	2.59%	-	-	-	-
74	Site 18R	BF	1.39	11.49%	1.78%	8.38%	1.70%	48.09 %	0.58%	-	-
75	Land at Coble Dene	BF	0.24	3.73%	-	0.94%	-	-	-	-	-
77	Percy Main Bus Depot	BF	0.45	33.07%	2.58%	22.08%	1.68%	-	-	-	Percy Main North
78	West Chirton South	BF	28.95	28.15%	4.54%	20.10%	3.70%	-	-	-	Percy Main North
79	Langdale Centre	BF	1.43	1.06%	-	0.91%	-	-	-	-	-
80	Bonchester Court	BF	0.22	16.53%	0.00%	11.12%	-	-	-	-	-
81	Beadnell Court	BF	0.22	1.82%	-	1.82%	-	-	-	-	-
85	Portugal Place Block	BF	0.44	3.37%	-	3.06%	-	-	-	-	-

88	Land Adjacent to ROAB Club	BF	0.06	33.02%	65.24%	98.26%	56.25%	-	-	-	-	
89	Carville Hotel	BF	0.12	12.37%	0.64%	11.05%	0.13%	-	-	-	-	
95	Town Hall (Wallsend Baths)	BF	0.34	-	-	-	-	-	-	-	Wallsend South	
96	Community Centre	BF	0.07	-	-	-	-	-	-	-	Wallsend South	
97	Cedar Grove Block	BF	0.70	15.97%	49.88%	58.87%	45.23%	-	-	-	Wallsend South	
98	Hadrian Road (land south of Metro line)	BF	1.15	9.37%	7.66%	15.58%	7.40%	-	-	-	-	
99	Rosehill Road (Persimmon)	BF	4.28	16.03%	1.21%	25.13%	7.80%	0.41%	0.41%	-	-	
100	Howdon CSC	BF	0.24	74.13%	-	64.74%	-	-	-	-	-	
101	Howdon Gas Works	BF	2.96	6.55%	-	5.67%	-	-	-	-	-	
102	Swales Industrial Estate	BF	2.58	3.04%	-	2.83%	-	-	-	-	-	
104	Howdon Green	BF	3.54	12.41%	23.18%	33.36%	21.84%	-	-	-	-	
105	Land at Telford St	GF	0.36	2.33%	-	0.40%	-	-	-	-	-	
106	Tyne Tunnel Trading Estate	Mixed	66.61	x	x	x	x	-	-	-		To be updated
107	West Chirton Middle	GF	28.50	x	x	x	x	-	-	-		To be updated
108	Esso	BF	20.70	x	x	x	x	-	-	-		To be updated
109	Weetslade	Mostly BF	48.61	x	x	x	x	-	-	-		To be updated
110	Proctor and Gamble	GF	17.05	x	x	x	x	-	-	-		To be updated
111	East Benton Farm	GF	8.67	x	x	x	x	-	-	-		To be updated
118	Land at Western Terrace	BF	0.30	x	x	x	x	-	-	-		To be updated
119	Pioneer Social Club	BF	0.15	x	x	x	x	-	-	-		To be updated
120	Land adjacent to Benton Metro	BF	0.39	x	x	x	x	-	-	-		To be updated
121	Norway House	BF	0.19	x	x	x	x	-	-	-		To be updated
123	The Avenue	BF	0.04	x	x	x	x	-	-	-		To be updated
124	Ash Court	BF	0.20	x	x	x	x	-	-	-		To be updated
125	Tynemouth Court	BF	0.50	x	x	x	x	-	-	-		To be updated
126	Forest Hall Police Station	BF	0.07	x	x	x	x	-	-	-		To be updated
127	Whitley Bay Police Station	BF	0.11	x	x	x	x	-	-	-		To be updated
129	Silverbirch	BF	1.14	x	x	x	x	-	-	-		To be updated

132	Dudley People's Centre	BF	0.32	x	x	x	x	-	-	-	To be updated
133	Drift Inn	BF	0.28	x	x	x	x	-	-	-	To be updated
135	Grasmere Court	BF	0.16	x	x	x	x	-	-	-	To be updated
136	Units 1 & 2, Wesley Way	BF	1.70	x	x	x	x	-	-	-	To be updated
138	Trinity United Reformed Church Hall	BF	0.16	x	x	x	x	-	-	-	To be updated
139	Land at Darsley Park	GF	2.86	x	x	x	x	-	-	-	To be updated
140	Former Dudley Miners Welfare Centre	GF	0.17	x	x	x	x	-	-	-	To be updated
141	Site of the former Seaton Burn First Schoo	GF	0.30	x	x	x	x	50%	33.33%	-	To be updated
142	Land at Burradon Road/Front Street	GF	0.65	x	x	x	x	-	-	-	To be updated
143	Dudley Social Club	BF	0.10	x	x	x	x	-	-	-	To be updated
22 to 26	Killingworth Moor & High Farm	GF	160.31	16.87	x	5.15	x	1.45	0.52	1.16	To be updated
35 to 41	Murton	GF	238.64	8.27%	x	1.34%	x	-	-	-	To be updated
54 to 57 & 137	East George Street Improvement Area	BF	5.07	x	x	x	x	-	-	-	To be updated
22 to 28 (EA Comment)	Killingworth Moor, High Farm + 27 and 28)	GF	160.31	16.91%	x	5.14%	x	1.33%	0.48%	1.06%	To be updated

'x' signifies a field that need to be updated