North Tyneside Council

North Tyneside Council
Preliminary Flood Risk Assessment

Updated Preliminary Assessment Report

June 2017

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1.0 INTRODUCTION

1.1 Background

The Flood Risk Regulations (the Regulations) came into force in December 2009 to implement the requirements of the European Floods Directive. The aim of the Directive is to provide a consistent approach to managing flood risk across Europe. It establishes four stages of activity within a six year flood risk management cycle. The diagram below shows the stages of the cycle, what was required and the timescales.

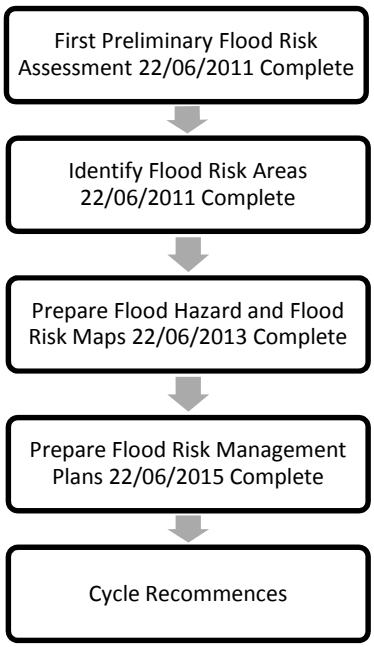


Figure 1: Flood Risk Management Cycle

1.2 The Preliminary Flood Risk Assessment

The PRFA is a high level screening exercise to locate areas in which the risk of ordinary watercourse, surface water and groundwater flooding is significant. It is not a stand alone process and is closely linked to the preparation of the early stages of Surface Water Management Plans (SWMP) and other planning, environmental, operational and sustainability outcomes.

This document updates the first PFRA which was completed on 22nd June 2011

The PFRA involves:

- collecting information on past (historic) and future (potential) floods;
- assembling the information into a Preliminary Assessment Report (PAR); and
- identifying Flood Risk Areas.

The PFRA (along with the Strategic Flood Risk Assessment 2010, the Surface Water Management Plan 2012 and the Water Cycle Study 2013) form part of the local flood risk management strategies that Local Lead Flood Authorities (LLFAs) are required to prepare by the Flood and Water Management Act 2010 (FWMA).

1.3 Scope of Report

As a LLFA, North Tyneside Council is responsible for managing local flood risk in particular from ordinary watercourses, surface runoff and groundwater. The Environment Agency (EA) is responsible for managing risk from main rivers, the sea and large raised reservoirs. As identified in the Regulations, flooding associated with the sea, main rivers and reservoirs is the responsibility of the EA and does not need be considered by the LLFA as part of the PFRA process, unless it is considered that it may affect flooding from local flood sources.

The scope of the PFRA is to consider past flooding and possible future flooding from surface water runoff, groundwater and ordinary watercourses. The PFRA must consider floods which have significant harmful consequences for human health, economic activity and the environment.

1.4 Aims and Objectives

The aim of this report is to fulfil the obligations of North Tyneside as the LLFA under the requirements of the Regulations. The PRA aims to identify areas in which the risk of flooding is significant and warrants further examination through the production of flood maps and flood risk management plans.

The key objectives can be summarised as follows:

- Identify relevant partner organisations involved in future assessment of flood risk; and summarise means of future and ongoing stakeholder engagement;
- Describe arrangements for partnership and collaboration for ongoing collection, assessment and storage of flood risk data and information;
- Provide a summary of the systems used for data sharing and storing, and provision for quality assurance, security and data licensing arrangements;
- Summarise the methodology adopted for the PFRA with respect to data sources, availability and review procedures;
- Assess historic flood events within the study area from local sources of flooding (including flooding from surface water, groundwater, canals and ordinary watercourses), and the consequences and impacts of these events;
- Establish an evidence base of historic flood risk information, which will be built up on in the future and used to support and inform the preparation of the Council's local flood risk management strategy;
- Assess the potential harmful consequences of future flood events within the study area; and
- Review the provisional national assessment of indicative Flood Risk Areas provided by the Environment Agency and provide explanation and justification for any amendments required to the Flood Risk Areas.

1.5 The Study Area

The study area for this PFRA is the administrative boundary of North Tyneside (see figure 2). It is one of five metropolitan districts within the Tyne & Wear conurbation, with an area of 82 square kilometres.
North Tyneside falls within the Northumbria River Basin District, which is served by one water company, Northumbrian Water, and the Environment Agency North East region.

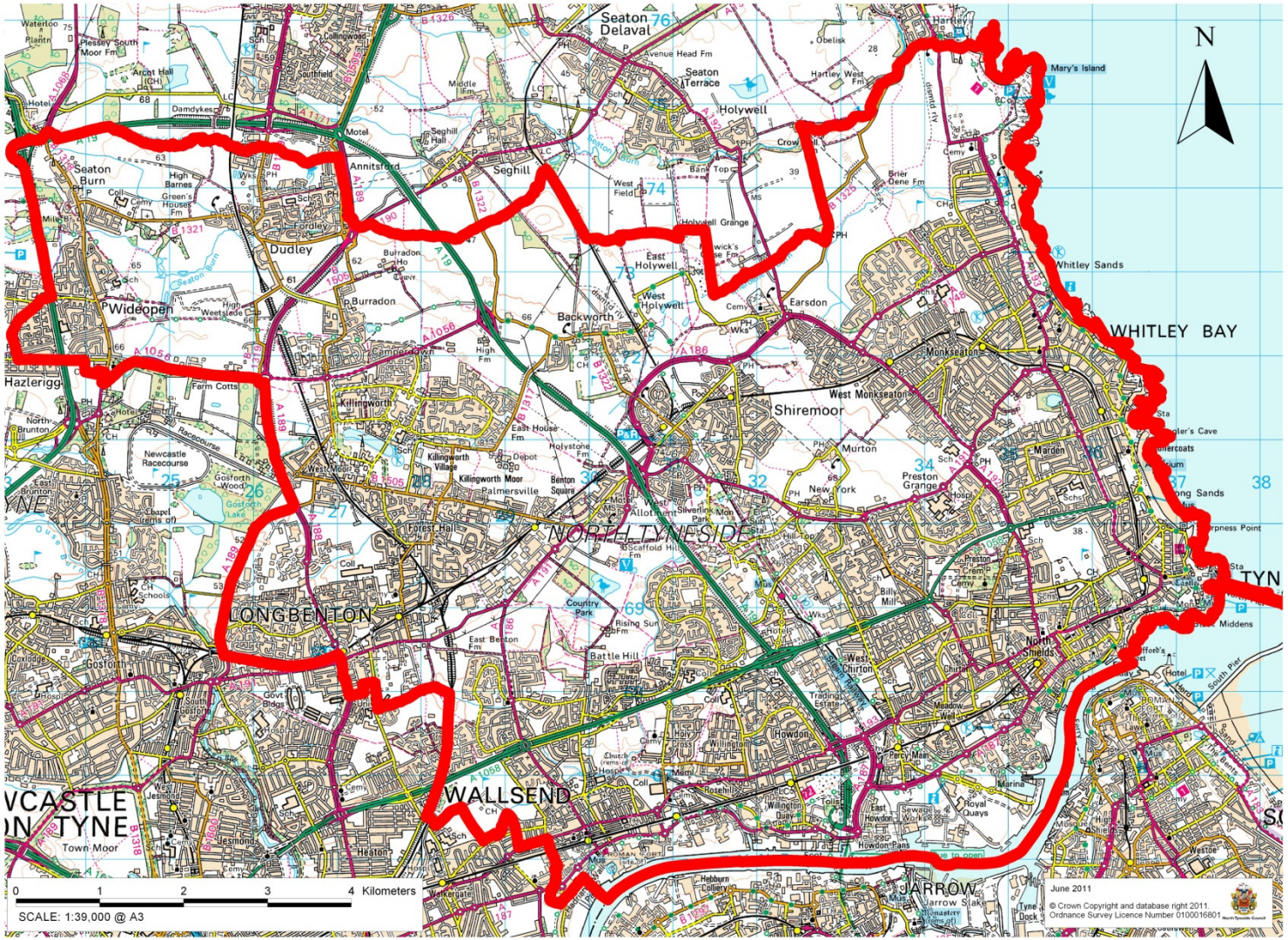


Figure 2: Map of the Study Area, North Tyneside

2.0 LOCAL LEAD FLOOD AUTHORITY RESPONSIBILITIES

The Flood Risk Regulations 2009 transposes the requirements of the European Floods Directive into UK law in England and Wales. The aim of the Directive is to provide a consistent approach to managing flood risk across Europe.

The Flood and Water Management Act, (FWMA) 2010 defines new responsibilities for flood risk management based on the recommendations of the Pitt Review.

2.1 Governance and partnership working

As the designated LLFA, North Tyneside Council is responsible for leading local flood risk management across the borough. Much of the local knowledge and technical expertise necessary for the Council to fulfil its duties as LLFA lies with partner organisations. It is therefore crucial that the Council works alongside these partner organisations to ensure effective and consistent management of local flood risk throughout the borough, which contributes to the provision of a coordinated and holistic approach to flood risk management across the borough.

Regulation 35 of the Regulations and Section 13 of the FWMA require relevant authorities to cooperate with one another.

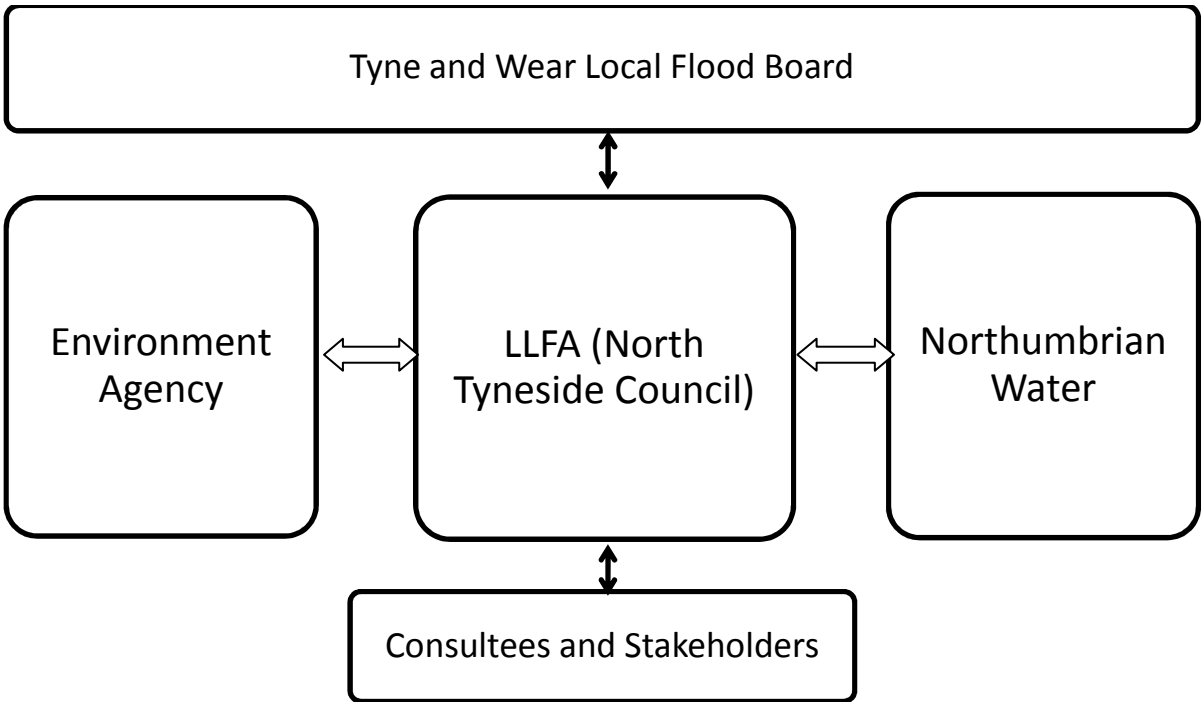


Figure 3: Partnership Working

The primary partners for the PFRA are North Tyneside Council (NTC), The Environment Agency (EA) and Northumbria Water Ltd (NWL). A good working relationship between the partners with a more formal arrangement set up whilst drafting other water strategies and studies. During the work it will be appropriate to work with other stakeholders and consultees. These include:

- Natural England
- The Highways Authority
- Utility Companies
- Transport Operators (ie. Nexus)
- Land Owners
- Developers
- Consultants
- Elected Members
- General Public
- Emergency Services

2.2 Communication and Engagement

This PFRA is primarily based on communication and information obtained through the North Tyneside Strategic Flood Risk Assessment (SFRA), the North Tyneside Surface Water Management Plan (SWMP) and Water Cycle Study (WCS).

3.0 METHODOLOGY AND DATA REVIEW

The PFRA is a high level screening exercise used to identify areas of local risk, based on available and readily derivable information, describing both the probability and harmful consequences of past and future flooding.

The approach for producing this PFRA was based upon the Environment Agency's PFRA Final Guidance, which was released in December 2010, and as required within the guidance this PFRA is based on readily available or derivable data.

3.1 Information Gathered

The Council's SFRA provided the majority of the data required for the PFRA. In order to make sure the most up-to-date flood risk data was available the early stages of the SWMP revisited the data collection process collecting new or updated datasets from their original source.

Table 1: Data Sources

Data Holder	Data	Description	Data restrictions/availability to public
NTC	North Tyneside SFRA 2010	The Level 1 SFRA contains useful information on historic flooding and analysis resulting in the identification of Critical Drainage areas in the borough.	Publically accessible but Ordnance Survey copyright applies to all maps.
	North Tyneside SWMP	Surface water management plan contains a detailed risk assessment of surface water flooding and identifies potential management options.	
	Flood Records	Register of flood events in North Tyneside from 2005.	
EA	Areas Susceptible to Surface Water Flooding	The first generation national mapping, shows areas that are susceptible to surface water flooding with three susceptibility bandings (less, intermediate and more).	This data falls under the license agreement with the Council and the EA. Internal Use is approved only in connection with statutory purposes that comprise the preparation of any assessment. No Commercial Use is permitted nor may the Licensee permit others to make any Commercial Use of the Information or anything derived from it.
	Flood Map for Surface Water	The second generation national surface water flood mapping. This dataset includes two flood events (with a 1 in 30 and a 1 in 200 chance of occurring) and two depth bandings (greater than 0.1m and greater than 0.3m).	
	Flood Map	Shows the areas that could be affected by flooding from rivers/from the sea/from rivers and, or the sea (split into three zones). It also shows flood defences and the areas that	

		benefit from certain defences.	
	Areas Susceptible to Ground Water Flooding	Strategic scale map showing groundwater flood areas on a 1km square grid, developed specifically for PFRAs.	
	Historic Flood Map	Spatial flood extent data for flooding from all sources	
	Catchment Flood Management Plans	CFMPs consider all types of inland flooding, from rivers, groundwater, surface water and tidal flooding and are used to plan and agree the most effective way to manage flood risk in the future.	
	National Receptors Dataset	A national dataset of social, economic, environmental and cultural receptors including residential properties, schools, hospitals, transport infrastructure and electricity substations	
NWL	DG5	The DG5 Register logs and records all sewer flood incidents in North Tyneside due to under capacity only. It is NOT a true register of properties/areas at risk of flooding, but a register of properties/areas that have internally flooded and reported it to NWL.	This data falls under the license agreement with the Council and NWL. The use of all data provided is restricted to the Council and their consultants for the preparation of the SWMP, SFRA and PFRA.

3.2 Availability and Limitations

There are a number of limitations with the data provided for this PFRA. The intention of the report is to collect readily available data which has been used in this PAR.

The most significant limitation relates to the lack of specific event information provided within the older flood incident records, specifically related to dates, durations and sources of flooding. Although it is good practice for the Council to record historic flood incidents, this was not a requirement until April 2011, which could be the main reason for incomplete or inconsistent historical records.

3.3 Sharing and Storing

A majority of the data has been specifically provided for this study (for use by the LLFA and their consultants) and is not publicly available; therefore there are restrictions on data use. A number of specific agreements have been put in place for the PFRA and SWMP to facilitate the sharing of data between partners:

- GIS and Ordnance Survey licences for mapping and data supplied by NTC
- Environment Agency Standard data licence
- Environment Agency surface water susceptibility maps licence
- Environment Agency LIDAR licence

- NWL Data Sharing protocol.

All data is kept on a secure Council server with limited access.

4.0 PAST FLOOD RISK

This section summarises relevant information on past floods with significant harmful consequences.

The Environment Agency is a key source of all flood risk information in England and Wales. As part of the Flood Map, the Environment Agency provides a national historical flood map layer. Those identified in North Tyneside include:

- Wheatfield Grove, Benton – Properties flooded on low lying ground along line of culvert and surface water drains 30th June 2007
- Hailsham Avenue, Longbenton – 30th June 2007
- A189 Roundabout – 6th September 2008
- Earsdon – Flooded fields due to poor drainage to Wellfield Beck 10th July 2008

The Council has a spreadsheet and GIS datasets of properties and general areas flooded since 2005. Some of the same properties flooded in multiple events, however current records do not show the source or severity of the flooding rather than it was just flooded. The data represents surveys of flooding done by Traffic, Dev - Engineering, Design and Partnering and the Council's Emergency Planner.

Table 2: Summary of Past Floods recorded by NTC

Date of Incident	Location	Description & Consequences
June/July 2005	Borough wide	Heavy rainfall led to build up of surface water, likely to be combined with sewer flooding but no records of this. Many residential properties flooded internally and externally and several transport networks became impassable.
July 2007	Focused in Longbenton with smaller pockets of flooding borough wide	Heavy rainfall led to build up of surface water, likely to be combined with sewer flooding but no records of this. Significant consequences in Longbenton with many residential properties flooded internally and externally with some effect to transport networks.
September 2008	Northern half of borough	Heavy rainfall led to build up of surface water, likely to be combined with sewer flooding but no records of this. Relatively short term with water clear within 12 hours but significant consequences to transport networks and residential properties flooded internally and externally.

June 2012	Borough wide	Extreme rainfall event across North Tyneside which led to pluvial, fluvial & sewer flooding incidents throughout the borough. Short term duration of intense rainfall cleared within 12 hours but significant consequences to transport networks and residential properties flooded internally and externally.
September 2012	Borough wide	Extreme rainfall event across North Tyneside which led to pluvial, fluvial & sewer flooding incidents throughout the borough. Short term duration of intense rainfall cleared within 12 hours but significant consequences to transport networks and residential properties flooded internally and externally.
August 2013	Borough wide	Extreme rainfall event across North Tyneside which led to pluvial, fluvial & sewer flooding incidents throughout the borough. Short term duration of intense rainfall cleared within 6 hours but significant consequences to transport networks and residential properties flooded internally and externally.
November 2016	Focused in the East of Borough	Extreme rainfall event across North Tyneside which led to pluvial, fluvial & sewer flooding incidents. Short term duration of intense rainfall cleared within 4 hours but significant consequences to transport networks and residential properties flooded internally and externally.

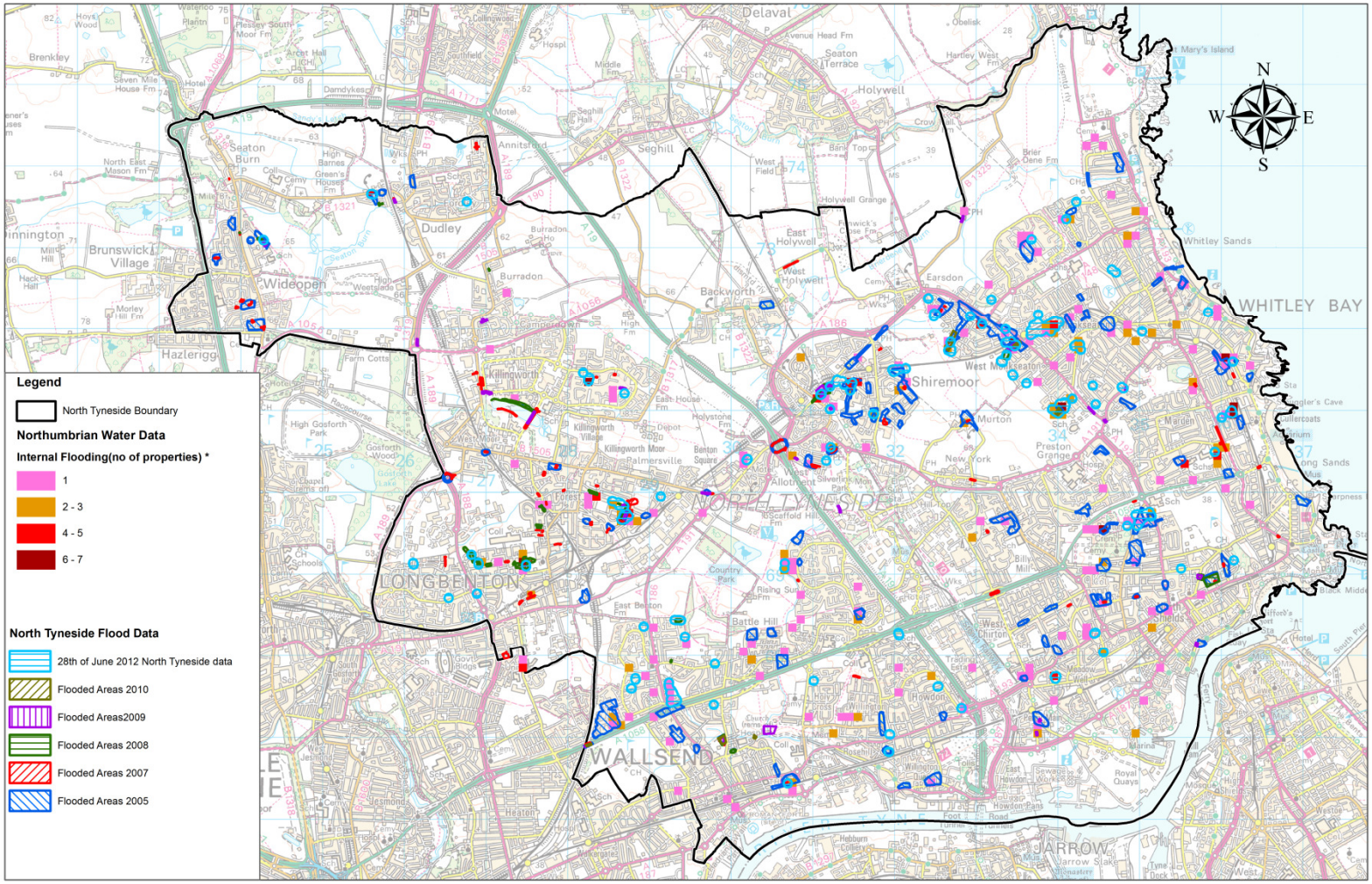
Figure 4 (page 11) shows the extent of the historic flooding recorded by both the Council and Northumbrian Water. Larger scale maps can be found on the Council's website within the SFRA.

Detailed records of past floods with significant harmful consequences can be found in the spreadsheet in annex 1.

4.1 Significant harmful consequences

For the purpose of the PFRA, the definition of 'locally significant flood risk' is in line with the national definition of 'significant flood risk', as defined by Defra and the Welsh Assembly Government in developing the methodology for identifying flood risk areas. A flood risk area was identified as an area of 1km2 where local flood risk exceeds at least one of the following indicators: greater than 200 people, greater than 1 critical service and greater than 20 non-residential properties.

Floods recorded in the PAR and its appendices are considered to have had significant harmful consequences.



North Tyneside Flooding Events

Working in partnership with CAPITA

Figure 4: Historic Flooding

5.0 FUTURE FLOOD RISK

Future flood risk within North Tyneside has been reviewed as part of this updated PFRA. This has involved looking at the borough as a whole and assessing potential risk areas based on flooding from a variety of local sources it also takes into account areas where flood risk may have reduced due to recent flood risk reduction schemes. The key aim of this assessment is to identify areas which are not currently known from past flood incidents.

5.1 Overview of Future Flood Risk

The following EA datasets were used to determine the Future Flood Risk. All maps were provided by Scott Wilson, commissioned to undertake the Council's SWMP and WCS (larger maps can be provided on request).

- Areas Susceptible to Surface Water Flooding (AStSWF) including 200 year more, intermediate and less susceptible outlines (Figure 5)
- Flood Map for Surface Water (uFMfSW) including 30 year, 100 year and 1000 year (Figure 6)
- Fluvial Flood Zones 2 & 3 (Figure 7)
- Areas Susceptible to Ground Water Flooding (AStGWF) (Figure 8)

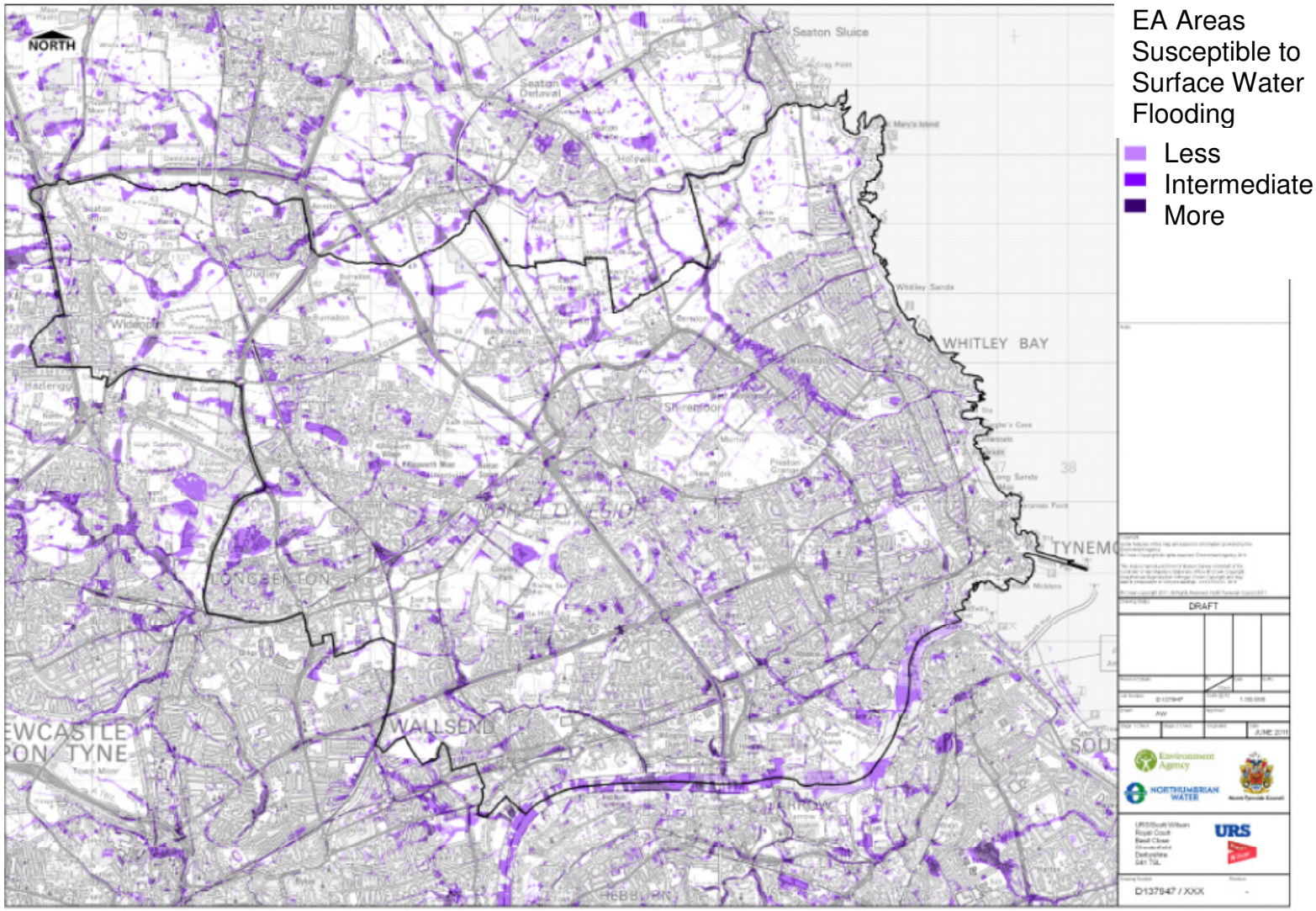
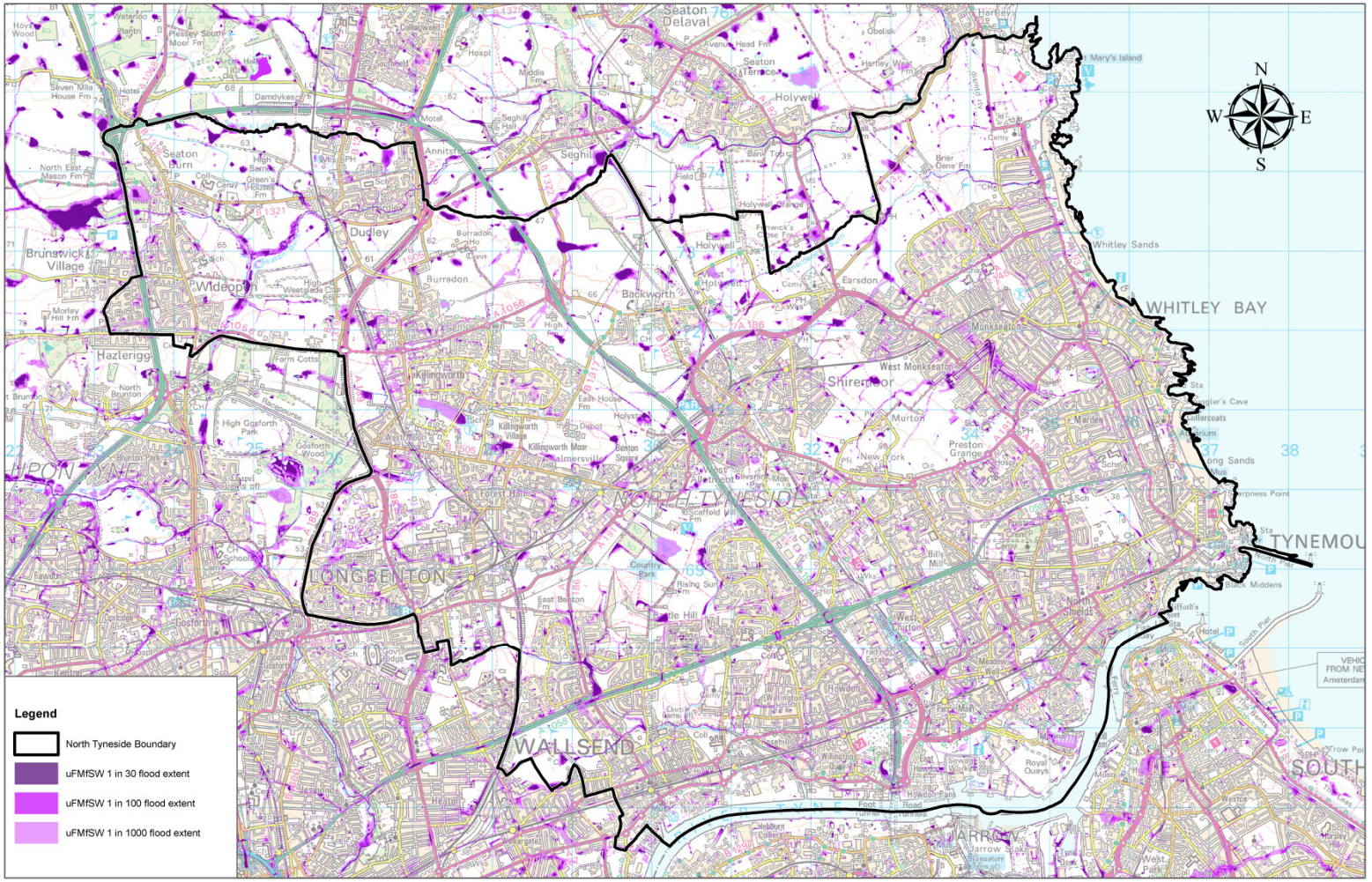


Figure 5: AStSWF



North Tyneside
Risk from Surface Water Flooding (Basic)

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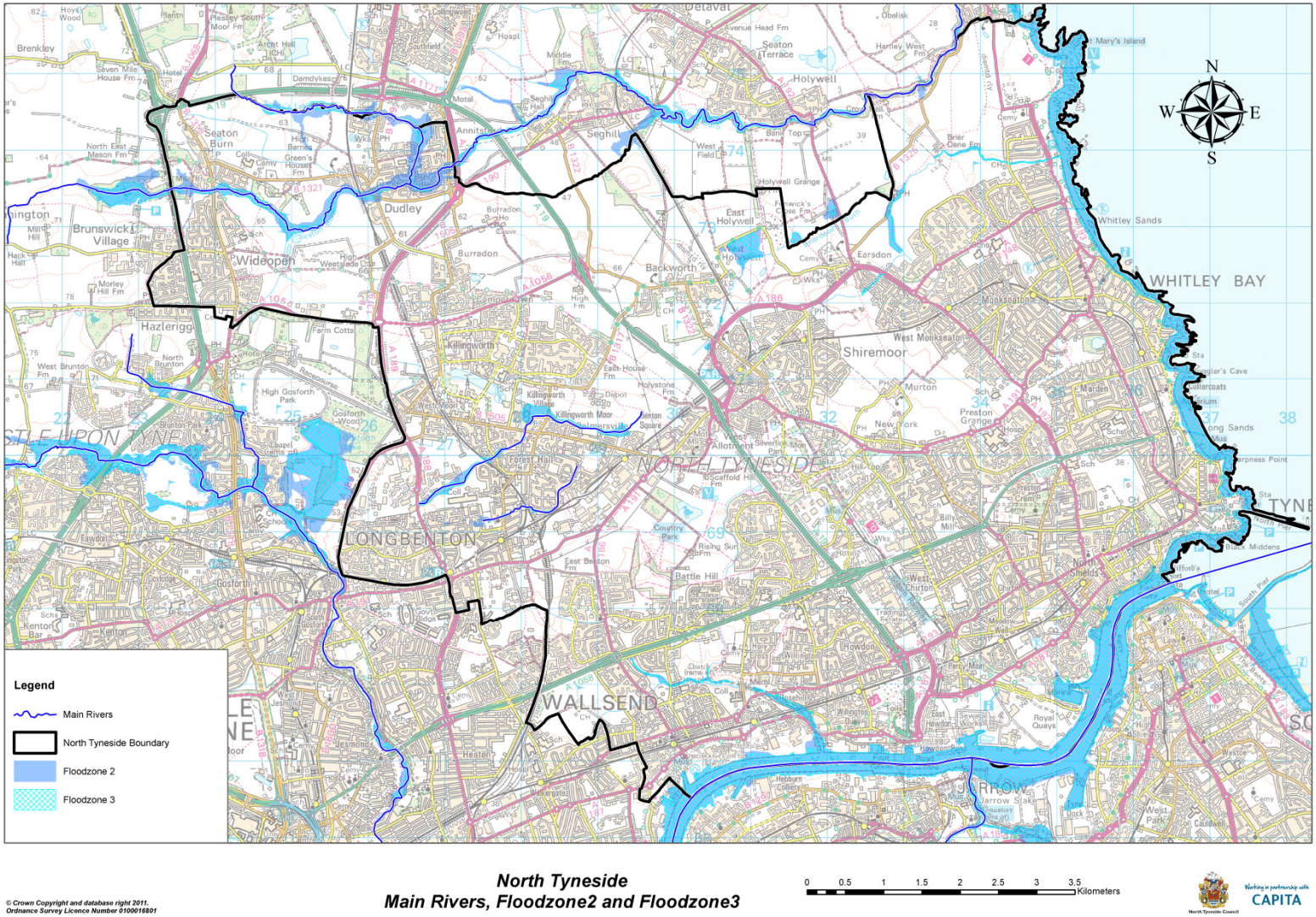
Figure 6: uFMfSW



North Tyneside
Main Rivers, Floodzone2 and Floodzone3

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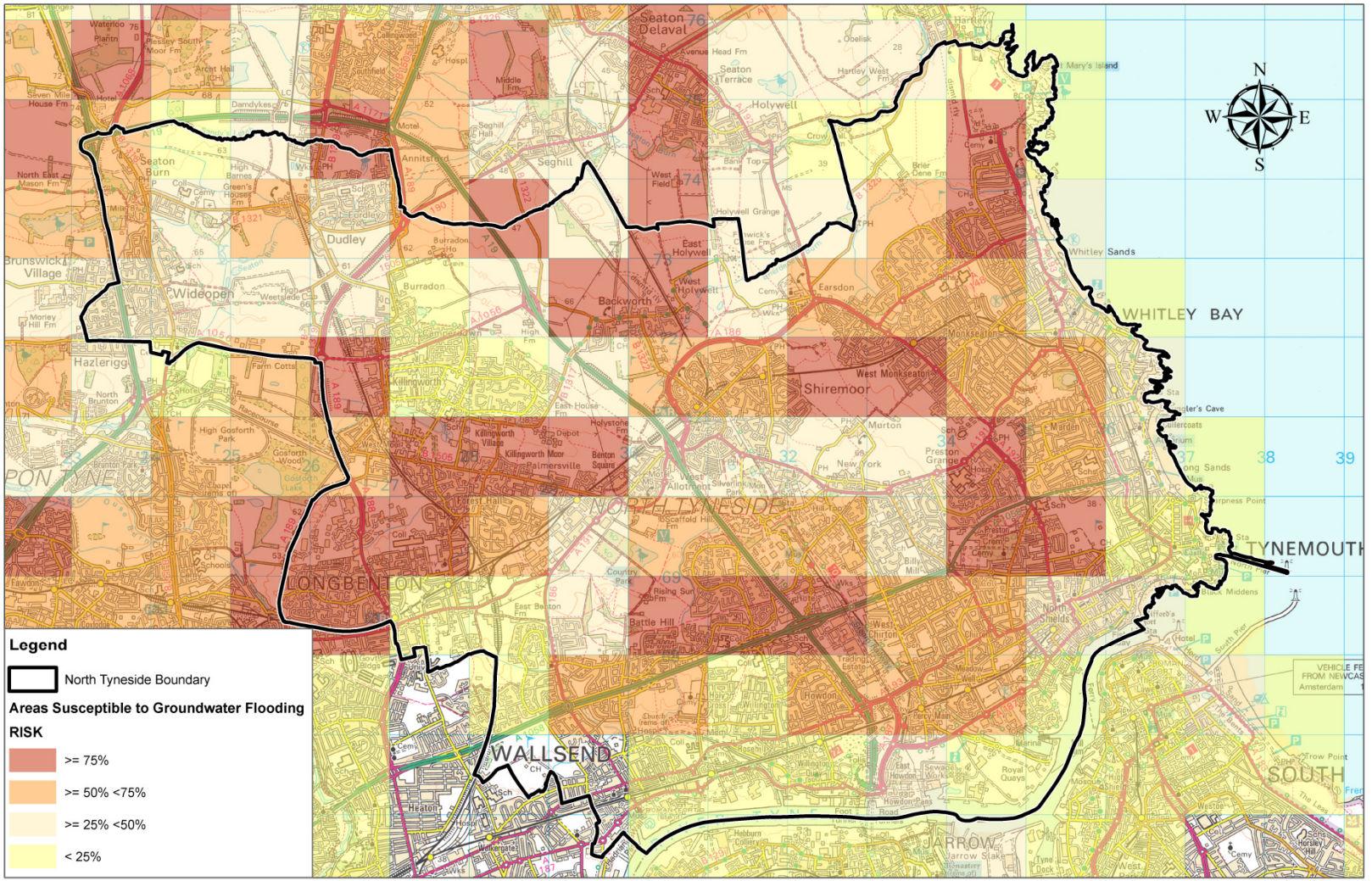
Figure 7: Flood Zones and Main Rivers



North Tyneside
Areas Susceptible to Groundwater Flooding

0 0.5 1 1.5 2 2.5 3 3.5 Kilometers

Working in partnership with CAPITA

Figure 8: AStGWF

Surface Water Flooding

The Environment Agency has produced a series of maps based on a national assessment of surface water flood risk. The AStSWF, released in August 2008, are a series of maps made up of three probability bandings for a 1 in 200 year rainfall event (Less, Intermediate and More). Each dataset name starts with "Risk of Flooding from Surface Water," and is available for rainfall scenarios with a 3.3% (1 in 30), 1% (1 in 100) and 0.1% (1 in 1000) chance of occurring in any given year. Table 2 summarises surface water runoff in NTC.

Table 3: Summary of Properties at risk from Surface Water Flooding

National Dataset	No. of Residential Properties Affected	No. of Non Residential Properties Affected
AStSWF - Less	*15600*	*1800*
AStSWF - Intermediate	*4600*	*500*
AStSWF - More	*360*	*50*
uFMfSw 1 in 1000 flood event	*12804*	*1111*
uFMfSW 1 in 100 flood event	*3226*	*547*
uFMfSW 1 in 30 flood event	*1249*	*226*

On 28th June 2012 the region suffered from significant pluvial & fluvial flooding. As a result of this flooding North Tyneside Council invested £4.7m and secured £2m in EA grants in order to reduce the flood risk to properties throughout the borough. This funding enabled the Local Authority to carry out forty flood alleviation schemes in various locations throughout the borough. This investment along with the latest surface water modelling data has led to a reduction of 1461properties which are no longer classed as being at risk of surface water flooding during a 1in30 year flood event.

North Tyneside Council has developed a Surface Water Management Plan. In the latest phase of the plan, additional surface water modelling is being carried out to further refine the areas at risk from surface water flooding and then carry out more detailed assessment of these locations.

Ground Water Flooding

The Environment Agency's dataset, AStGWF, provides the basis for assessing future flood risk from groundwater.

The map was derived using the top two susceptibility bands of the British Geological Society (BGS) 1:50,000 Groundwater Flood Susceptibility Map and thus covers consolidated aquifers (chalk, sandstone etc, termed 'clearwater' in the data attributes) and superficial deposits. It does not take account of the chance of flooding from groundwater rebound. It shows the proportion of each 1km grid square where geological and hydrogeological conditions show that groundwater might emerge. Four area categories illustrate susceptible areas, which show the proportion of each 1km square where groundwater might emerge. It does not show the likelihood of groundwater flooding occurring.

Table 4: Summary of Properties at risk from Ground Water Flooding

National Dataset	No. of Residential Properties Affected	No. of Non Residential Properties Affected
AStGWF	*21645*	*998*

Ordinary Watercourses

Flooding from ordinary watercourses can be identified using the Environment Agency's Flood Map and the Council's SFRA. Figure # illustrates the current Environment Agency Flood Map within North Tyneside.

Table 5: Summary of Properties within EA Flood Zones

National Dataset	No. of Residential Properties Affected	No. of Non Residential Properties Affected
Flood Zone 2	*1110*	*151*
Flood Zone 3 & 3a	*456*	*102*

Sewer Flooding

The DG5 register is a performance indicator used by Water Companies to report the number of properties at risk of flooding due to overloaded sewers to Ofwat. Once a property is identified on the water companies DG5 register it typically means that the water company can put funding in place to take properties off the DG5 register and the property may not be at risk of future flooding.

NWL have classified the risk of sewer flooding in the drainage areas within North Tyneside as low, medium or high. The following areas have been classified as being at high risk of flooding:

- Benton,
- Brierdene,
- Chirton,
- Seaton Burn valley,
- Tynemouth,
- Whitley Bay.

5.2 Locally Agreed Surface Water Information

There are three sources of data for surface water flooding available within North Tyneside Council these are; Areas Susceptible to Surface Water Flooding, the Strategic Flood Risk Assessment and the Surface Water Management Plan.

5.3 Consequences of Future Flood Risk

Two methods were used to identify areas of potentially significant risk as the basis for the indicative FRAs. In each case the EA used national information from the current (2016) Risk of Flooding from Surface Water (RoFSW) map - previously known as the updated Flood Map for Surface Water (uFMfSW) - and a rainfall event with a 1% chance of occurring in any year.
Method 1 - cluster analysis for concentrations of people/property at risk. In this method, 1km grid squares of places where surface water flood risk is an issue ("blue squares") were identified wherever at least 200 people or 20 non-residential properties or more than 1 key service might be flooded.

In some areas these blue squares are densely packed together representing a concentration of high consequences from surface water flooding and providing a way of identifying areas where flood risk could be significant. Where many grid squares are close together (clustered) and the risk is most concentrated, these clusters form indicative FRAs.
All clusters contain at least 5 adjacent blue squares. The flood risk indicators used in the identification of indicative Flood Risk Areas are summarised in the table below.

Definition of flood risk indicators used in cluster analysis		
Indicator	**Definition**	**Threshold**
People	Number of people at risk taken as 2.34 times the number of residential properties at risk of flooding	200 people or more per 1km grid square
Key Services	Number of key services at risk, for example utilities, emergency services, hospitals, schools	More than one per 1km grid square
Non-residential Properties	Number of non-residential properties at risk from flooding	20 or more per 1km grid square

These are similar to those used to develop indicative FRAs in 2011, but using a rainfall event with a 1% chance of occurring in any year rather than 0.5% chance as in 2011. This is because current surface water risk products do not include the assessment of a 0.5% chance rainfall event.

Method 2 - Communities at risk (C@R)
Method 1 identifies locations where the density of flood risk is highest across the country. There are other locations where the total flood risk is high but not as concentrated as those areas identified in method 1. So, to complement method 1, we have used information from our C@R work.
For C@R we have analysed the surface water flood risk for communities according to Office for National Statistics built-up areas (BUAs) and built-up areas sub-divisions (BUASDs).
Built-up areas (BUAs) are characteristic of settlements including villages, towns or cities. In 2011 across England and Wales 95 per cent of the usually resident population lived in BUAs. They include areas of built-up land with a minimum of 20 hectares (200,000m2). Any areas with less than 200 metres between them are linked to become a single BUA, with BUASDs identified.
Where available, the EA have used BUASDs to provide greater granularity of communities in large urban areas. Where this approach identifies 3000 or more reportable properties at risk of surface water flooding, the BUA/BUASD forms an indicative FRA. As with method 1, this is for a rainfall event with a 1% chance of occurring in any year. The National Receptor Database (NRD2014) property point dataset with the uFMfSW Property Point v3 attributes was used to classify a property as ‘at risk’ of flooding from surface water. ‘At risk’ properties were counted by BUASD boundary (to exclude non-reportable property points e.g. telephone boxes, advertising hoardings).

Combining method 1 and method 2 and identifying indicative FRAs In some locations, clusters of blue squares from method 1 and BUA/BUASDs from method 2 overlap. Where this is the case, the indicative FRA is the total extent of the two areas combined.

The North Tyneside Council area has no identified clusters therefore contains no designated Flood Risk Areas.

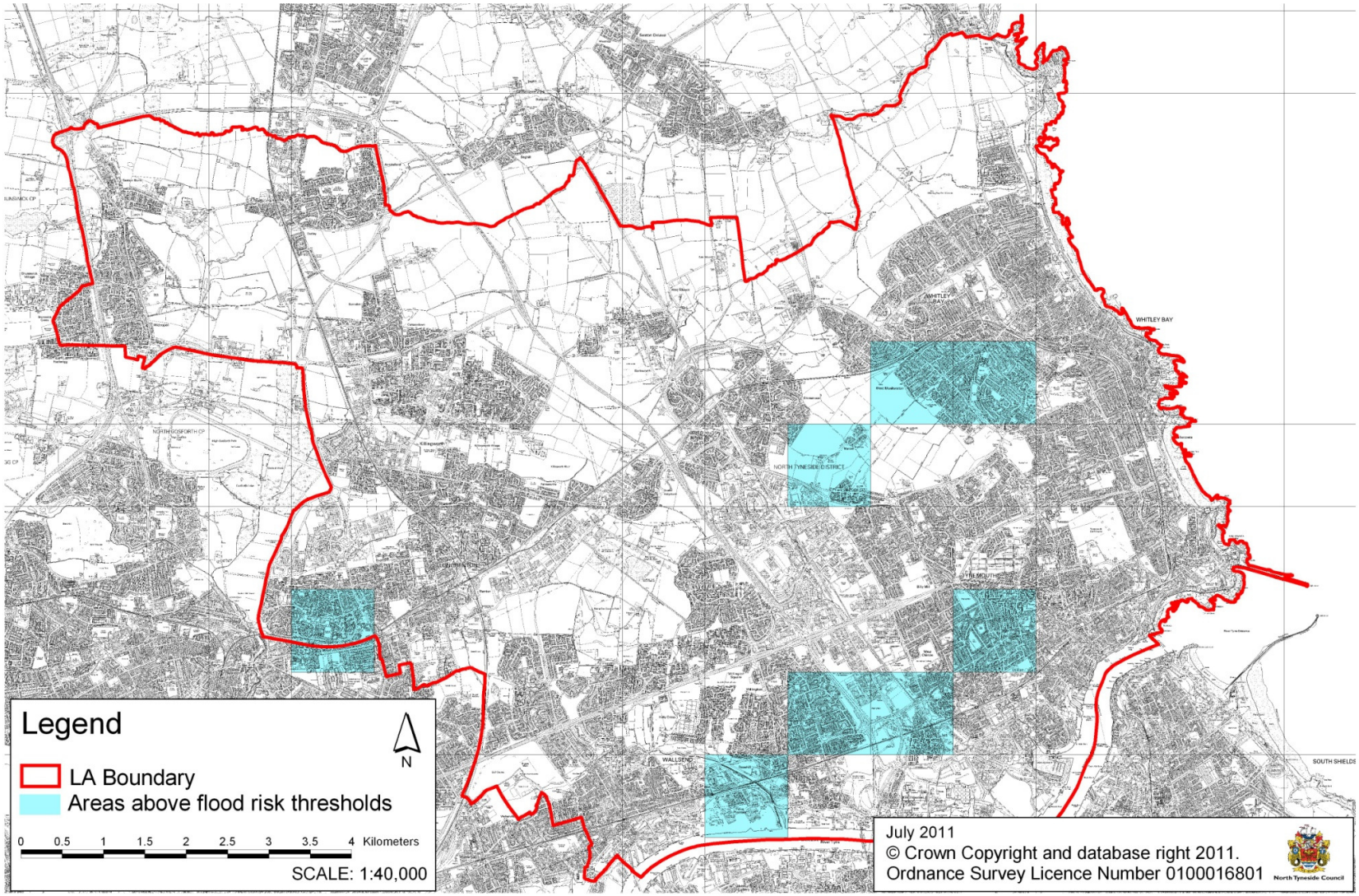


Figure 9: Areas above Flood Risk Thresholds

5.4 Climate change and long term developments

The below text is a standardised statement on climate change and climate change predictions supplied by the Environment Agency in the PFRA Guidance.

The Evidence

There is clear scientific evidence that global climate change is happening now. It cannot be ignored.

Over the past century around the UK we have seen sea level rise and more of our winter rain falling in intense wet spells. Seasonal rainfall is highly variable. It seems to have decreased in summer and increased in winter, although winter amounts changed little in the last 50 years. Some of the changes might reflect natural variation, however the broad trends are in line with projections from climate models. Greenhouse gas (GHG) levels in the atmosphere are likely to cause higher winter rainfall in future. Past GHG emissions mean some climate change is inevitable in the next 20-30 years. Lower emissions could reduce the amount of climate change further into the future, but changes are still projected at least as far ahead as the 2080s.

We have enough confidence in large scale climate models to say that we must plan for change. There is more uncertainty at a local scale but model results can still help us plan to adapt. For example we understand rain storms may become more intense, even if we can't be sure about exactly where or when. By the 2080s, the latest UK climate projections (UKCP09) are that there could be around three times as many days in winter with heavy rainfall (defined as more than 25mm in a day). It is plausible that the amount of rain in extreme storms (with a 1 in 5 annual chance, or rarer) could increase locally by 40%.

Key Projections for Northumbria River Basin District

If emissions follow a medium future scenario, UKCP09 projected changes by the 2050s relative to the recent past are

- Winter precipitation increases of around 10% (very likely to be between 0 and 23%)
- Precipitation on the wettest day in winter up by around 11% (very unlikely to be more than 24%)
- Relative sea level at Tynemouth very likely to be up between 7 and 38cm from
- 1990 levels (not including extra potential rises from polar ice sheet loss)
- Peak river flows in a typical catchment likely to increase between 8 and 13%

Increases in rain are projected to be greater near the coast than inland.

Implications for Flood Risk

Climate changes can affect local flood risk in several ways. Impacts will depend on local conditions and vulnerability.

Wetter winters and more of this rain falling in wet spells may increase river flooding in both rural and heavily urbanised catchments. More intense rainfall causes more

surface runoff, increasing localised flooding and erosion. In turn, this may increase pressure on drains, sewers and water quality. Storm intensity in summer could increase even in drier summers, so we need to be prepared for the unexpected. Rising sea or river levels may increase local flood risk inland or away from major rivers because of interactions with drains, sewers and smaller watercourses. Where appropriate, we need local studies to understand climate impacts in detail, including effects from other factors like land use. Sustainable development and drainage will help us adapt to climate change and manage the risk of damaging floods in future.

Adapting to Change
Past emission means some climate change is inevitable. It is essential we respond by planning ahead. We can prepare by understanding our current and future vulnerability to flooding, developing plans for increased resilience and building the capacity to adapt. Regular review and adherence to these plans is key to achieving long-term, sustainable benefits.

Although the broad climate change picture is clear, we have to make local decisions uncertainty. We will therefore consider a range of measures and retain flexibility to adapt. This approach, embodied within flood risk appraisal guidance, will help to ensure that we do not increase our vulnerability to flooding.

Long Term Developments
It is possible that long term developments might affect the occurrence and significance of flooding. However current planning policy aims to prevent new development from increasing flood risk.

In England, Planning Policy Statement 25 (PPS25) on development and flood risk aims to "ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall."

In Wales, Technical Advice Note 15 (TAN15) on development and flood risk sets out a precautionary framework to guide planning decisions. The overarching aim of the precautionary framework is "to direct new development away from those areas which are at high risk of flooding."

Adherence to Government policy ensures that new development does not increase local flood risk. However, in exceptional circumstances the Local Planning Authority may accept that flood risk can be increased contrary to Government policy, usually because of the wider benefits of a new or proposed major development. Any exceptions would not be expected to increase risk to levels which are "significant" (in terms of the Government's criteria).

5.5 Major Developments
The Local Plan is the Council's strategic planning framework which identifies major developments in the borough for the next 15 years. All potential sites are undergoing sequential test in accordance with PPS25. Until publication of the Local

Plan any major development proposals would be subject to flood risk assessments and EA scrutiny.

6.0 NEXT STEPS

As no Flood Risk Areas have been identified in North Tyneside, the Council does not have to produce flood hazard and risk maps as part of this updated PFRA.

7.0 LOCAL FLOOD RISK MANAGEMENT STRATEGY

The PFRA, together with the SWMP and any updates of the SFRA will form part of the local flood risk management strategies that LLFAs are required to prepare under the Flood and Water Management Act 2010. NTC's strategy set out how we will manage the local flood risks in our areas and will cover areas not identified as being at significant flood risk under the Flood Risk Regulations 2009.

The strategy must be consistent with the National Flood and Coastal Erosion Risk Management Strategy for England, and should be developed and maintained with consultation from other stakeholders, such as the public and other risk management authorities.

The strategy must specify:

- the risk management authorities in the authority's area;
- the flood and coastal erosion risk management functions that may be exercised by those authorities in relation to the area;
- the objectives for managing local flood risk (including any objectives included in the authority's flood risk management plan prepared in accordance with the FRR);
- the measures proposed to achieve those objectives;
- how and when the measures are expected to be implemented;
- the costs and benefits of those measures, and how they are to be paid for;
- the assessment of local flood risk for the purpose of the strategy;
- how and when the strategy is to be reviewed; and
- how the strategy contributes to the achievement of wider environmental objectives.

7.1 Data Collection

In order to continue to fulfil their role as LLFA, the Council is required to investigate future flood events and ensure continued collection, assessment and storage of flood risk data and information.

Incident Recording
The Council's internal flood incident register is maintained and is continually updated as new incidents occur. To assist in the during the PFRA review process it would be beneficial to update the current spreadsheet to record more detail.

Below is an example data collection spreadsheet that is used by the Council to collate flood event data.

Recorded by	Name of staff
Unique Reference	YYYY-01
Date and Time Reported	Could be different to the date of the event
Description	Description of the flood and its adverse or potentially adverse consequences. Where available, information from other fields (Start date, Days duration, Main source, Main mechanism, Main characteristics, Significant consequences) should be repeated here.
Date of Event	Might not be the same as when recorded
Duration of Event	Number of hours or days land is covered by water
Address	Street and Town
Postcode	
Description of Location	Particularly important where water covers a large area.
Depth of Flooding	Perceived depth
Main Source	The main source of flooding ie. surface water
Additional sources	Any additional sources ie. sewer flooding
Photographic evidence	Yes/No and give filename of where photo is stored
Significant consequences to human health	Were there any consequences to human health when the flood occurred or likely to happen if the flood were to reoccur
Residential Properties	No. of properties with flooding

Asset Register
North Tyneside has an asset register which contains records of all existing assets within the borough and is updated when more data becomes available.

Stakeholders and partners are encouraged to use GIS formats to store their data in order to facilitate exchange and management of data. A data management plan would be valuable in ensuring data sets were kept up to date and consistent across all stakeholders. North Tyneside Council are in the process of developing an online web-based GIS asset register database.

8.0 REFERENCES

- Environment Agency Report – GEHO1210BTGH-E-E Preliminary Flood Risk Assessment (PFRA) Final guidance 2011 http://publications.environment-agency.gov.uk/pdf/GEHO1210BTGH-e-e.pdf
- The Flood Risk Regulations 2009 http://www.legislation.gov.uk/uksi/2009/3042/contents/made
- The Flood and Water Management Act 2010 http://www.legislation.gov.uk/ukpga/2010/29
- Planning Policy Statement 25: Development and Flood Risk https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/7772/pps25guideupdate.pdf
- North Tyneside Council Surface Water Management Plan, 2012 http://www.northtyneside.gov.uk/browse-display.shtml?p_ID=18286&p_subjectCategory=809
- North Tyneside Strategic Flood Risk Assessment, 2010 http://www.northtyneside.gov.uk/browse-display.shtml?p_ID=18286&p_subjectCategory=809