

NORTHUMBERLAND LOCAL FLOOD RISK MANAGEMENT STRATEGY



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Working in partnership with





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Northumberland County Council – Local Flood Risk Management Strategy

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1 INTRODUCTION

1.1 Why do we need a Strategy?

In England, 5.2 million properties are at risk of flooding. Of these, 1.4 million are at risk from rivers or the sea, 2.8 million are at risk from surface water, with a further 1 million at risk from both of these flood sources¹. This risk was most recently realised in many parts of the country during the winter of 2013/14, the wettest winter on record, with over 7,800 homes and nearly 3,000 commercial properties flooded across the UK.

However, it was the severity of the summer floods of 2007, which resulted in 55,000 properties flooding, 7,000 rescues by emergency services, 13 deaths and an estimated £3 billion of damages, which generated changes in the way flooding is managed locally and nationally.

The severity of these flood events prompted new legislation providing additional roles and responsibilities for Risk Management Authorities (RMAs). In particular, The Flood and Water Management Act 2010 (the Act) provides for better flood risk management for communities and places a leadership role on unitary and county councils, such as Northumberland County Council, as Lead Local Flood Authorities (LLFA) for their areas.

The Act places a duty on LLFAs to develop a Local Flood Risk Management Strategy (the Strategy), the importance of which has been highlighted following a series of flooding events across our own county. In 2008, widespread flooding across Northumberland directly affected approximately 1200 properties². More recently, a number of events in the summer of 2012 resulted in flooding to over 240 properties³. There were smaller and more isolated incidents in 2013 and 2014.

The Strategy complements and contributes towards our existing approach to flood risk management which includes flood response and recovery activities, post flooding investigations, studies to further understand flood risk and schemes to mitigate flood risk.

1.2 What is the Northumberland Local Flood Risk Management Strategy?

The Northumberland Local Flood Risk Management Strategy outlines how we will manage local flood risk in our area and ensure that the actions identified within it are monitored and achieved.

The Strategy will play an important role in formalising an integrated approach to local flood risk management in Northumberland by developing local objectives and setting out measures with short, medium and long-term actions. This approach will help us to manage the risk in a way that delivers the greatest benefit to our residents, businesses and the environment.

The Act defines local flood risk as "the risk of flooding from local sources including surface water, groundwater and ordinary watercourses (small ditches and watercourses)".

¹ Flooding in England: A National Assessment of Flood Risk. 2009. Environment Agency

² Northumbria Local Resilience Forum September 2008 Multi Agency Debrief Report. GONE.

³ Flood Investigation Report: Investigation of the summer 2012 floods. 2013. Northumberland County Council

While this Strategy outlines how we will manage flooding from local sources in our area, we recognise the importance of dealing with flood risk from all sources in a coordinated way, therefore, the Strategy also sets out how we will work with other authorities to manage all sources of flooding. In addition, the Strategy recognises our role in managing the risk of coastal erosion.

1.3 How does the Local Strategy relate to existing plans and documents?

The Act gives the Environment Agency a national strategic overview role for flood risk management. The Strategy complements and supports the *National Strategy*, published by the Environment Agency, which outlines a National framework for flood and coastal erosion risk management, balancing the needs of communities, the economy and the environment.

To ensure a consistent, unified approach to flood risk management in Northumberland, the Strategy has been developed in collaboration with other Risk Management Authorities (RMAs) including the Environment Agency, Northumbrian Water, as well as local communities and neighbouring LLFAs.

Over recent years, a number of documents have been prepared detailing the assessment and management of flood risk within Northumberland. Figure 1.1 illustrates the sequence of flood risk studies, plans, legislation and data in relation to the Strategy.



Figure 1-1 Timeline of Complementary Plans and Documents which have informed the development of the Strategy

FINAL (APPROVED) November 2015 It is intended that this Strategy will form a key document in this suite of flood risk management plans, drawing together existing flood risk studies and plans into a single document that outlines how we will manage local flood risk going forwards.

This Strategy draws on technical information and historic records of flooding presented in the <u>Northumberland Preliminary Flood Risk Assessment</u> (PFRA), <u>Northumberland Level 1</u> <u>Strategic Flood Risk Assessment</u> (SFRA), outline Water Cycle Study (WCS) and the recently prepared Level 2 SFRA and detailed WCS.

To promote a coordinated approach to flood risk management across Northumberland this Strategy also draws from wider water environment management plans including the <u>Northumbria River Basin District Management Plan</u> (RBMP), the six Catchment Flood Management Plans (CFMPs) covering Northumberland and the <u>Northumberland and North</u> <u>Tyneside Shoreline Management Plan 2</u> (SMP2).

In addition to the related flood plans and documents, the strategy complements and supports the Council's *Corporate Plan*, which outlines our vision, strategic aims and policy priorities.

1.4 Supporting Documents

To fully appraise the potential implications associated with implementing the Strategy, and reasonable alternatives, the following assessment processes and documents have been produced:

- Strategic Environmental Assessment (SEA) the appraisal findings of this SEA are subject to consultation alongside this Strategy document. The SEA report documents the process for identifying and evaluating the potential environmental impacts of the Strategy. For the appraisal of this strategy, the SEA includes an Equality Impact Assessment to consider the impact on people who share a protected characteristic.
- Habitats Regulations Assessment (HRA) the appraisal findings of this HRA are subject to consultation alongside this Strategy document. The HRA report documents the process for determining whether significant adverse effects on European protected sites are likely or not.

1.5 Consulting on the Strategy

To achieve an integrated approach in managing flood risk, stakeholders are required to work more closely together. Building on existing partnership arrangements, a communication plan was produced and implemented in the development of this draft document to ensure effective and appropriate consultation with the widest possible range of individuals and organisations.

The draft Strategy was prepared using feedback from an initial consultation exercise in the summer of 2014, which provided residents, businesses and organisations the opportunity to share their opinions and personal experiences of flood risk management in the county.

Similarly the draft Strategy was made available for consultation between February and April 2015, and closed on 24th April 2015 with the draft document subsequently being amended, where deemed necessary. The Strategy was formally approved for implementation by the County Council 4th November 2015.

2 LEGISLATIVE & POLICY BACKGROUND

In response to the severe flooding experienced across England and Wales during the summer of 2007, the Government commissioned Sir Michael Pitt to undertake a review of flood risk management. The outcome of this, <u>"Learning Lessons from the 2007 Floods</u>" outlined the need for changes in the way the UK is adapting to the increased risk of flooding and the role different organisations have to deliver this function.

The Flood Risk Regulations (2009) designated unitary and county councils, including Northumberland County Council, as Lead Local Flood Authorities (LLFA). The <u>Flood and</u> <u>Water Management Act 2010</u>, enacted by Government in response to The Pitt Review, established LLFAs as one of several Risk Management Authorities (RMA) with responsibilities for managing local flood risk; namely the flood risk arising from surface water runoff, groundwater and ordinary watercourses. This includes a statutory duty to develop, maintain, apply and monitor a strategy for the management of local flood risk.

The <u>Flood and Water Management Act 2010</u> also formalised the flood risk management roles and responsibilities for other organisations including the Environment Agency, water companies, local government and highways authorities and emphasises the need for organisations to work collaboratively together by sharing information and resources.

This section provides a summary of the relevant pieces of national legislation and policies that outline our requirements for flood risk and environmental management across Northumberland. Appendix A provides a list of relevant legislation and policy with hyperlinks.

2.1 Flood and Water Management Act

The <u>Flood and Water Management Act 2010</u> (the Act) revises, modernises and consolidates significant elements of existing legislation covering flooding, land drainage, coastal erosion and reservoir safety. It also strengthens and extends existing flood and water legislation including implementing the recommendations of Sir Michael Pitt published within the report entitled <u>"Learning Lessons from the 2007 Floods"</u>.

The Act creates clearer roles and responsibilities, which include the new role of Lead Local Flood Authority (LLFA) for county councils and unitary authorities in managing local flood risk (from surface water, ground water and ordinary watercourses) and a strategic overview role for all flood risk for the Environment Agency, which retains responsibility for the management of main river (fluvial) flooding.

The key provisions of the Flood and Water Management Act 2010 include:

- New statutory responsibilities for managing flood risk There are national strategies and guidance on managing flood risk. Unitary and county councils bring together the relevant bodies to develop local strategies for managing local flood risk;
- Protection of assets which help manage flood risk The Environment Agency, local authorities and Internal Drainage Boards (where present) are able to ensure that private assets which help manage the risks of floods cannot be altered without consent;
- Sustainable drainage Drainage systems for all new developments will need to be in line with new National Standards to help manage and reduce the flow of surface water;

- Powers to carry out environmental works The Environment Agency, local authorities and Internal Drainage Boards (where present) are able to manage water levels to deliver leisure, habitat and other environmental benefits;
- Reservoir safety The public will be protected by a new risk-based regime for reservoir safety. It will reduce the burden on regulated reservoirs where people are not at risk, but introduce regulation for potentially higher-risk reservoirs currently outside of the system;
- **Transfer of private sewers** On 1st October 2011, water and sewerage companies in England and Wales became responsible for private sewers, which were previously the responsibility of property owners. Not all private sewers and lateral drains were included, for example property owners remain responsible for the sections of pipe between their property and the transferred private sewer or lateral drain (see Figure 2-1);



Figure 2-1: Typical Drainage System Responsibilities

Further details of the RMAs responsibilities and functions in relation to flood risk management in Northumberland are provided in Section 4.

2.2 Coast Protection Act

The <u>Coast Protection Act 1949</u> provides the coast protection authority with the powers to perform duties that appear necessary for the protection of any coast in their area. The keys aims of the act are to:

- Protect the coast of Great Britain against erosion and encroachment by the sea; and
- To provide for the restriction and removal of works detrimental to navigation.

2.3 Flood Risk Regulations

The <u>Flood Risk Regulations 2009</u> incorporate the requirements of the <u>European Floods</u> <u>Directive</u> into national law in England and Wales. The Flood Risk Regulations:

- Give responsibility to the Environment Agency to prepare Preliminary Flood Risk Assessments, flood risk maps, hazard maps and flood risk management plans for flood risk from the sea, main rivers and reservoirs;
- Give responsibility to the LLFA to prepare Preliminary Flood Risk Assessments for all other forms of flooding (excluding sewer flooding), including surface water runoff, groundwater and ordinary watercourses; and
- Require areas of nationally significant risk to be identified, and flood risk maps, hazard maps and management plans to be produced for those areas.

The Preliminary Flood Risk Assessment (PFRA) for Northumberland identified no significant flood risk areas (as defined by the Flood Risk Regulations) and, therefore, there is no requirement to undertake further work with regard to the Flood Risk Regulations 2009 at this time.

The Regulations require coordinated flood risk management plans for rivers that cross international boundaries. Although the border between England and Scotland is not strictly an international boundary, similar provisions have been applied in the Flood Risk (Cross Border Areas) Regulations 2010 to the catchments that lie within the Solway Tweed and Northumbrian River Basin District. A cross border advisory group, which includes the Council as a member, has been established to ensure a coordinated flood risk management approach in these areas.

All of the documents under the Flood Risk Regulations 2009 are to be reviewed and if necessary updated every 6 years. Therefore the second set of Preliminary Flood Risk Assessment reports will be published in 2017.

2.4 The National Planning Policy Framework

As the Local Planning Authority, the <u>National Planning Policy Framework 2012</u> and supporting <u>Planning Practice Guidance</u> released in March 2014 require us to undertake a Strategic Flood Risk Assessment (SFRA).

The SFRA is used to inform strategic land use planning including the application of the Sequential Test which seeks to steer development towards areas of lowest flood risk prior to consideration of areas of greater risk. The <u>Northumberland Level 1 SFRA</u> was published in 2010 and the Level 2 SFRA was recently prepared in 2015.

2.5 Land Drainage Act

The <u>Land Drainage Act 1991</u> outlines the duties and powers to manage land drainage for a number of bodies including the Environment Agency, Internal Drainage Boards (where present), local authorities, navigation authorities and riparian landowners.

The Flood and Water Management Act 2010 has updated many parts of this legislation to integrate the role of the LLFA. The powers and duties under this act can be summarised as:

 A duty on a drainage board to exercise a general supervision over all matters relating to drainage of land;

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- A general duty to the environment when exercising powers;
- Powers to maintain, improve and build new works required for drainage;
- Consenting and enforcement powers for ordinary watercourse;
- Powers to make byelaws; and
- General powers of entry onto land for water level management so that statutory authorities can exercise flood risk management functions for the common good.

2.6 Highways Act

The <u>Highways Act 1980</u> gives county and unitary authorities specific duties and powers, as highway authorities, in relation to flooding and drainage affecting the public highway. With regard to drainage, the powers and duties under this act can be summarised as:

- Powers to maintain, improve and build new works required for drainage;
- General powers of entry onto land, and
- Enforcement powers to prevent unauthorised discharges of water on to the public highway.

2.7 Reservoirs Act

Responsibility for the management and supervision of reservoirs in England and Wales is regulated by the <u>Reservoirs Act 1975</u>. The Reservoirs Act applies to all reservoirs classified as 'large raised reservoirs', i.e. those that hold a volume of water of 25,000m³, or more, cubic metres above natural ground level.

The Flood and Water Management Act 2010 amends the Reservoirs Act by introducing new arrangements for reservoir safety, based on risk rather than the size of the reservoir. It also includes provisions which could, if enacted, reduce the threshold of structures classified as large raised reservoirs to 10,000m³.

The key changes as a result of the Flood and Water Management Act 2010 include:

- Large raised reservoirs that are assessed as 'high risk' will be subject to full regulation;
- Large raised reservoirs that are not assessed as 'high risk' will need to be registered but will not be subject to full regulation;
- All incidents at reservoirs will need to be reported;
- All reservoirs that hold more than 10,000m³ of water above natural ground level may be registered in the future; and
- If registered, some reservoirs that hold more than 10,000m³ that are assessed as 'high risk' will be subject to full regulation.

A reservoir is designated as 'high risk' if the Environment Agency considers that "human life could be endangered in the event of an uncontrolled release of water from the reservoir and the reservoir does not satisfy certain conditions".

Full legislation includes appointing a qualified (panel) civil engineer to supervise the design and construction of the reservoir, continually supervise the reservoir once built, carry out an inspection every ten years, and supervise and certify any recommended measures to be taken in the interests of safety.

Reservoirs that hold less than 25,000m³ of water are subject to safety regulations managed by the Health and Safety Executive (HSE) and local authorities.

2.7.1 Onsite and Offsite Reservoir Emergency Plans

<u>Onsite Reservoir Flood Plans</u> are produced by the reservoir owners or operators. The plan should include details of how the owner or operator will prevent the dam from failing in an emergency and how they will contain and reduce the effects of the failure. Onsite plans will be mandatory in due course.

<u>Offsite Reservoir Flood Plans</u> are produced by the Local Resilience Forum (LRF). Offsite plans set out what the emergency services will do to warn and protect people and property downstream in the event of an incident which could lead to dam or reservoir failure. Local authorities are responsible for coordinating offsite plans for reservoir flooding and ensuring communities are well prepared. Local authorities will work with other members of Local Resilience Forums (LRFs) to produce these plans.

2.8 Climate Change Act

Under the <u>*Climate Change Act 2008*</u>, the Government, public bodies and statutory organisations are required to report on how they are adapting to climate change.

We will report in this Strategy the impact of climate change and its effect on flood risk in Northumberland, including how we plan to manage and mitigate the effects.

2.9 Civil Contingencies

The <u>Civil Contingencies Act 2004</u> aims to deliver a single framework for civil protection in the UK and sets out the actions that need to be taken in the event of a flood. The Civil Contingencies Act is separated into two substantive parts: local arrangements for civil protection (Part 1) and emergency powers (Part 2).

Responsibilities under Part 1 of the Civil Contingencies Act include:

- The undertaking of risk assessments;
- Developing Emergency Plans;
- Developing Business Continuity Plans;
- Arranging to make information available to the public about civil protection matters and maintaining arrangements to warn, inform and advise the public in the event of an emergency;
- Sharing information with other local responders to enable greater co-ordination;

- Co-operating with other local responders to enhance co-ordination and efficiency; and
- Providing advice and assistance to businesses and voluntary organisations about business continuity management.

2.10 Strategic Environmental Assessment (SEA) Directive

The <u>SEA Directive 2001</u> requires a SEA to be carried out for all plans and programmes which are 'subject to preparation and/or adoption by an authority at national, regional or local level.' The SEA informs the preferred long-term strategy through its identification of the likely significant effects of the implementation of the Strategy on relevant environmental receptors.

2.11 Water Framework Directive (WFD)

The <u>Water Framework Directive 2000</u> is a European Directive which introduced a strategic planning process to manage, protect and improve the water environment. Local strategies should be assessed for WFD compliance to ensure that local measures reduce flood risk, comply with the objectives of the WFD, and identify, where possible, measures to contribute to achieving WFD objectives.

The Environment Agency is responsible for preparing management plans for river basin districts in England and Wales. Those plans must be prepared in line with the requirements of the WFD. The plans outline the characteristics of the river basin district, identify the pressures that the local water environment faces and actions to improve or manage these.

2.12 Drainage Strategy Framework for Water and Sewerage Companies

This <u>Drainage Strategy Framework</u> good practice guide, commissioned by the Environment Agency and The Water Services Regulation Authority (OFWAT), illustrates how water and sewerage companies should prepare a drainage strategy for a particular catchment using six guiding principles:

- **Partnership** The document recognises that water and sewerage companies cannot develop Drainage Strategies on their own;
- **Uncertainty** Strategies should explain the reliability of the data and knowledge about current and future performance of drainage systems;
- **Risk-based** Strategies should be risk-based, to ensure that investment is made where risks are the greatest;
- Whole life costs and benefits;
- Live process Strategies should be adaptable and periodically reviewed; and
- Innovative and sustainable.

3 OVERVIEW OF FLOOD RISK IN NORTHUMBERLAND

3.1 What is Flood Risk?

Flood risk is not just the likelihood of flooding occurring, but also the potential damage a flood could cause. Assessing risk in quantifiable, financial terms can help prioritise where available funding should be directed, as well as support applications for additional external funding.

However, the consequences of flooding can be far reaching and not always easy to value, particularly the social impacts of displacement, loss and fear of repeat events. It is therefore important to understand flood risk within Northumberland and how the impacts of flooding can be avoided or reduced.



3.2 Local Sources of Flood Risk

Northumberland is the sixth largest county in England, with an administrative area of approximately 5,010km². Northumberland is predominantly rural, with Northumberland National Park located to the west covering 25% of the county. The county has a population of approximately 316,100, with the majority living in the south east of the county.

Across Northumberland, there are risks of flooding from a number of different sources. Northumberland has an extensive river network and therefore fluvial flooding presents a significant risk throughout the county. The county also has a 132km coastline along the North Sea, where some coastal communities are at risk from tidal flooding. Flood risk in Northumberland is associated with a number of sources; some are more common than others and vary in magnitude and scale. Sources include tidal flooding, flooding from main rivers and ordinary watercourses (fluvial flooding), surface water flooding (pluvial flooding), groundwater flooding, sewer flooding, artificial sources (such as reservoirs) and a combination of any of these sources.

Flooding from the sea, main river flooding, sewer flooding and flooding from artificial sources are not defined as 'local' sources of flooding and therefore do not fall under the responsibility of Northumberland County Council and requirements of this Strategy. However, these sources of flooding are considered significant within Northumberland and can occur in combination with local sources of flooding. A summary of the risk for all sources is therefore provided below and the responsible RMA identified. Maps illustrating the flood risk from all sources in Northumberland are provided in Appendix B.

Fluvial flood risk from the larger rivers including the River Tyne, River Wansbeck, River Blyth, River Till, River Breamish and River Coquet are relatively well understood and have been managed by the Environment Agency for a number of years. However, flood risk from local sources including surface water runoff and ponding, groundwater, small ditches and land drains is less understood. These are typically localised events which are often difficult to predict, with sparse historical records available to provide supporting evidence.

Typically, reactive mitigation measures have been implemented in response to past flood events, usually with the construction of new flood and drainage infrastructure. However, climate change and continued urbanisation are likely to increase flood risks in the future unless action is taken to mitigate or adapt to that risk.

3.2.1 Ordinary Watercourses

Ordinary watercourses include every river, stream, ditch, drain, cut, dyke, sluice, sewer (other than a public sewer) and passage through which water flows, above ground or culverted, which is not designated as a Main River.

Fluvial flooding from Ordinary Watercourses occurs when the capacity of the watercourse is exceeded, causing water to spill out of the channel into surrounding areas. These areas are known as the floodplain. Fluvial flooding can be exacerbated due to a lack of maintenance causing blockages both within natural open channels or culverted/piped sections.

At the time of undertaking the Northumberland PFRA in 2011 there was no data to suggest a significant risk of flooding from ordinary watercourses in Northumberland. However, as stated within the PFRA, this does not mean there is no risk present, but rather that there is not sufficient data or modelling to identify areas of significant risk.

Responsible RMA: Riparian land owners are responsible for managing and maintaining Ordinary Watercourses within their land ownership. As LLFA, we have power to manage the risk of flooding arising from Ordinary Watercourses through engagement with riparian owners and enforcing maintenance responsibilities in accordance with the Land Drainage Act 1991.

3.2.2 Groundwater

Groundwater flooding occurs as a result of water rising up from the underlying aquifer or from water flowing from springs. This tends to occur after much longer periods of sustained high rainfall and can be sporadic in both location and time often lasting longer than a fluvial or surface water flood.

High groundwater level conditions may not always lead to widespread groundwater flooding; however, they have the potential to exacerbate the risk of surface water and fluvial flooding by reducing the infiltration capacity of the ground, and to increase the risk of sewer flooding through sewer / groundwater interactions.

British Geological Survey (BGS) mapping shows the area to be mostly underlain by carboniferous limestone, igneous rocks and sandstones which have limited permeability. Large parts of the bedrock covering the study area is overlain by relatively impermeable glacial till further reducing the likelihood of groundwater flooding.

The term groundwater rebound is used when groundwater levels rise due to reduced abstraction rates. This usually occurs in places overlaying major aquifers. The Northumberland <u>Preliminary Flood Risk Assessment</u> states that groundwater rebound is more likely to occur in the south-east of Northumberland and along a corridor to the east of the county. Blyth, Ashington, Ponteland and Bedlington may be susceptible to groundwater rebound.

Responsible RMA: We are responsible as LLFA for managing the risk of groundwater flooding. We also work with other organisations, including the Environment Agency, to manage this risk.

3.2.3 Surface Water

Surface water (pluvial) flooding usually occurs when high intensity rainfall results in overland flows on the surface of the ground. This can result in ponding against obstructions, such as road and rail embankments, and in low lying areas. It can be exacerbated when the soil is saturated and receiving drainage systems have insufficient capacity to cope with the additional flow.

The Environment Agency <u>Risk of Flooding from Surface Water Map</u> indicates that rural areas, which account for the vast majority of the county, are generally at low risk of surface water flooding. However, the surface water map indicates that some urban areas in the south-east of the county are shown to be at higher risk from surface water flooding.

Previous studies undertaken by NCC have identified a number of urban areas that may be potentially at risk from surface water flooding. These urban areas include of Morpeth, Berwick, Belford, Ponteland, Hexham, Haltwhistle, Cramlington, Amble and Blyth.

Surface water flooding often occurs in combination with other flood sources. For example two major flood events in Morpeth have occurred in recent years, although fluvial flooding from the River Wansbeck is the primary flood source surface water flooding has also been identified as a contributing factor. This combined flood mechanism has also occurred in other urban areas such as Haltwhistle.

Responsible RMA: We are responsible as LLFA for managing the risk of surface water flooding.

3.3 Other Sources of Flood Risk

3.3.1 Tidal

Tidal Flooding occurs during high tides when the sea floods areas along the coast and estuarine areas by overtopping existing walls/ defences. In addition to high tides, tidal flooding can become exacerbated by storm or tidal surges and from wave action. High sea levels can

cause tide locking, which may reduce the discharge of water from rivers and sewers causing an additional source of risk.

The tidal flood risk, associated with coastal and estuarine areas is shown on the Environment Agency <u>Flood Map for Planning (from Rivers and the Sea)</u>. This flood map provides estimates of flood extents across the county (without the provision of flood defences) and identifies that a number of settlements in Northumberland are at risk of tidal and fluvial flooding.

The <u>Northumberland County Council Flood Action Plan</u> identifies areas at risk of tidal flooding. Blyth Town Centre has been identified as being at very high risk of tidal flooding from the North Sea. Whereas Amble and Berwick Upon Tweed have been identified as being at high risk from the North Sea and Tweed Estuary respectively. Seahouses and Alnmouth have both been identified as being at medium risk of tidal flooding from the North Sea.

Responsible RMA: Environment Agency.

3.3.2 Sewer

During heavy rainfall flooding from sewers or highway drains may occur if (a) the rainfall event exceeds the design capacity of the drainage system, (b) the system becomes blocked and/or (c) the system cannot discharge due to high water levels in receiving watercourses. Sewer and highway flooding is typically localised and short term.

Ofwat expect Northumbrian Water to provide a level of service to customers so that they are not at risk of flooding from rainfall events with a return period of less than 1 in 20 years. Sewers for adoption have been designed to accommodate rainfall events with a minimum 1 in 30 year return period since the early 1970's. Therefore, rainfall events with a rainfall probability of greater than 1 in 30 years would be expected to result in surcharging of some of these sewer systems.

Some areas of Northumberland are served by older sewers which may have an effective design standard of less than 1 in 30 years. In areas of Northumberland the sewer network is often a 'combined system' where storm and foul drainage is served by a single sewer. As a result sewer flooding events from older sewers can be more frequent than from sewers constructed more recently.

DG5 records provided by Northumbrian Water suggest properties at risk of sewer flooding are predominantly in the more urban areas in the south east of the county. The *Northumberland Level 1 SFRA*, produced in 2010, identified some areas of Morpeth, Cramlington, Hexham, Amble and Haltwhistle to be at risk of sewer flooding however this data may now be outdated due to Northumbrian Water's ongoing capital investment programme.

A number of areas were identified within the Outline Water Cycle Study, produced in 2012, that would require upgrades to existing sewers if further development were to take place. This assessment supports the SFRA in identifying some areas of Haltwhistle, Cramlington, Amble and Hexham as areas at risk of sewer flooding, however this data may now be outdated due to Northumbrian Water's ongoing capital investment programme.

Northumberland County Council are currently developing a detailed Water Cycle Study (WCS). The detailed WCS provides information at a level suitable to ensure that there are solutions to deliver growth for the preferred development allocations. In this instance this relates to the enhanced provision of housing and related services in Northumberland in line with the Local Plan, and the potential constraints to the water cycle which such development may pose. The WCS will be used to inform the NCC Infrastructure Development Plan (IDP), which will outline a strategic plan for development and infrastructure investment across

Northumberland County over the planning period. The WCS will also be used to inform flood risk management decisions.

NW have undertaken an internal assessment of the capacity of the existing sewer network system using drainage area modelling and local operational knowledge. The models have been used by NW to assess the current and future performance of the public sewerage system, incorporating estimates of development up to 2020. This information will support the decision making process for further development throughout Northumberland.

Responsible RMA: Northumbrian Water as the sewerage undertaker for Northumberland. Northumberland County Council for highway drains and the Highways Agency for other trunk roads. Other owners are responsible for private sewers.

3.3.3 Artificial

Artificial sources include any water bodies not covered under other categories, such as canals, lakes and reservoirs. Northumbrian Water operates seven impounding reservoirs/storage areas within Northumberland that may potentially present a flood risk due to failure or overtopping of the structures, namely:

- Kielder Water (largest man-made reservoir in north-west Europe);
- Bakethin;
- Catcleugh;
- Fontburn;
- Colt Crag;
- Hallington; and
- Whittle Dene.

The Environment Agency has produced flood maps to show the impact that a dam or reservoir failure resulting in an uncontrolled release of water, could have downstream. The outline extent of flooding is shown on the Environment Agency <u>Risk of Flooding from Reservoir Map</u>. Urban settlements at risk in the unlikely event of a reservoir failure include Morpeth and Hexham.

More detailed maps are available to upper-tier local authorities, reservoir owners and operators, and emergency responders. These detailed maps are used to develop the offsite plans within the Local Resilience Forums (LRFs).

Responsible RMA: Dependent on ownership, but mainly the Environment Agency and Northumbrian Water.

3.3.4 Main River

River flooding occurs when water levels rise as a result of high or intense rainfall which flows into them, resulting in watercourses overflowing or bursting their banks. A main river is defined by the Environment Agency on its <u>Main River Map</u> and is usually a larger river or stream.

The fluvial flood risk, associated with all Main Rivers is shown on the Environment Agency <u>Flood Map for Planning (from Rivers and the Sea)</u>. This flood map provides estimates of flood extents across the county (without the provision of flood defences) and identifies that a number of settlements in Northumberland are at risk of fluvial flooding from main rivers.

Areas at risk of fluvial flooding from main rivers include River Wansbeck at Morpeth River Coquet at Rothbury, River Pont at Ponteland and River Tyne at Hexham and Prudhoe.

Responsible RMA: Environment Agency.

3.4 Understanding Future Flood Risk

There are a number of factors that can influence flood risk in Northumberland both beneficially and adversely, these include:

- Climate change leading to more intense periods of rainfall, increasing the frequency of large-scale flooding and the chances of flooding occurring where it has not been experienced before;
- Sea-level rise affecting drainage and groundwater levels in coastal areas;
- Heightened river levels preventing surface water from draining from riverside development;
- Population increase leading to increased demand for development and access to key services and facilities;
- Pressure for new development in areas at risk of flooding or changes in land use which increase risk elsewhere;
- Deterioration of structures or features that currently protect us from flooding and thus require maintenance or replacement;
- Public sector cuts leading to reduced maintenance activities and reduced funding for flood alleviation schemes; and
- More stringent planning regulations and new developments which can contribute to reducing flood risk.

3.4.1 Climate Change

Climate change can affect local flood risk in several ways. Impacts will depend on local conditions and vulnerability. Prolonged periods of wet weather as well as short intense storm events may increase river flooding in both rural and 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. Recharge of the aquifers may increase in wetter winters, or decrease in drier summers.

Where appropriate, local studies are needed to understand climate impacts in detail, including effects from other factors like land use.

3.5 Indicative Flood Risk Areas

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Little information is available to quantify the risk associated with flooding from groundwater and ordinary watercourses. Where historical evidence is available this can be used to identify those areas potentially at greater risk in the future, however, as previous sections have discussed, there are very few recorded flooding incidents for either of these sources of flooding within Northumberland and they are considered to be of lower significance.

Local flood risk, for the purpose of this Strategy, is therefore predominantly based on the risk arising from surface water flooding. However, Northumberland also experiences flooding from Main Rivers and tidal sources, as well as sewer flooding.

The Environment Agency undertake national modelling of the risk of flooding from surface water and Main Rivers and publish the mapping outcomes on their website. The maps presented describe the undefended scenario.

The <u>Risk of Flooding from Surface Water Map</u> (uFMfSW) identifies the risk of surface water flooding at a strategic scale.

Surface Water flood risk is banded based on the following:

- **High Risk** at risk of flooding for a rainfall event with a 1 in 30 probability of occurrence in any given year;
- **Medium Risk** at risk of flooding for a rainfall event with a 1 in 100 probability of occurrence in any given year;
- Low Risk at risk of flooding for a rainfall event with a 1 in 1000 probability of occurrence in any given year; and
- Very Low Risk at risk of flooding for a rainfall event with a probability of occurrence greater than a 1 in 1000 in any given year.

A high level assessment of the risk has been undertaken for this Strategy using the Environment Agency's National Receptor Database and uFMfSW to provide an indication of the level of risk facing Northumberland. Results are summarised in Table 3-1.

Table 3-1: Number of properties at Risk of Pluvial Flooding in Northumberland (based on Environment Agency uFMfSW)

Tupo of Proporty	Risk			
Type of Property	Low	Medium	High	
Residential		13,582	2,981	2,798
	Commercial & Industrial	1,115	365	511
Non Residential	Emergency Service Stations*	16	5	2
	(Fire, Police & Ambulance)	10	Ŭ	-
	Hospitals*	1	0	1

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Schools and Education Facilities*	50	17	29
Surgery or Health Care*	18	6	5
Residential Home*	6	5	3
Sewage Treatment*	16	5	19
Electricity Sub Station o Building*	. 1	0	0
Other	32	9	9
Total	1,255	412	579
Residential and Non-Residential Total	14,837	3,393	3,377

*Identified as Critical Infrastructure.

Based on the Northumberland County Council Core Strategy delivery areas an indication of the number of properties at risk of pluvial and fluvial flooding is provided in Table 3-2 and 3-3.

Table 3-2: Number of residential properties at Risk of Pluvial Flooding in Northumberland (based on Environment Agency uFMfSW)

Delivery Area	Small Delivery Area	Low	Medium	High
	Corbridge	181	67	91
	Hexham	663	191	256
Central	Morpeth	835	191	353
Central	Ponteland	712	170	108
	Prudhoe	924	148	81
	Rest of delivery area	826	135	381
	Alnwick	366	62	107
	Belford Seahouses	226	51	110
North	Berwick	448	97	91
North	Rothbury	127	18	37
	Wooler	107	27	46
	Rest of delivery areas	696	150	305
South East	Amble	169	32	11

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Delivery Area	Small Delivery Area	Low	Medium	High
	Ashington	1131	232	151
	Bedlington	800	190	120
	Blyth	1907	454	229
	Cramlington	1497	476	305
	Guidepost	270	38	24
	Newbiggin by the Sea	188	46	27
	Seaton Delaval	518	116	80
	Rest of delivery area	449	193	193
	Allendale and Haydon Bridge	184	84	88
West	Bellingham	153	21	45
	Haltwhistle	191	40	72
	Rest of delivery area	307	101	191

Table 3-3: Number of residential properties at Risk of Fluvial Flooding in Northumberland (based on Environment Agency undefended flood zone maps)

Flood Zone 2: Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.

Flood Zone 3: Land having a 1 in 100 or greater annual probability of river flooding; or land having a 1 in 200 or greater annual probability of sea flooding.

Delivery Area	Small Delivery Area	Flood Zone 2	Flood Zone 3
	Corbridge	6	53
Central	Hexham	172	287
	Morpeth	217	1014

Delivery Area	Small Delivery Area	Flood Zone 2	Flood Zone 3
	Ponteland	36	409
	Prudhoe	21	79
	Rest of delivery area	135	317
	Alnwick	15	8
	Belford Seahouses	56	91
North	Berwick	0	55
North	Rothbury	61	119
	Wooler	85	58
	Rest of delivery areas	223	371
	Amble	32	11
	Ashington	13	24
	Bedlington	12	37
	Blyth	426	1032
South East	Cramlington	22	10
	Guidepost	28	16
	Newbiggin by the Sea	0	11
	Seaton Delaval	6	5
	Rest of delivery area	31	27
	Allendale and Haydon Bridge	124	149
West	Bellingham	77	120
	Haltwhistle	43	17
	Rest of delivery area	62	334

3.6 The Impacts of Identified Risk

The impacts of flooding can be quantified using techniques outlined in the Flood and Coastal Erosion Management – Appraisal Guidance (FCERM-AG). Damages can be categorised as direct, indirect and intangible. Direct damages are a result of flood water contact with damageable property and contents. Indirect costs are the costs associated with the damage of that property such as industrial production, evacuation and accommodation. Intangible damages are consequences of flooding that aren't as easily identified, such as loss of an archaeological site or long term effects of flooding.

Plates 21 and 22, in Appendix B, highlight the estimated annual average damages by both fluvial and surface water flooding. High level direct and indirect damages have been assigned to each property at risk to provide an indicative cost of damages that could be expected in each delivery area. An annual average damage value of £4,728, sourced from the Multi-Coloured Manual, has been used to calculate the damages in each delivery area. It assumes no existing standard of protection and no flood warning system.

4 ROLES AND RESPONSIBILITIES FOR FLOOD RISK MANAGEMENT

4.1 Who has responsibility for managing flood risk in Northumberland

Flood risk management is the responsibility of everyone, not solely the organisations identified by the Flood and Water Management Act 2010. No single body has the means to reduce all flood risk. Effective management will involve various bodies each with a range of relevant duties and powers. Relevant organisations need to work together and with the community, to make better use of their capacity and limited resources.

Contact details of key Risk Management Authorities (RMAs) and other relevant organisations are provided in Appendix C. An example of typical circumstances for which you would contact each of the key contacts is also provided.

4.2 Risk Management Authorities

In addition to designating LLFAs, the Flood and Water Management Act 2010 identifies certain organisations as RMAs which have specific responsibilities, duties and powers related to flood risk management. Some responsibilities are new, and others are existing duties and powers set out in previous legislation.

Table 4-1 outlines the LLFA and RMAs for Northumberland.

Risk Management Authority	Name of Organisation	
Environment Agency	Environment Agency	
Lead Local Flood Authority	Northumberland County Council	
Internal Drainage Board	None	
Water and Sewerage Company	Northumbrian Water	
Highway Authority	Northumberland County Council	
	Highways England	

Table 4-1: Flood Risk Management Authorities in Northumberland

4.3 Northumberland County Council

4.3.1 Role as Lead Local Flood Authority

As the LLFA the Council is responsible for planning risk management for flooding from surface water, groundwater and ordinary watercourses, otherwise known as local sources of flooding. The Flood and Water Management Act 2010 places powers and duties on LLFAs, an overview of these are powers and duties shown in Figure 4.1.

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Figure 4-1: Lead Local Flood Authority Duties and Powers SuDS / SAB as of 1st April 2017 this section of the FWMA 2010 has not been enacted.

FINAL (APPROVED) November 2015 As a LLFA, we have a responsibility to investigate flood incidents under Section 19 of the Flood and Water Management Act 2010. The nature of the investigation will depend upon the extent of the flooding. The outcome from any investigation will inform the development and prioritisation of flood defence schemes.

Section 13 of the Flood and Water Management Act 2010 states that we must co-operate with other relevant authorities to exercise our flood and coastal erosion risk management functions. Section 13 also states that we may share information with relevant authorities to carry out our duty as a LLFA.

As a LLFA, under Section 14 of the Flood and Water Management Act 2010, we may request a person to provide information in connection with our flood and coastal erosion risk management functions.

We also have powers under Section 25 of the Land Drainage Act (1991) to serve notice on any persons impeding the flow of an ordinary watercourse without consent and causing an increase in flood risk or having an adverse effect on ecological status of the watercourse.

Land Drainage Consent is required from Northumberland County Council for any works that are likely to impede the flow of water within an ordinary watercourse. This is to ensure that the risk of flooding does not increase and that any ecological issues are addressed.

4.3.2 Role as Coast Protection Authority

As the Coast Protection Authority, we have powers to carry out protection, whether inside or outside the administrative area, as necessary. We must provide consent on schemes taking place on our coastline and it is within our powers to serve notice on landowners if, and when, key maintenance is required.

4.3.3 Role as Highways Authority

As a Highway Authority for Northumberland we are required by Section 41 of the Highway Act 1980 to maintain all highways that are maintainable at public expense (excludes Trunk Roads which are the responsibility of Highways England), this includes a duty to provide an adequate drainage system and to keep the highway free from flooding.

4.3.4 Role as Emergency Responder

We are a Category 1 Responder under the <u>*Civil Contingencies Act 2004*</u> and therefore have a responsibility, along with other organisations for developing emergency plans, contingency plans and business continuity plans to mitigate the effects of an emergency in Northumberland.

Currently the Northumberland County Council Flood Action Plan only provides a response to the threat of fluvial and coastal flooding within Northumberland based on warnings issued by the Environment Agency.

Northumberland County Council will participate in strategic sandbagging prior to or during a flood event in partnership with the Northumberland Fire and Rescue Service. Locations/ areas to be sandbagged will be identified at the time. It is not general practice to provide sand bags directly to the public in the event of flooding and each situation will be assessed on merit and the appropriate action taken.

Weather situations can change quickly and strategic locations may alter depending on where the flooding is occurring and why; these may include places such as community centres and nominated council depots and facilities, front line responders will advise.

In preparation for a flood event the public are advised to self-help by purchasing sandbags from hardware stores and builders merchants where alternative flood protection devices can also be acquired.

4.3.5 Role as Planning Authority

As a Local Planning Authority (LPA) we have a responsibility to consider flood risk in our strategic land use planning and the development of our Local Plan, as set out under the National Planning Policy Framework (NPPF) and supporting guidance. In making land allocations through the Local Plan, there is a requirement to undertake a Strategic Flood Risk Assessment.

We are the 'decision maker' on flood risk for planning applications for development, taking into consideration technical advice from other RMAs as consultees (statutory). When considering applications for development, we require site-specific flood risk assessments to be undertaken in line with the NPPF. Planning applications for major development should be accompanied by a site-specific drainage strategy or statement that demonstrates that the drainage scheme proposed is in compliance with the NPPF and the Non-statutory technical standards.

4.3.6 Role as SuDS Approval Body (SAB)

Sustainable Drainage Systems (SuDS) are an approach to managing rainwater and surface water that replicates natural drainage, the key objectives being to manage flow rate and volume of runoff to reduce flood risk and water pollution.

Schedule 3 of the Flood and Water Management Act (the Act) sets out legislation for LLFAs to create SuDS Approval Bodies (SABs) to adopt SuDS and ensure their ongoing maintenance. However, this provision of the Act has not yet been enacted. Instead, the Government has implemented an alternative approach to delivering SuDS through strengthening planning policy.

On 18 December 2014, the Secretary of State for Communities and Local Government laid a Written Ministerial Statement in the House of Commons setting out changes to planning for major development that came into effect on 6 April 2015.

Northumberland County Council, as the LLFA, is a now statutory consultee within the planning process. Schedule 4 Part (ze) of the Development Management Procedure Order requires a LLFA to be a statutory consultee for any 'major development with surface water drainage'.

4.3.7 Role as an Asset Owner

We are responsible for the maintenance of Council owned assets which have a role in flood risk management. These include drainage ditches, gullies, trash screens and culverts.

4.4 Environment Agency

The Environment Agency are designated a RMA under the Act. The Environment Agency are responsible for managing flooding from main rivers and tidal and have a responsibility to provide a strategic overview for all flooding sources and coastal erosion.

The Flood and Water Management Act 2010 requires the Environment Agency to 'develop, maintain, apply and monitor a strategy for flood and coastal erosion risk management in England'. The Environment Agency <u>National Strategy for Flood and Coastal Erosion Risk</u> <u>Management</u> was published in September 2011.

The Environment Agency has permissive powers to carry out maintenance work on main rivers under Section 165 of the Water Resources Act 1991.

Under Section 109 of the Water Resources Act 1991 a Flood Defence Consent is required from the Environment Agency for any works that are in, under, over or within five metres of a main river.

4.5 Northumbria Regional Flood and Coastal Committee (RFCC)

RFCC was established through the Flood and Water Management Act 2010. The purpose of the RFCC is as follows:

- To ensure there are coherent plans for identifying, communicating and managing flood and coastal erosion risks across catchments and shorelines;
- To encourage efficient, targeted and risk-based investment in flood and coastal erosion risk management that represents value for money and benefits local communities; and
- To provide a link between the Environment Agency, LLFAs, other risk management authorities, and other relevant bodies to build understanding of flood and coastal risks in its area.

4.6 Northumbrian Water

Northumbrian Water is responsible for the maintenance of the public sewerage system within Northumberland. As the water and sewerage company in the area, they are responsible for managing the risks of flooding from surface water and foul or combined sewer systems.

Northumbrian Water is funded by OFWAT to provide a level of service to customers that provides protection for up to 5% (1 in 20 year) AEP events. Sewers on new development are typically designed to provide protection from flood events up to the 3.33% (1 in 30 year) AEP event and capital projects have historically been designed to provide protection from flood events up to the 2.5% (1 in 40 year) AEP event.

4.7 Highways England

Highways England is responsible for managing the Motorway and Trunk road network in England. Within Northumberland this includes the A1, A19 and A69.

4.8 Land Owners

4.8.1 Riparian Owners

Riparian landowners are those who own land adjoining a watercourse. As detailed within the Environment Agency document 'Living on the Edge', they are presumed to own the land up to the centre of the watercourse – unless it is known to be owned by someone else. Riparian landowners have certain rights and responsibilities, including the following:

- Maintenance of the river bed and banks of the watercourse (including trees and shrubs growing on the banks);
- Clear away any debris (natural or man-made), even if it did not originate from their land; and
- Keep any structures that they own clear of debris. These structures include culverts, trash screens, weirs and mill gates.

Riparian landowners must understand and act upon these responsibilities. Failure to carry out their responsibilities could result in legal action.

Riparian owners have the right to protect their property from flooding and their land from erosion. These activities may require a Land Drainage Consent from Northumberland County Council if the works are by an ordinary watercourse or a Flood Defence Consent from the Environment Agency if the works are by a main river.

4.8.2 Property Owners and Residents

Property owners have a responsibility to take reasonable measures to protect their own property and to ensure that the measures do not cause harm to others. This includes measures such as keeping drains clear and maintaining flood defences (if any are owned). If you own a private drainage system, such as a septic tank, then you have a duty to ensure that is appropriately maintained.

4.8.3 Agricultural Land Owners

Land management practices can have a significant effect on flooding. This is especially true of a large, rural county like Northumberland. Changes in use of agricultural land can have an impact on surface water runoff. Land management changes that can negatively affect surface water runoff are crop selection, removal of hedges and ditches and land compaction.

Organisations like the National Farmers Union (NFU) have been working with National and Local Government to develop strategies such as Catchment Sensitive Farming schemes to improve water quality and reduce flood risk.

Advice is also available through the Environment Agency, Northumberland County Council and the National Farmers Union if agricultural land is at risk, or has been affected by flooding.

4.9 Other Key Stakeholders

4.9.1 Neighbouring LLFAs and other risk management authorities

Collaborative working with neighbouring LLFAs and other RMAs is key to develop consistent methods of working and enhance resource capabilities for the better management of local flood risk.

4.9.2 Utility and Infrastructure Providers

Utility and infrastructure providers such as Network Rail, energy companies and telecommunication companies are not RMAs. However, they have a crucial role to play in flood risk management and their assets can be an important consideration in planning for flooding. Moreover, as riparian landowners, they may own assets, such as culverts, weirs and sluice gates etc., which need to be properly maintained.

They already maintain plans for the future development and maintenance of the services they provide and it is important that they factor in flood risk management issues into this planning process. This will ensure that their assets and systems are resilient to flood and coastal risks and that the required level of service can be maintained in the event of an incident.

5 OBJECTIVES FOR MANAGING LOCAL FLOOD RISK

5.1 National Flood Risk Management Objectives

We have developed the Northumberland local flood risk management objectives in line with the Environment Agency's National Flood and Coastal Erosion Risk Management Strategy for England. This sets out the following national objectives for flood risk management:

- Understand the risks understanding the risks of flooding and coastal erosion, working together to put in place long-term plans to manage these risks and making sure that other plans take account of them;
- Prevent inappropriate development avoiding inappropriate development in areas of flood and coastal erosion risk and being careful to manage land elsewhere to avoid increasing risks;
- Manage the likelihood of flooding building, maintaining and improving flood and coastal erosion management infrastructure and systems to reduce the likelihood of harm to people and damage to the economy, environment and society;
- Help people to manage their own risk increasing public awareness of the risk that remains and engaging with people at risk to encourage them to take action to manage the risks that they face and to make their property more resilient; and
- Improve flood prediction, warning and post-flood recovery improving the detection, forecasting and issue of warnings of flooding, planning for and co-ordinating a rapid response to flood emergencies and promoting faster recovery from flooding.

5.2 Guiding Principles for Local Flood Risk Management

The National Strategy objectives are supported by six high-level principles to guide decisions on risk management activities, and the process by which they are taken, at both a national and local level. We have used these to guide the development of objectives and identification of measures to deliver local flood risk management within Northumberland.

The National Strategy guiding principles are listed in Figure 5.1.





Figure 5.1: Guiding Principles for Local Flood Risk Management

5.3 Complementary Plans and Strategies

A number of complementary plans and strategies undertaken by Northumberland County Council and the Environment Agency for the study area are already in place and have been considered in the development of the Local Objectives. A list of plans and strategies considered during formulation of the Local Objectives is provided below:

 Catchment Flood Management Plans – River Tyne, North East Northumberland, River Till and Breamish, Eden, and River Wansbeck and Blyth Catchment Flood Management Plans;

- Shoreline Management Plan (2) Management policies, include measures such as to not actively intervene, hold the line, advance the line and managed realignment;
- **River Basin Management Plan** Northumbria District River Basin Management Plan includes catchment objectives to meet Water Framework Directive requirements; and
- Northumberland Sustainable Community Strategy sets long term vision to improve economic, social and environmental wellbeing of communities.

It is important that the Local Strategy is aligned with the corporate priorities of Northumberland County Council's strategic plans. To make sure this is achieved the Local Strategy has been developed with a number of key teams within the council.

The strategy has been developed in parallel with the development of the Northumberland Local Plan Core Strategy and its shared evidence base to ensure key points are brought into each of the key pieces of strategic work for the council.

5.4 Northumberland's Local Objectives

Our objectives for managing local flood risk in Northumberland are set out below.

Northumberland Local Objectives

- 1. Improve knowledge and understanding of flood risk throughout Northumberland;
- 2. Promote sustainable development to reduce local flood risk with consideration to the anticipated impact of climate change;
- 3. Actively manage flood risk and drainage infrastructure to reduce likelihood of flooding throughout Northumberland;
- 4. Encourage communities to become more resilient to flooding by increasing public awareness and understanding their concerns;
- 5. Be better prepared for flood events and post flood recovery.

The Northumberland local objectives have been broken down into more specific measures as presented in Section 5.5 to 5.9. Actions have been developed around these measures in collaboration with external and internal stakeholders. The Action Plan is provided in Appendix D and stakeholder involvement in the development of the actions is shown in Appendix E.

- Consultation responses on the draft Strategy, which closed on the 24th April 2015, asked for views on the following: Whether the objectives we have identified for our strategy are appropriate;
- Whether the activities we have set out in our action plan are appropriate; and
Whether our proposals for prioritising our flood risk management activities are appropriate.

Most responses agreed with the local objectives and the approach, therefore no change has been proposed. Some responses highlighted the importance of communication and engagement and integrated catchment wide approaches. We will strive to focus on reporting on where we have successfully implemented measures in these focus areas.

Some responses highlighted the importance of managing future flood risk and development. The development of the Local Flood Risk Management Strategy and the Northumberland Local Plan have been closely aligned, ensuring that appropriate measures have been agreed to ensure sustainable development.

A full response to the consultation can be found in Appendix G.

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5.5 Objective 1

Improve Knowledge and understanding of flood risk throughout Northumberland

5.5.1 *Measure 1.1*

Identify and prioritise local flood risks, whilst taking into account the anticipated effects of climate change.

- Ensure Flood and Coastal Erosion Risk Management Team involvement in pre-planning consultation with developers to ensure appropriate studies are undertaken to identify and understand local flood risk;
- Use local knowledge and indicative flood risk areas to ensure our limited resources are used to investigate and understand local flood risk in higher risk priority areas;
- Continue to improve knowledge of local flood risk issues through liaison with established community groups and Town and Parish Councils; and
- In higher risk priority areas investigate local flood risks and identify how future development and climate change impacts may affect local communities.

The Flood and Coastal Erosion Risk Management team work closely with the Development and Delivery and Planning and Housing Policy teams to ensure planning policy and planning decisions are based on an informed understanding of flood risk within Northumberland. Preplanning consultation with the FCERM Team is encouraged for developments which the team will be formally consulted on through the planning process.

We will continue to use Flood Investigation Reports to help prioritise flood risk areas and future schemes. We will also use the Indicative Flood Risk Areas identified within this Strategy to prioritise the settlements that could potentially be most at risk from surface water flooding in the future, especially when considering the anticipated effects of climate change.

As part of this Strategy we have carried out an engagement questionnaire and requested feedback from the public to shape the future of flood risk management within Northumberland and identify additional problem drainage areas, which may have been overlooked. This information will help us improve our understanding of flood risk and allow us to further develop specific actions.

The majority of responses were received from residents and via town and parish councils. 75% of the respondents had been directly affected by flooding. The majority of people affected believed the cause of flooding was from 'local' flood sources, such as, runoff from fields and roads, blocked or overflowing road drains and smaller ditches and streams.

The majority of respondents felt that they would like further information on the following:

- ✓ Who is responsible for dealing with different types of flooding;
- ✓ What work is being carried out in Northumberland; and
- ✓ Maintenance of watercourses in their area.

Respondents believed that the following work should be considered a priority for flood risk management in Northumberland:

- Increased maintenance of watercourses and road drains;
- ✓ Large flood relief schemes to protect multiple properties;
- ✓ Changes to flood management policy for new development;
- ✓ Improved education about land management practices; and
- ✓ Working with local communities to help them prepare for flooding.

We will continue to engage with communities across Northumberland to gain further knowledge on flood events and flood risks. This information will be used to prioritise areas for more detailed investigation.

5.5.2 *Measure 1.2*

Work in collaboration with other Risk Management Authorities to ensure a holistic approach to flood risk.

- Continue to work in collaboration and build relationships with other Risk Management Authorities (RMAs) to share best practice and develop a consistent approach to flood risk; and
- Continue to liaise with risk management authorities in accordance with existing governance and communication arrangements.

We already collaborate and work with other RMAs and this has supported the development of the Strategy and delivery of flood risk management projects previously carried out.

The Northumberland Strategic Flood Risk Management Group oversees all flood risk management in Northumberland and consists of Northumberland County Council, the Environment Agency and Northumbrian Water.

We meet on a regular basis to discuss and prioritise flood related issues and plan the delivery of future schemes. We also engage with other RMAs when needed, this includes neighbouring LLFAs, a full list of consultees can be found in Appendix E.

In developing the strategy we have reviewed our communication plan to ensure that it continues to align with our current and future plans.

5.5.3 *Measure 1.3*

Investigate and record details of flood events to improve understanding and build-up an evidence base.

- Publish Flood Investigation Reports, in line with Section 19 of the Flood and Water Management Act requirements, on the Council website; and
- Continue to use outcomes of Flood Investigation Reports to build-up the evidence base and prioritise future programme of works

As LLFA we are required by <u>Section 19 (s.19) of the Flood and Water Management Act 2010</u> to investigate flood incidents to the extent that we consider necessary or appropriate. Our investigation should identify and notify the appropriate RMA and ascertain whether the RMA has exercised or propose to exercise their flood risk management functions. Once complete we are required to publish the results of our investigation.

Flooding is often caused by a complex range of factors, and investigating flooding can therefore be a very time consuming and costly exercise. It is therefore critically important that the Council uses the resources available in the most effective way possible, and in the way that the law requires us to. We have carried out a number of <u>Flood Investigation Reports</u> which are publically available on the Council website, and it is this experience that has influenced the criteria that we consider when assessing whether a formal investigation under s.19 will be carried out.

The threshold for triggering a s.19 flood investigation is defined as follows:

- Internal flooding to 5 or more residential or commercial properties in a particular geographic area; and / or
- Essential infrastructure disruption for over 5 hours.

As Northumberland is predominantly rural, the effect of internal flooding of a property can have a significant economic and social impact on the local community, which is why we have decided to set the threshold at this low level. Internal flooding is when flooding enters the threshold of your home or property; this does not include gardens and detached garages.

Essential infrastructure includes the essential services and networks on which we depend to function, such as key transport, power and water treatment assets. A full definition of essential infrastructure, taken from the <u>National Planning and Practice Guidance; Flood Risk</u> <u>and Coastal Change</u>, is provided in the glossary.

While every reported flood incident may not trigger a formal s.19 investigation, we are always keen to receive details and information of flooding incidents, regardless of scale. Such information assists us in understanding how the drainage network operates and where weaknesses might exist.

All information collected, whether resulting in a formal s.19 investigation, or not, is then used in conjunction with our own records and with predictive modelling to determine the nature and priority of our risk management activities. We carry out studies to investigate flood mechanisms in known high risk areas to understand the risk and potential mitigation options in more detail. The outcomes of these studies are used to inform the capital and operational expenditure plans and are also used to prioritise flood risk management projects.

The threshold for investigating flooding will be reviewed on an annual basis by the Northumberland Strategic Flood Risk Management Group.

Information on recent or historic flooding incidents, including reports, photographs, maps and video clips can be sent to <u>fcerm@northumberland.gov.uk</u>

5.5.4 Measure 1.4

Develop and maintain the Flood Risk Asset Register to identify key flood risk assets and who is responsible for their maintenance.

- Identify key flood risk asset owners and develop a maintenance programme with them (particularly key for riparian owners);
- Continue to update the Flood Risk Asset Register with significant assets identified during flood investigations and the preparation of flood risk studies; and
- Establish effective regimes to share flood risk asset information between Council departments and risk management authorities.

As required by <u>Section 21 of the Flood and Water Management Act 2010</u>, Northumberland County Council, as LLFA, maintains a Flood Risk Asset Register of significant flood risk structures and features, which includes information on ownership and condition. We currently update the register where a flood investigation identifies an asset of flood risk importance.

We will continue to update the asset register as and when informal and formal defences are identified through flood investigations and flood risk studies and include information on asset ownership to identify maintenance responsibilities.

We will also aim to further develop our register through close communication with the Development and Delivery team to identify new Sustainable Drainage Systems (SuDS) installed as part of new developments. We will also continue to liaise with the Environment Agency with regards to sharing flood risk asset information currently held on their Asset Management Database.

5.6 Objective 2

Promote sustainable development to reduce local flood risk with consideration to the anticipated impact of climate change

5.6.1 Measure 2.1

Inform planning policy to encourage new development in low risk areas and to restore flood plains and promote sustainable, resilient development.

- Ensure the evidence base is up to date and regular updates are made as necessary (significant flood event, update to the Northumberland Local Plan evidence base, new legislation);
- Continue to work with Development and Delivery and Planning and Housing Policy Teams to provide advice on local flooding matters and assist with the development of policies that are informed by a sound evidence base;
- Follow established protocols of consultation of planning applications to enforce planning policies from a flood risk perspective; and
- Where reasonably practicable require all new development located in catchments with known flood risk issues to achieve a reduction in greenfield runoff (50% reduction in brownfield runoff).

The Planning and Housing Policy Team are currently working with the Flood and Coastal Erosion Risk Management Team to carry out a Level 2 Strategic Flood Risk Assessment (SFRA) and Detailed Water Cycle Study (WCS) to ensure flood risk and water resources are considered fully within the Core Strategy and help develop local area specific policies.

To ensure planning decisions fully consider flood risk implications and where possible reduce existing flood risk to the local area the Flood and Coastal Erosion Risk Management Team have asked to be consulted formally on planning applications where the development is greater than 0.5ha in size, greater than 10 dwellings, adjacent to a watercourse/coast or likely to be susceptible to coastal erosion.

Prior to a planning application being submitted we encourage developers and their agents to contact our Flood and Coastal Erosion Risk Management Team to discuss flood risk and drainage aspects of the proposed development in instances where formal consultation with the team will occur.

5.6.2 Measure 2.2

Ensure appropriate and adequate sustainable drainage solutions are included in all new developments.

- Continue to promote awareness of flood risk implications and the use of SuDS in planning decision making;
- Produce local SuDS guidance to guide developers and their consultants seeking approval and adoption of SuDS by Northumberland County Council;
- Approve, adopt and maintain SuDS, in line with statutory requirements and arrangements set out in the local SuDS guidance and where the criteria for adoption is met;
- Work in partnership with Northumbrian Water to understand existing capacity of sewage treatment works and sewerage systems to ensure that new development does not increase surface water flooding as a consequence of capacities being exceeded; and
- Identify contributions to flood mitigation schemes through the development management process.

At present we do not have a formal position or guidance on the use of SuDS within Northumberland. However, we strongly encourage their use throughout any new development in Northumberland. We have been pursuing setting the policy for the use of SuDS within the emerging Core Strategy and within Neighbourhood Plans.

We will consider adopting and maintaining certain SuDS features on a case-by-case basis. However in all instances the features must be constructed to best practice guidance and we will require an agreed funding mechanism to be in place to ensure the on-going maintenance.

On the 6th April 2015 Northumberland County Council, as the Lead Local Flood Authority, became a statutory consultee for major planning applications with surface water implications.

Major development will be:

- Residential Development: 10 dwellings or more or residential development with a site area of 0.5 hectares or more where the number of dwellings is not yet known.
- Non Residential Development: Provision of a building or buildings where the total floor space to be created is 1000 square metres or more or where the floor area is not yet known, a site area of 1 hectare or more

Therefore any major development that is submitted will require a Drainage Statement or an extended section within its Flood Risk Assessment looking at the disposal of surface water from the development. Any new major development that is submitted to Northumberland County Council will need to incorporate SuDS within its design and to adhere to National Standards and local guidance.

The purpose of this change is to strengthen existing planning policy to ensure that sustainable drainage systems will be provided in new major developments where appropriate. The planning practice guidance has been updated to reflect these changes and non-statutory technical standards for the design, maintenance and operation of sustainable drainage systems have been published on-line.

Developments that fall outside of the definition of *major development* may have cumulative impacts on surface water. Where such proposed developments are located within areas of known flood risk, we will endeavour to comment on such proposals, for which we may require a Drainage Statement to be submitted and SuDS incorporated within their design.

The Development and Delivery and Planning and Housing Policy teams currently work closely with Northumbrian Water to identify where new development may have a detrimental effect on existing surface water, foul water and combined sewerage systems. This approach identifies issues and consequently a solution before development begins.

5.6.3 Measure 2.3

Advocate a catchment wide approach to sustainable development and land management practices to contribute towards reducing flood risk, better water quality and wider environmental benefits.

- Ensure that Water Framework Directive (WFD) Assessments are undertaken where development may impact waterbodies and prevent WFD objectives being met; and
- Continue to work with RMAs, universities, developers, landowners and other similar organisations to promote and develop natural flood management schemes to reduce risk posed to rural communities.

5.7 Objective 3

Actively manage flood risk and drainage infrastructure to reduce likelihood of flooding

5.7.1 Measure 3.1

Use our understanding of flood risk throughout Northumberland to develop risk based, long term maintenance procedures for management of our existing key flood assets.

- Review and monitor the risk based approach to highway gully maintenance; and
- Continue to follow established approach to consenting works to ordinary watercourses.

We have identified approximately 1000 flood prone gullies throughout Northumberland. Gullies have been identified by number of call outs and where we have known risk to public safety and property. The number of flood prone gullies does not remain static due to upgrade works and extreme weather events.

We have developed a risk based approach, which prioritises gully maintenance based on the <u>Environment Agency Flood Map for Planning</u> and known issues. Where a gully is located within a known flooding hotspot it is targeted on a quarterly basis. Where it forms part of the strategic network it is targeted annually. We aim to target all other gullies on a biennial basis.

We plan to review this gully prioritisation methodology in the future to take account of evolving risk information.

In accordance with <u>Section 23 (1) of the Land Drainage Act 1991</u> any culverting or works affecting the flow of an ordinary watercourse requires written consent from Northumberland County Council. We will continue to follow our established procedure to consenting works to ordinary watercourses and have a web page dedicated to <u>consenting on watercourses</u>, which provides further information on when consent is required and the application process.

We will review our consenting procedure on a regular basis, informed by the asset register, recent flood events and community engagement responses.

5.7.2 Measure 3.2

Ensure our limited resources are invested in higher risk priority areas where measures will improve social, environmental and economic benefits.

- Continue to work with RMAs and other interested stakeholders to manage flood risk and identify multi-beneficial solutions;
- Review and update the LFRMS Action Plan on an annual basis;
- Prioritise work with consideration of Defra's outcome measures, and the availability of funding;
- Use the flood risk asset register to inform maintenance activities; and
- Prioritise and deliver a programme of studies, investigation and works in line with available funding routes and with consideration of the severity and frequency of flooding.

We will continue to work with RMAs and other interested stakeholders to reduce flood risk, and identify solutions that provide multiple benefits. Multiple benefits can include improved water quality, improved biodiversity, improvements to public green space and streetscapes, subsequently improving human health and wellbeing.

The EA monitor the performance of the national flood and coastal erosion risk management programme using outcome measures. Outcome measures consider the severity and frequency of flooding, overall economic risk and opportunities for environmental improvements. We will continue to prioritise our work towards where the greatest outcome measure can be made, with consideration of the availability of funding.

The LFRMS Action Plan will be reviewed annually or following a significant flood event and updated, where applicable, to reflect current priorities, funding availability and timescales for delivery.

We have developed a prioritisation and funding process in partnership with Northumbrian Water and the Environment Agency, this process aligns with the National funding strategy and assesses schemes using a risk based approach.

Northumberland County Council Northumberland County Council – Local Flood Risk Management Strategy

5.7.3 Measure 3.3

Seek partnership working opportunities so that those that benefit from existing or proposed flood risk assets can contribute towards their planning and management.

• Promote local choice by working collaboratively with RMAs, developers, landowners and community groups to attract funding and deliver the most effective solutions.

We will work collaboratively with all key stakeholders to ensure partnership working opportunities are realised. We will continue to work with existing communities, landowners, developers and risk management authorities to assess existing risk and to mitigate future risk.

5.8 Objective 4

Encourage communities to become more resilient to flooding by increasing public awareness and understanding their concerns

5.8.1 Measure 4.1

Engage with communities through existing groups and networks to raise awareness of the flood risk within their area.

 Work with existing groups and Parish and Town Councils to identify and develop appropriate ways to engage with local communities and support flood actions plans.

We believe that communication is key to the success of the planned response. As part of our communication and engagement strategy we will support an engagement officer, funded by Local Levy until the end of the 2016/2017 financial year. The officer works with communities across Northumberland (and Tyne & Wear). The aim of this role is to build community resilience by:

- ✓ Working with communities to better prepare them for flooding;
- Establish where possible community flood action plans or full resilience plans for all severe weather events;
- Working through flood issues in order for communities to better understand the flooding problem, and
- ✓ Introduce the whole catchment management approach to help people understand the effects of their actions on communities downstream.

5.8.2 Measure 4.2

Use a range of media techniques to increase the potential for community engagement.

- Publish information on the website to inform communities of flood risk and how to be better prepared and update as new information becomes available;
- Maintain and update the LLFA section on the Northumberland County Council website;
- Ensure final version and future updates of the local strategy are freely available to the public in a range of formats; and

• Identify groups of people within the community that may be more vulnerable to flooding and ensure that engagement activities are communicated in a suitable format.

We currently publish all information through the Northumberland County Council <u>Flood Risk</u> <u>Management</u> webpage. The webpage includes links to the Northumbria Flood Action plan, our Section 19 Flood Investigation Reports and an explanation of our powers and duties as LLFA.

The engagement questionnaire findings showed us that people would prefer to receive information through the Northumberland County Council website, although leaflet and letters through doors and information in local newspapers also scored highly.

The Equality Impact Assessment undertaken as part of this Strategy has indicated that people are potentially more vulnerable to flooding due to age, disability and race. A strategy will be developed around these findings to ensure that the communication strategy focuses on the delivering the flood risk message to these communities.

5.8.3 Measure 4.3

Help communities understand the benefits of local flood plans and the importance of local flood risk assets in terms of community resilience and preparedness for flooding.

Work with communities to raise awareness of the benefits of local flood plans which will
provide a better understanding of local flood risk and the location of important drainage
assets in their area.

Community Agreements and Local Flood Plans are being developed with interested communities across the county. The purpose of a Community Agreement is to:

- ✓ Outline the roles and responsibilities of the official responding organisations and the community, so that people know who does what, and when;
- Improve lines of communication to ensure that the Council's response during flood events can be better coordinated and directed to areas of greatest need;
- ✓ Assist the community to take action in the early stages of a flood event;
- ✓ Work with communities to help themselves become more resilient to flood risk.

Resources will be directed towards communities at greatest risk and where there is a willingness and commitment within the community to work with us to deliver agreements.

An assessment of each flood source is included within the NCC Flood Action Plan (FAP) which identifies risk levels, properties at risk, command and control structures and rest centre options. The FAP is generally updated after a large flood event or as new information becomes available.

5.9 Objective 5

Be better prepared for flood events and post flood recovery

Northumberland

Northumberland County Council Northumberland County Council – Local Flood Risk Management Strategy

5.9.1 Measure 5.1

Monitor and analyse warnings issued by the Environment Agency and Met Office to coordinate and prepare our response to extreme weather events.

- Ensure the Northumberland County Council Flood Action Plan remains current and in line with latest flood and weather warning guidance;
- Develop a communications plan to support communities; and
- Work in partnership with the Environment Agency and other partners when responding to a flooding incident.

Northumberland County Council's Flood Action Plan is recognised as Section 2.1 of the Northumbria LRF Multi Agency Flood Plan.

The plans provide a response to fluvial and coastal flooding based on flood warnings issued by the Environment Agency. Northumberland County Council's Flood Action Plan is available on the Council's website.

The plan will be activated in the following scenarios:

- ✓ Flood Alerts and Flood Warnings issued by the Environment Agency;
- ✓ Upon the receipt of Severe Weather Alerts or Warnings, Extreme Rainfall Alerts or Flood Guidance Statements that indicate an increased risk of flooding;
- ✓ Public reports of flooding to be addressed between the Northumberland Fire and Rescue Service Flexi Duty Group Manager, Highways and Neighbourhood Services Manager and the Duty Civil Contingencies Officer;
- ✓ Reports by operational staff of flooding incidents are being reported.

Seven rapid response catchments have also been identified within the Northumberland Flood Action Plan. These are catchments which could flood within a two hour period. These catchments are Acomb, Bellingham, Greenhead, Kielder, Otterburn, Stocksfield and Wark.

The Northumberland Flood Action Plan is updated annually, or after a major flood event. All emergency response teams, including the Environment Agency are part of the group which are consulted when the document is updated.

5.9.2 Measure 5.2

Continue to work with other risk management authorities and partners to ensure consistent and efficient emergency response plans and support those who have been affected by flooding.

- Help communities to develop Local Flood Plans and Community agreements
- Identify critical infrastructure at risk and develop resilience plans; and
- Identify and support communities that would benefit from having a local flood forum and help to develop Community Agreements / Local Flood Plans.

Due to the rural nature of the county, it is important that the local objectives, specific measures and actions ensure that flood risk messages are delivered to all communities and to ensure everyone has a voice and influence as promoted within the <u>Sustainable Community Strategy</u> for Northumberland.

The Northumbria LRF Flood Plan identifies the need for greater preparation and resilience against flood risk. This will involve an understanding of current flood risk, investing in assets to build resilience and to ensure emergency procedures can be utilised when needed. We will continue to carry out this work and review our approach on a regular basis.

5.9.3 Measure 5.3

Use our local knowledge of flood risk to prioritise actions in advance of a potential flood incident

 Utilise the natural links between the FCERM Team and Civil Contingencies Team to promote and co-ordinate flood response and preparedness across key teams within the authority.

The response of flooding is already well co-ordinated and all key teams understand their role in extreme flood events.

5.10 Action Plan

The resultant actions derived from the local objectives and more specific measures introduced in Sections 5.5 to 5.9 above are provided in the Action Plan (see Appendix D).

Indicative timescales for implementing the various actions have been identified within the Action Plan. Actions are allocated a short, medium or long term timescale for implementation. Short term actions have been categorised as taking place in the next two years, medium in between 2-5 years and long term actions above 5 years.

Northumberland County Council will endeavour to achieve the indicative timescales attributed to each action, however, due to the limited resource, and the unpredictable nature of flood events, actions may need to re-prioritised. Section 6.1 provides a list of key factors that are taken into account in the prioritisation of actions.

In addition to timescale, each action includes the following detail:

- Lead RMA and any key stakeholders;
- Date to review; and
- Links to other related plans or strategies.

5.11 Equality in Northumberland

An Equality Impact Assessment was undertaken to understand the effect of flooding on people with different 'protected characteristics'. The Equality Impact Assessment focuses on the protected characteristics of age, disability and race. These have been focused on as they include people who may be at higher risk if a flood event occurred.

The action plan has considered key points that were identified within the Equality Impact Assessment in relation to each of the protected characteristics. Some of the key points for consideration are shown in Table 5-1.

Protected Characteristic	Key Points for Consideration		
Age	 Northumberland has a larger population of people aged 65 or above when compared to the national average Greater percentage of older people living in the rural areas to the north and west of the County Recovery time after a flood event Vulnerability to the effect of flooding Access to digital information 		
Disability	Access to informationVulnerability to the effect of flooding		
Race	Access to information and resources (language)		

Table 5-1	Equality	y - Protected	Characteristics
		,	•

6 DELIVERING THE STRATEGY

6.1 How will we Prioritise Flood Risk Management Activities?

In order to better understand flood risk across Northumberland, further assessments of the areas, sources and extents of flood risk will need to be completed. The type of assessment required will depend upon the complexity of the problem; however it may be necessary to develop a Surface Water Management Plan (SWMP), or another technical study, to assess the interaction between drainage systems.

These assessments would then enable appropriate design options to be identified, sufficient for a funding application to be made. Recognising that some areas will have a greater level of flood risk than others, it will be necessary to prioritise the areas requiring further assessment.

So that resources and funding are targeted at those areas and activities of highest importance we will, therefore, prioritise our activities based on:

- Historic and on-going flood risk;
- Availability of funding and external contributions;
- Identified benefits to properties, communities, businesses and/or infrastructure;
- Where there is strong community engagement;
- Where there are opportunities to support economic growth;
- Where there are opportunities to work collaboratively with other Risk Management Authorities (RMAs);
- The delivery of multiple benefits, including wider environmental benefit; and
- Feedback from consultation with internal and external stakeholders.

This prioritisation process will build up a picture over time of the most beneficial flood risk management projects within the highest risk areas, allowing Northumberland County Council and our partners to focus efforts on funding local projects.

However, it must be recognised that it is possible for projects to advance more quickly than the initial prioritisation if local funding becomes available which would 'unlock' a project's potential for moving forward. In this way local communities and organisations could consider investing in raising local contributions as beneficiaries of a proposed scheme in order for it to be realised.

We have undertaken an assessment of properties at risk of flooding from surface water flooding across Northumberland using the Environment Agency dataset 'risk of flooding from surface water' which is publically available on the <u>Environment Agency website</u> (see Sections 3.5 and 3.6). This assessment identifies the number of properties (residential and commercial) and critical infrastructure at risk both across the County and within the main settlements.

Moving forward, the property count assessment (along with the factors listed in the above bullet points) will be used to inform future investment in local flood risk management activities.

6.2 Funding Flood Risk Management

In the main, flood risk management projects are funded by a combination of the following funding streams:

- National funding FCERM-GiA, (Grant in Aid);
- Regional funding Local Levy; and
- Local / other funding contributions.

The sources of funding for flood risk management can be summarised as shown in Figure 6-1.



Figure 6-1 Sources of Funding for Flood Risk Management

6.2.1 Flood and Coastal Erosion Risk Management Grant in Aid

FCERM-GiA is the capital budget set aside by central government for flood defence projects across England. Following consultation during 2011, Defra introduced a new approach to the funding of flood risk management capital projects, termed 'Flood and Coastal Resilience Partnership Funding'. The key benefits of this approach are:

- Communities, through their Regional Flood and Coastal Committees (RFCC's), can take decisions on which projects should proceed, based on local willingness to contribute towards the benefits that would be delivered;
- The programme of capital works will be prioritised based on the damages being prevented by the project, and
- A higher proportion of capital projects can be eligible for some government funding, subject to resources being available.

The amount of schemes that can qualify through this route each year is limited and will be dependent of the funding score they achieve. All schemes are required to complete a FCERM appraisal in line with Defra's policy statement. The FCERM appraisal aims to:

- Work with natural processes;
- Adapt to future risk and changes (like climate change); and
- Work with others to deliver better, more sustainable solutions which can deliver wider objectives and maximise benefits for people, businesses and the environment.

The FCERM appraisal process uses a risk based approach. This means that the likelihood and the consequences of flooding are taken into account when assessing the preferred option. Economic, social and environmental impacts (both positive and negative) should be assessed.

Once appraisals are carried out they are assessed by the Environment Agency against Outcome Measures (see Table 6-1) to prioritise schemes taken forward for approval.

Outcome Measure (OM)	Explanation
OM1	Economic benefits
OM2	Households moved from one category of flood risk to a lower category
OM3	Households better protected against coastal erosion
OM4	Statutory environmental obligations fully met through flood and coastal erosion risk management

Table 6-1: Defra Outcome Measures

The Environment Agency will then prioritise the funding in the following order:

- Projects, for legal or health and safety reasons, need to be completed the following year;
- Projects, with approved levels of funding, which are already under construction; and
- New projects which are prioritised based on the benefits they will deliver, taking into account the timing and availability of external contributions.

6.2.2 **Regional Funding Local Levy**

Money raised by LLFAs that has not been provided through FCERM-GiA funding. This funding is sought through the <u>Northumbria Regional Flood and Coastal Committee (RFCC)</u>. This funding supports FCERM projects which are:

- Unable to meet the criteria for FCERM-GiA funding, but deemed beneficial to the management of flood and coastal erosion risk on the grounds of innovation and local priorities;
- Unable to attract full funding under FCERM-GiA or only at a later stage, but for which a contribution will enable its inclusion at the desired time; and
- Feasibility studies for RMA schemes which would otherwise not attract FCERM-GiA but enable the committee to develop a strategic longer term programme.

It should be noted that the mechanism for attracting FCERM-GiA or Local Levy funding gives priority to the protection of residential properties.

6.2.3 Local Funding

Local funding is a key initiative of the new funding structure; if a scheme does not achieve a funding score of 100% then other funding sources are required to meet the difference. This funding can be obtained through some of the areas shown in Table 6-2.

Funding Source	Description
Private beneficiary investment	Contributions can be made from private organisations or individuals. This usually takes place if the owner of an asset will benefit from the scheme.
Other Risk Management Authorities (RMAs)	Other RMAs may contribute towards a scheme if there are joint benefits, this could include Northumbrian Water, highway authority and internal drainage boards.
Developer contributions through Section 106 agreements	Planning obligations, or 'Section 106 agreements' are a well-established mechanism for securing funding for agreed issues arising from a development proposal.
Community Infrastructure Levy	A levy that local authorities can choose to charge on new developments in their area. It is a charge on new development to help pay for supporting infrastructure that the Council, local communities and neighbourhoods want.

Table 6-2: Funding Sources

Northumberland County Council Northumberland County Council – Local Flood Risk Management Strategy

Funding Source	Description
Other	There are many other sources of funding which include environmental or social initiatives. This can include EU grants, lottery funding, Regional Growth Fund and NGO support.

Collaborative working between RMAs is necessary to secure funding to address local flood risk issues. For example, Northumbrian Water projects are funded through Asset Management Plans (AMP's) which are agreed with OFWAT on a five year cycle. The AMP6 cycle will commence in 2015/2016 and outline investment funds available for infrastructure upgrades to reduce flooding from sewers.

Northumberland County Council Northumberland County Council – Local Flood Risk Management Strategy

7 DELIVERY OF WIDER ENVIRONMENTAL OBJECTIVES

7.1 Identification of Environmental Opportunities

The implementation of the Strategy within Northumberland provides a significant opportunity to improve the natural, rural and built environment. This includes helping to provide better environments for residents and businesses as well as improving biodiversity and local habitats for wildlife. The Flood and Water Management Act 2010 states that the Strategy must specify how it will contribute to the achievement of wider environmental objectives and sustainable development. Potential environmental impacts have been considered in the Strategic Environmental Assessment, which has been produced to support the implementation of this strategy and consist of documents specific to Northumberland.

Northumberland County Council is committed to the protection and enhancement of locally, nationally and internationally recognised environmental sites. Whilst a Strategic Environmental Assessment (SEA) has been undertaken as part of the development of Strategy, there is considerable uncertainty involved in strategic assessments at this level. Therefore, during the development of any specific measures or actions emanating from this Strategy, further appropriate environmental appraisal work will be undertaken at project level.

Environmental impacts will, therefore, be considered as part of any flood risk management activities. Appropriate assessment will be made at every stage and we will not pursue any activities which could result in a negative environmental impact within Northumberland or in neighbouring LLFA areas.

Key environment issues and objectives identified within the SEA are shown in Table 7-1.

Key Environmental Issue	Draft SEA Objective
Northumberland's population is projected to continue growing, with a heavy concentration of residents living in the urban areas to the South East of the County.	
The number and proportion of people within the age group 65+ is also expected to increase.	Help to tackle deprivation, rural isolation and reduce inequalities between different groups and
Demands on healthcare in the County are most likely to increase due to a growing population and an increasingly elderly population.	communities
There are concentrations of deprivation within the main settlements to the South East of the County.	
Climate change is anticipated to exacerbate flood risk.	Improve resilience to the effects of flooding and climate change
Northumberland contains a rich diversity of protected and valued heritage assets.	Protect the condition and setting of landscape and heritage assets

Table 7-1: Key Environmental Issues

Council Northumberland County Council – Local Flood Risk Management Strategy

Draft SEA Objective
Protect, restore and enhance
the quality, functionality and connectivity of green and blue infrastructure
Support the growth of a resilient local economy and housing market

7.2 Environmental Sites in Northumberland

A number of Sites of Special Scientific Interest (SSSI's) are present in Northumberland. SSSI's are considered as the country's best wildlife and geological sites. With pressure from development, pollution, climate change and unsustainable management, it is essential to conserve the natural heritage for both current and future generations. According to Natural England, there are over 4,100 Sites of Special Scientific Interest (SSSI's) in England covering 8% of the country's land area. This includes approximately 114 sites in Northumberland.

The Habitats Directive requires EU Member States to create a network of protected wildlife areas, known as Natura 2000, across the European Union. This network consists of Special Areas of Conservation (SACs) and Special Protection Areas (SPAs), established to protect wild birds under the Birds Directive. These sites are part of a range of measures aimed at conserving important or threatened habitats and species. There are 6 SPAs within or partially within Northumberland and 1 SAC.

Ramsar sites are wetlands of international importance designated under the Ramsar Convention. Within Northumberland there are 4 Ramsar sites.

Within Northumberland there are approximately 25 Local Nature Reserves, some of which are also considered as Sites of Special Scientific Interest (SSSI's). These Local Nature Reserves

are sites that have value for wildlife conservation and biodiversity, as well as being close to communities with a genuine need for access to natural open space.

Further information on the environmental sites in Northumberland can be found within the SEA report, which has been produced to support the implementation of this strategy. Plate 26, of Appendix B, displays the location of some of the key environmental sites throughout Northumberland.

7.3 Historic Sites in Northumberland

As stated in the SEA, Northumberland contains a variety of features recognised for their heritage value. These include Hadrian's Wall World Heritage Site, listed buildings, scheduled monuments, conservation areas, historic parks and gardens, battlefields and wrecks. Statutory Listed Buildings are found throughout the county, with concentrations in the main towns and smaller settlements. These include a range of historic buildings and structures such as Norman Castles, country houses, fortified farmhouses, and buildings associated with the County's diverse social, economic and cultural legacy. The breadth of heritage in Northumberland stretches to pre-historic times. Many of these features fall within or are adjacent to Environment Agency Flood Zones 2 and 3, and areas at risk of surface water flooding. There is therefore potential for the setting and character of these heritage assets to be affected by flood events.

There are also a number of historic landscapes throughout the County, including the Northumberland Coast and North Pennines Areas of Outstanding Natural Beauty. Hadrian's Wall World Heritage Site (which is also a Scheduled Ancient Monument) located to the south of the County is of particular importance for its heritage value.

Heritage assets, designated or otherwise, are required to be conserved in a manner appropriate to their significance. Guidance on what constitutes significance can be found in the English Heritage publication *Conservation Principles, Policies and Guidance*: 2008. In some circumstances, the setting of a heritage asset may contribute to its significance.

English Heritage have identified that there is a medium risk that flooding could affect access to Warkworth Castle and Hermitage. Although this risk assessment is focused in tidal flood risk and erosion, the site has also been known to have flooded due to heavy rainfall.

Flooding has the potential to cause destruction of some heritage assets (examples include bridges, weirs and mills). Frequent flooding could give rise to an inability to secure insurance against damage, leading to spiralling depreciation in levels of investment and potentially causing a loss of value.

Careful interventions can enhance the historic environment.

7.4 Complementary environmental plans and strategies

A number of environmental plans and strategies exist that we will draw on through the delivery of local flood risk management to ensure consistency with and achievement of wider environmental objectives.

These have formed a key part in developing the objectives and measures for managing local flood risk over the coming years as part of the Strategy. An explanation of these can be found in the SEA document.

7.5 Delivery of wider environmental objectives

Table 7-2, overleaf, demonstrates how the Strategy will seek to contribute towards wider social and environmental objectives.

Objective	Local Flood Risk Management Strategy Activities
Help to tackle deprivation, rural isolation and reduce inequalities between different groups and	Continue to improve knowledge of local flood risk issues through liaison with established community groups and through requesting information from Parish Councils and online questionnaires.
communities.	Develop a communications plan for all key fisk management authomies.
Improve resilience to the effects of flooding and climate change	In higher risk priority areas undertake studies to investigate local flood risks and identify how future development and climate change impacts may affect local communities.
Protect the condition and setting of landscape and	Develop a better understanding of the location, condition and ownership of significant flood defence and drainage assets using a risk based approach. Continue to work with planners, council members and risk management authorities to manage flood risk and identify multi-beneficial solutions.
heritage assets	Use local knowledge and indicative flood risk areas to ensure our limited resources are used to investigate and understand local flood risk in higher risk priority areas.
Protect, restore and enhance the quality, functionality and connectivity of green and blue infrastructure.	Continue to work with risk management authorities, universities, developers, landowners and other similar organisations to promote and develop natural flood management schemes to reduce risk posed to rural communities.
Support the growth of a resilient local economy and housing market.	Continue to work with Development and Delivery and Planning and Housing Policy teams to provide advice on local flooding matters and assist with the development of policies that are informed by a sound evidence base. Encourage developers, statutory consultees and local planning teams to work closely with the FCERM team at the master planning stage as drainage implications could influence site layout. In higher risk priority areas undertake studies to investigate local flood risks and identify how future development and climate change may affect

Table 7-2: How Strategy Contributes to Wider Environmental Objectives

8 IMPLEMENTATION, MONITORING AND REVIEW

8.1 Delivery

This strategy will provide a framework for the delivery of our flood risk responsibilities as a LLFA. The Strategy should be considered a 'live' document which will evolve over time as new policy, guidance and data becomes available.

The Action Plan provided in Appendix D details the measures and actions that will be taken to deliver the Local Objectives. For each measure a number of actions have been identified and for each of these the proposed funding route, timescale for implementation, and delivery lead and partners have been identified.

The Action Plan will be the key mechanism through which progress in meeting the Local Objectives will be monitored and will be reviewed annually or following a significant flood event and updated, to reflect current priorities, funding availability and timescales for delivery.

8.2 Monitoring

The Strategy will be monitored by the Northumberland County Council Flood and Coastal Erosion Risk Management (FCERM) Team. The team will monitor progress of the action against the proposed milestones.

The Northumberland Strategic Flood Risk Management (FRM) Group will monitor delivery of the Strategy. The following are key members of the core team steering group:

- Northumbrian Water;
- Environment Agency;
- FCERM Team, Northumberland County Council;
- Civil Contingencies Team, Northumberland County Council; and
- Planning and Housing Policy Team, Northumberland County Council.

The Group will monitor progress against actions and milestones on a quarterly basis.

8.3 Review

The Action Plan will be reviewed and updated on an annual basis by the FCERM Team within Northumberland County Council. The team will liaise with both internal and external stakeholders where necessary.

It is proposed that a review of the Strategy should be scheduled for 2020, and thereafter every six years (as a minimum) to coincide with the requirement under the Flood Risk Regulations 2009 to revise the Flood Risk Management Plan.

However, the Strategy should be viewed as a dynamic strategy and may require review more regularly to recognise specific changes. Potential triggers for a review of the Strategy may include:

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- Occurrence of a significant and widespread local flood event;
- Significant changes to datasets or information which may alter the understanding of risk within Northumberland;
- Significant amendments to the legal responsibilities and/or roles and functions of Risk Management Authorities and/or other organisations;
- Annual Monitoring identifies that the Strategy is not achieving its objectives; or
- Change in funding availability which has a significant effect on the Strategy Action Plan.

8.4 Consultation

An initial engagement exercise was carried out via the Northumberland County Council consultation portal in the summer of 2014 for a period of two months. The consultation provided residents, businesses and organisations the opportunity to voice their opinions and personal experiences of flood risk management within the County. Those opinions have been considered in the development of the draft Strategy.

Consultation on the draft Strategy ended on the 24th April 2015. A full response to the consultation feedback can be found in Appendix G. The feedback has provided further clarity on the issues important to the community. We believe that the actions and measures proposed meet those requirements.

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APPENDIX A REFERENCES

	Reference	Date	Author	Web Link
	Sir Michael Pitt Report 'Learning Lessons from the 2007 Floods'	2008	Cabinet Office	http://www.environment- agency.gov.uk/research/library/publications /33889.aspx
	National Planning Policy Framework	2012	Communities and Local Government	http://www.communities.gov.uk/documents/pl anningandbuilding/pdf/2116950
	Technical Guidance to the National Planning Policy Framework	2012	Communities and Local Government	http://www.communities.gov.uk/publications/pl anningandbuilding/nppftechnicalguidance
lation	The Flood and Water Management Act	2010	HM Government	http://www.legislation.gov.uk/ukpga/2010/2 9/contents
Legis	The Flood Risk Regulations	2009	HM Government	http://www.legislation.gov.uk/uksi/2009/304 2/contents/made
	Land Drainage Act 1991	1991	HM Government	http://www.legislation.gov.uk/ukpga/1991/5 9/contents
	The Highways Act 1980	1980	HM Government	http://www.legislation.gov.uk/ukpga/1980/6
	EU Flood Directive	2007	European Union	<u>http://eur-</u> lex.europa.eu/LexUriServ/LexUriServ.do?ur i=CELEX:32007L0060:EN:NOT
Guidance	Living on the Edge	2012	Environment Agency	http://www.environment- agency.gov.uk/homeandleisure/floods/31626. aspx
	Private Sewers Information	2013	Thames Water Website	http://www.thameswater.co.uk/help-and- advice/8654.htm
	Developing Urban Blue Corridors – Scoping Study (FD2619)	2011	URS, Kingston University London and Croydon Council for Defra	http://randd.defra.gov.uk/Document.aspx?D ocument=FD2619_10152_FRP.pdf

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	Reference	Date	Author	Web Link
sment and Plans	Northumberland PFRA	2011	Northumberland County Council	http://www.northumberland.gov.uk/default.asp x?page=12684
	Northumberland SFRA Level 1	2010	Northumberland County Council	http://www.northumberland.gov.uk/default.asp x?page=12684
ind Asses	Northumberland SFRA Level 2	2015	Northumberland County Council	http://www.northumberland.gov.uk/default.asp x?page=12684
Northumberla	Northumberland Outline Water Cycle Study	2012	Northumberland County Council	http://www.northumberland.gov.uk/default.asp x?page=12684
	Northumberland Detailed Water Cycle Study	2015	Northumberland County Council	http://www.northumberland.gov.uk/default.asp x?page=12684
ailable support	Northumberland County Council	2014	Northumberland County Council	http://www.northumberland.gov.uk/default.asp x?page=12684
	National Farmers Union	2014	National Farmers Union	http://www.nfuonline.com/science- environment/flooding/
Ą	National Flood Forum	2013	National Flood Forum	http://www.nationalfloodforum.org.uk/



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APPENDIX B INFORMATIVE MAPPING

Attached separately or available at http://www.northumberland.gov.uk/Default.aspx?page=17422

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APPENDIX C K

KEY CONTACTS

Issue	Who to Contact	Contact Details
Blockages or damage to highways drains If your property is a at risk of flooding How to find out more about flooding warnings More information on available property protection measures	Northumberland County Council	Northumberland County Council County Hall, Morpeth, Northumberland, NE61 2EF Tel: 0845 600 6400 Email: ask@northumberland.gov.uk Website: www.northumberland.gov.uk
Obtain a Flood Defence Consent Maintenance of a Main River If your property is a at risk of flooding More information on available property protection measures	Environment Agency	Environment Agency North East Area Office, Tyneside House, Skinnerburn Road Newcastle Business Park, Newcastle-upon-Tyne, NE4 7AR Tel: 03708 506 506 Email: enquiries@environment-agency.gov.uk Website: www.environment-agency.gov.uk
If you are concerned that there may be a blockage in the public sewer	Northumbrian Water	Northumbrian Water Boldon House, Wheatlands Way, Durham, DH1 5FA Tel: 0345 717 1100 Floodline 0800 328 7648 Website: www.nwl.co.uk/business/sewer- flooding.aspx
Report flooding on a trunk road Report a blocked or damaged culvert under a trunk road	Highways Agency	Highways Agency Lateral, 8 City Walk, Leeds, LS11 9AT Tel: 08459 55 65 75 Email: ha_info@highways.gsi.gov.uk Website: www.highways.gov.uk

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Issue	Who to Contact	Contact Details
If your property is a at risk of flooding How to find out more about flooding warnings More information on available property protection measures	National Flood Forum	National Flood Forum Old Snuff Mill Warehouse, Park Lane, Bewdley, Worcestershire, DY12 2EL Tel: 01299 403 055 E-mail: info@floodforum.org.uk Website: www.nationalfloodforum .org.uk

APPENDIX D ACTION PLAN

Attached separately or available at http://www.northumberland.gov.uk/Default.aspx?page=17422

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APPENDIX E ENGAGEMENT PLAN

Tier	Stakeholder
Tier One - Core Team Key decision makers	NCC Flood and Coastal Risk Management Team
Tier Two – Strategic FRM Group Key contributors and information providers	NCC Planning and Housing Policy NCC Technical Services / Local Services & Housing Delivery NCC Civil Contingencies Environment Agency (statutory consultee on SEA) Northumbrian Water
Tier Three – Internal & External Stakeholders Data and contribution required, need to be aware of study findings. Need to be able to raise issues during study that might influence the findings.	 NCC = Local Services & Housing Delivery , Development and Delivery Team, Planning and Housing Policy Team, Property Services, Communications, Customer and Cultural Services, Estates, Highways, Local Transport Plan Officers, Children's Services, Public Protection/ Environmental Health, Car Parks, Members and Portfolio holders, Building Control, Environment & Sustainability, Civil Contingencies, IT/GIS, Housing Services, Revenues & Benefits, Adult Services, Climate change Officer External = Network Rail, Northumbria Police, Northumberland Fire and Rescue, Northumbria NHS, Northumberland National Park Authority, Northumberland Coast AONB / County Ecologist, English Heritage (statutory consultee on SEA), RSPB, Natural England (statutory consultee on SEA), National Trust, Housing Associations, Farmers/Large Landowners/ Estate Managers, Northumberland Wildlife Trust, Major Developers, Newcastle City Council, North Tyneside Council, Cumbria County Council, Durham County Council, Gateshead Council, Scottish Borders Council

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APPENDIX F RECORD OF KEY DECISIONS

Date	Item
17 th July 2014	Workshop with Northumberland County Council to key actions. Help to develop action plan
15 th August 2014	Responses to SEA and EqIA Scoping Report
1 st September 2014	Responses from Local Flood Risk Strategy engagement questionnaire
1 st November 2014	Confirmation of local flood risk objectives and action plan, incorporate consultation responses
5 th January 2015	Incorporation of comments from key stakeholders (Environment Agency and Northumbrian Water
22 nd January 2015	Consultation
4 th November 2015	Northumberland County Council approved the Local Flood Risk Strategy at a meeting of the Full Council.

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APPENDIX G CONSULTATION RESPONSE

The draft Northumberland Local Flood Risk Management Strategy (The Strategy) was made available for consultation between February and April 2015. The Strategy outlines how we, Northumberland County Council, intend to manage flooding in the area and collaborate with other Risk Management Authorities (RMAs) to manage all sources of flooding, now and in the future.

The Strategy will play an important role in formalising an integrated approach to local flood risk management in Northumberland by identifying local objectives and setting out measures with short, medium and long term actions. This approach will help us to manage flood risk in a way that delivers the greatest benefit to residents, businesses and the environment.

As part of the consultation on the Strategy, we asked for views on the following:

- · Whether the objectives we have identified for our Strategy are appropriate;
- · Whether the activities we have set out in our action plan are clear; and
- Whether our proposals for prioritising our flood risk management activities are appropriate.

A number of responses were received and we would like to thank everyone who replied. The sections below highlight some of the key points from those responses and how we plan to incorporate the comments into the Strategy.

Are the objectives we have identified for our Strategy are appropriate?

Most consultees agreed that the objectives identified were appropriate. One response went on to highlight that they particularly welcome greater clarity on leadership and responsibility for each source of flood risk. One response disagreed with the objectives and asked for clearer information on the sustainable development strategy and appropriate SuDS solutions.

In response to these comments we will endeavour to clearly report on progress against each objective on a regular basis. Further information on the development strategy for Northumberland will be included within the *Local Plan*. Success concerning sustainable development and SuDS implementation will be measured through Measures 2.1, 2.2 and 2.3 of the Strategy. The progress reports will be available through the Flood Risk Management page of the Council website.

Comments on progress are welcome and can be received using the e-mail address <u>fcerm@northumberland.gov.uk</u> or by writing to FCERM, Northumberland County Council, County Hall, Morpeth, Northumberland, NE61 2EF.

Do you agree or disagree with the actions we have proposed to deliver our objectives?

Most responses agreed with the actions proposed and one response states that the activities within the action plan are clear. A number of comments were received regarding the ongoing maintenance and monitoring of existing assets. A number of concerns were raised about the sustainability of maintenance on assets such as gullies, sewerage systems and Sustainable Drainage Systems (SuDS). One response disagreed with the objectives and stated that further information should be provided on the sustainable development and how it is being applied in Northumberland.

The FCERM Team has been consulted widely throughout the development of the Northumberland Local Plan. Strategic planning policies relating to flooding and SuDS requirements are contained within the Northumberland Core Strategy.

As of 6th April 2015 Lead Local Flood Authorities (LLFA) such as Northumberland County Council became statutory consultees on all planning applications over 1 ha or 10 or more dwellings for which we will review surface water drainage proposals. We will also endeavour to review development proposals located within a sensitive drainage area. Planning applications will be reviewed by the FCERM team on behalf of the LLFA, and any recommendations will form part of the planning conditions.

We are also in regular communication with Northumbrian Water and the Environment Agency to develop a collaborative and combined risk based approach to flood risk mitigation in Northumberland.

Do you agree with how we propose to prioritise our flood risk management activities?

The Strategy proposes prioritising activities based on a number of factors (as outlined in section 6.1). The consultation responses mostly agree with the list of prioritisation factors with concern raised on the surface water and pluvial flooding issues.

The factors will be considered on a site by site basis and funding prioritisation will be carried out in line with Environment Agency Flood and Coastal Erosion Risk Management Appraisal Guidance (FCERM-AG).

Given the need for partnership funding do you have any suggestions to improve funding opportunities?

Some consultation responses recommended that funding is received by central government policy. Further information on the mechanisms of central funding can be found in Section 6.2 of the Strategy. We aim to deliver flood mitigation schemes through a number of funding routes, including central government Grant in Aid (GiA) funding. It was also recommended that engagement continues to be carried out with local communities and businesses. One consultation response highlighted the number of ways that a community can contribute, this is not limited to financial contribution but can also include contributions such as voluntary maintenance and access to privately owned land. We acknowledge these forms of contributions and will ensure that they are highlighted in business cases.

One response highlighted that a long term strategy is required to mitigate against existing flood risk, combined with consideration of climate change and proposed development impacts. The strategy aims to achieve this through Local Objective 2 'Promote sustainable development to reduce local flood risk with consideration to the anticipated impact of climate change'.

We have outlined how we would like to work more effectively with local communities, Risk Management Authorities and other organisations. Are there any specific areas where you feel additional collaborative working would be of benefit?

Consultation responses outline that communication and engagement with residents and local community groups is welcome, although there was concern that there may not have been sufficient engagement in the past. The Strategy states (Measures 2.1 and 2.2) that we will aim to engage with communities through existing groups and networks, to raise awareness, using

a range of media techniques. We feel that we have had success in many areas of Northumberland but we strive to continually improve and measure progress against these measures.

Other comments

Other comments highlighted the importance of working across Council boundaries to ensure an integrated catchment wide flood risk approach. We agree with these comments and will continue to develop our relationship with the neighbouring authorities.

One comment highlighted the importance of the Local Plan and the Local Flood Risk Management Strategy being aligned. This has been a key objective for us and will measure progress through Measures 2.1, 2.2 and 2.3.

We are grateful for the site specific challenges highlighted in the consultation response for communities in Northumberland. The Flood Risk Management team will be reviewing these separately and will be in touch with the community groups in those areas directly.

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APPENDIX H GLOSSARY

Term	Definition
AEP	Annual Exceedance Probability
AStGWF	Areas Susceptible to Groundwater Flooding - Environment Agency predictive mapping of areas at risk of groundwater flooding.
BGS	British Geological Society
Category 1 Responders	As defined under Schedule 1 of the Civil Contingencies Act, Category 1 responders are "core responders" in the event of an emergency and include emergency services, local authorities, health bodies and Government agencies including the Environment Agency.
CDA	Critical Drainage Area - A discrete geographic area (usually a hydrological catchment) where multiple and interlinked sources of flood risk (surface water, groundwater, sewer, main river and/or tidal) cause flooding in one or more Local Flood Risk Zones during severe weather thereby affecting people, property or local infrastructure.
CFMP	Catchment Flood Management Plan - A high-level planning strategy through which the Environment Agency works with their key decision makers within a river catchment to identify and agree policies to secure the long-term sustainable management of flood risk.
Climate Change	Long term variations in global temperature and weather patterns estimated to be caused by natural processes and exacerbated by human actions (such as the burning of fossil fuels etc.).
Culvert	A covered pipe or channel designed to prevent the obstruction of a watercourse or drainage path by an artificial construction.
DG5 Register	A water authority held register (as required by OFWAT) of properties which are at risk of either internal or external sewer flooding due to hydraulic overloading (capacity exceedance).
EqIA	Equality Impact Assessment
Environment Agency (EA)	Environment regulator for England and Wales. Risk Management Authority responsible for management of flood risk from fluvial (main rivers), tidal and coastal sources of flooding and Reservoirs.
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
FCERM-AG	Defra. Environment Agency. 2013. Flood and coastal erosion risk management appraisal guidance

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Term	Definition
Flood defence	Infrastructure used to protect an area against floods such as storage reservoirs, floodwalls and embankments; they are designed to a specific standard of protection (SoP).
Flood Zone 1	Low probability of flooding, as defined by the Environment Agency.
Flood Zone 2	Medium probability of flooding. Probability of fluvial flooding is $0.1 - 1\%$. Probability of tidal flooding is $0.1 - 0.5\%$, as defined by the Environment Agency.
Flood Zone 3a	High probability of flooding. Probability of fluvial flooding is 1% (1 in 100 years) or greater. Probability of tidal flooding is 0.5%(1 in 200 years), as defined by the Environment Agency.
Flood Zone 3b	Functional floodplain, as defined by the Environment Agency.
Fluvial Flooding	Flooding resulting from water levels exceeding the bank level of a main river or ordinary watercourse
FRA	Flood Risk Assessment
FWMA	Flood and Water Management Act
GiA	Grant in Aid Growth and Acceleration Funding from Defra
Groundwater	Groundwater is all water that is below the surface of the ground and in direct contact with the subsoil or ground
Highways Act 1980	Sets out the main duties (management and operation of the road network) of highways authorities in England and Wales. The Act contains powers to carry out functions / tasks on or within the highways such as improvements, drainage, acquiring land etc.
HRA	Habitats Regulations Assessment
Lead Local Flood Authority (LLFA)	Lead Local Flood Authority. The statutory body defined under the Flood and Water Management Act responsible for the management of local flood risk, namely surface water runoff, groundwater and ordinary watercourses.
LFRMS	Local Flood Risk Management Strategy
LLFA	Lead Local Flood Authority – Northumberland County Council are the LLFA for Northumberland County
LRF	Local Resilience Forum
Main River	Main Rivers are the responsibility of the Environment Agency
National Planning Policy Framework (NPPF)	Sets out the Government's planning policies for England and how these are expected to be applied
NW	Northumbrian Water
Ordinary watercourse	A watercourse that does not form part of a Main River. This includes "all rivers and streams and all ditches, drains, cuts, culverts, dikes, sluices (other than public sewers within the meaning of the Water Industry Act 1991) and passages, through which water flows" according to the Land Drainage Act 1991.
Overland Flow	Flooding caused when intense rainfall exceeds the capacity of the drainage systems or when, during prolonged periods of wet weather, the soil is so saturated such that it cannot accept any more water.
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Term	Definition
PFRA	Preliminary Flood Risk Assessment
PSA	Potential Strategic Areas
Return Period	The average time period between rainfall or flood events with the same intensity and effect.
Riparian Owner	Anyone who owns land or property alongside a river or other watercourse. Responsibilities include maintaining river beds/banks and allowing flow of water to pass without obstruction.
Risk Management Authority (RMA)	Anyone who owns land or property alongside a river or other watercourse. Responsibilities include maintaining river beds/banks and allowing flow of water to pass without obstruction.
SA	Sustainability Assessment
SEA	Strategic Environmental Assessment
Section 19 Investigations	A requirement of the Flood and Water Management Act 2010 is to investigate flood events that the LLFA is aware of
SFRA	Strategic Flood Risk Assessment
SMP	Shoreline Management Plan
Standard of Protection (SoP)	The level of protection that a defence provides, measured in terms of flood intensity (e,g 1 in 100 year or 0.01% AEP)
uFMfSW	updated Flood Maps for Surface Water



Northumberland County Council

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