



St. Helens
Council

Local Flood Risk Management Strategy (LFRMS) 2019-2025

Cheshire and Mersey Catchment Group
Flood and Water Management Act 2010



A. Revision Schedule

A.1 Below provides a list of the final sign-off to this document:

Document Title:	Local Flood Risk Management Strategy (2nd Release).				
Revision:	Name:	Signature:	Position:	Date:	Stage:
Final	Matthew Catherall	<i>M. Patherall</i>	Engineering LLFA	27/05/2020	Originator
	John Sheward	<i>J Sheward</i>	Asset Manager	27/05/2020	Checked and Reviewed
Notes:	Council Cabinet Approval 27 th May 2020				

A.2 Revision updates to the document are as follows:

Revision:	Name:	Signature:	Position:	Date:	Stage:
Final Draft	Matthew Catherall	<i>M. Patherall</i>	Engineering LLFA	05/06/2019	Final Draft
Revised 2014 Document	Matthew Catherall	<i>M. Patherall</i>	Engineering LLFA	28/01/2019	Second Revision
Revised 2014 Document	John Sheward	<i>J Sheward</i>	Asset Manager	08/12/2018	Check Progress
Revised 2014 Document	Matthew Catherall	<i>M. Patherall</i>	Engineering LLFA	18/06/2018	First Revision
Cheshire Mid Mersey Group Update	Steve Berry	-	Flood Risk Management Regional Officer	11/09/2017	Originator
Notes:	Consultation Version Approval from Portfolio Holder required				

B. Information & Review / Monitoring

- B.1 This document has been produced for the purpose of setting out how St.Helens Council will endeavour to manage flood risk across its administrative area in accordance with the requirements of the Flood and Water Management Act 2010. It is an ongoing review process and will be fully revised at six year intervals. Please contact using (01744) 676789, email using flood@sthelens.gov.uk or through the website on www.sthelens.gov.uk.
- B.2 St.Helens Council will monitor its progress in effectively managing flood risk against the actions set out in Appendix D. The actions set out in Appendix D are subject to change on a yearly basis as priorities are identified and reassessed. Appendix D will be reported on an annual basis and available on the Council website. The document purpose is developed from the Statutory Duty set down by Section 9.1 of the Flood and Water Management Act 2010 which states 'A lead local flood authority for an area in England must develop, maintain, apply and monitor a strategy for local flood risk management in its area (a "local flood risk management strategy")'.
- B.3 This strategy has number of document marker boxes which help identify key legislation, regulations and supplementary guidance and also a number of legislation marker boxes which specify certain points of the Flood and Water Management Act 2010 legislation. Each box is either named Marker (in red formatting) or Regs (in blue formatting).

C. Foreword

Since the first publication of the Local Strategy in 2014, St Helens Council has continued to develop and strengthen its management of flood risk duties in line with current available legislation and partnership work with neighbouring local authorities. It is vital that organisations work and communicate more effectively, not just with each other but crucially with the public. This Local Strategy details the roles and responsibilities of all major stakeholders, including households and community groups so that there is increased clarity and understanding about when different stakeholders should be involved.

This strategy focuses on the effects of flooding from risk sources including and not limited to surface runoff, river bodies, groundwater and waste water. St Helens Council is keen to ensure that all forms of flooding are managed together and tackled according to level of risk, as well as considering appropriate solutions. St Helens Council cannot prevent all areas from flooding but can take practical measures to reduce both the likelihood and impact of any flooding that does occur.

Since the first local strategy a number of the flood risk locations identified such as Beech Gardens, Bell lane, Peasley Cross and West End Road have had appropriate and positive flood relieve schemes implemented or resilience measures installed, with areas such as College Street and the wider Sankey Valley undergoing further complex assessment.

As more development takes place not just at regional and local planning scale but down to individual land owners altering their hardstanding footprint, it is essential that it is managed so that the effects on flood risk are minimised. This Local Strategy is our statement of intent as to how St Helens Council will manage flood risk, inform or remind of everybody's responsibilities, how to find out about your flood risk and what St Helens Council can do to help you become safer.

Councillor Andy Boden
Portfolio Holder – Environmental Services

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1. Introduction

St.Helens Council has a legal duty under the Flood and Water Management Act 2010 (FWMA 2010) to produce a Local Flood Risk Management Strategy (hereafter referred to as ‘the strategy’).

What this section will cover:

- What is a Local Flood Risk Management Strategy;
- The area and target audience of St.Helens;
- Aims, Objectives and Measures of the strategy.

1.1 What is a Local Flood Risk Management Strategy?

1.1.1 The FWMA 2010 defines a lead role for local authorities and designated St Helens Council a Lead Local Flood Authority (LLFA). The FWMA 2010 Act gives County and Unitary Local Authorities a local leadership role and the Environment Agency a national overview role in relation to Flood and Coastal Erosion Risk Management (FCERM).

REGS

FWMA 2010 - Section 9. Local flood risk management strategies: England

(1) A lead local flood authority for an area in England must develop, maintain, apply and monitor a strategy for local flood risk management in its area (a “local flood risk management strategy”).

1.1.2 St.Helens Council must have a Local Strategy that is available to the general public. The FWMA 2010 Act states this document is to be reviewed at least every 6 years. This document was first published in April 2014. St.Helens Council seek to be proactive in the area of flood risk and strive to regularly monitor and review to ensure that the objectives are being delivered and that they are still relevant. The strategy is a document that explains how the Council as an LLFA will coordinate services across the Borough with the primary aim to understand and where appropriate manage flood risk from:

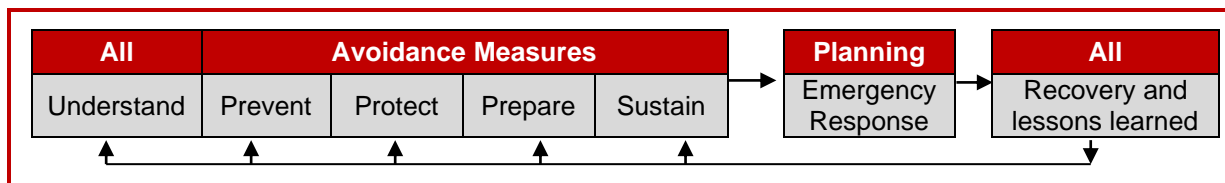
- **Groundwater** - Water that flows out from the ground due to high water tables locally or regionally;
- **Ordinary Watercourses** - Out of channel flows from small watercourses such as streams, brooks and drainage ditches that are not regarded to be main river by the Environment Agency;
- **Surface runoff** - Water that flows over land following a heavy rainfall event, before it enters a natural watercourse or an artificial drainage network.

1.2 Who is the Strategy aimed at?

1.2.1 This strategy is aimed at the main flood Risk Management Authorities (RMAs) operating in the Borough and how they link together. The role of these authorities is identified in the FWMA 2010 Act. It will also be relevant to individuals, communities and businesses at risk of flooding and coastal erosion and the general public. Figure 1.1 outlines the principle steps that are required to manage flood risk in relation to the target audience and what appropriate measures will need to be adapted as circumstances change. The strategy will also be of interest, but not limited, to:

- **Organisations** that manage land, navigation, property, cultural heritage and the natural environment such as landowners, farmers, Natural England, Crown Estates and the Forestry Commission;
- **Important service and infrastructure providers** such as water companies and other utility companies, highways authorities and Network Rail;
- **Non-government organisations** such as the RSPBB, National Farmers Union, the National Trust, Wildlife and Rivers Trusts, National Flood Forum, and the Association of British Insurers.

❖ **Figure 1.1 - Steps to understand Flood Risk**



1.3 Objectives of the St.Helens Local Flood Risk Management Strategy

1.3.1 Table 1.1 provides a summary of the Aims, Objectives and Measures within the St.Helens Local Flood Risk Management Strategy. The numbers associated with each of the measures reflect the section number where the measure is described in the strategy. The **aim** which covers all **objectives** is to produce a coherent plan to demonstrate how the Council will work with individuals, the community, and organisations to holistically manage flood risk in a sustainable manner.

❖ **Table 1.1 - Aims, Objectives and Measures the St.Helens Local Flood Risk Management Strategy**

Aim:			
Produce a coherent plan to demonstrate how the Council will work with individuals, the community, and organisations to holistically manage flood risk in a sustainable manner.			
Objectives:	Section:	Measure:	
1	To clearly set out the different types of flooding, who is responsible and Governance arrangements.	2.1	National Policy Context
		2.1	Local Policy Context
		2.3	Council policy Context
		2.4	Other Relevant Legislation
		2.5	Roles and Responsibilities
		2.6	Governance Arrangements
2	To assess the total risk of flooding from all sources in St.Helens	3.1	Overview of St.Helens Borough
		3.2	Data availability
		3.3	Historic Flood Risk – Assessment of Past Flooding
		3.4	Future Flood Risk
		3.5	Climate Change and Long Term Development
3	To manage flood risk and where appropriate reduce the risk and consequences of flooding through a range of activities and by effective management	4.1	Partnership Working and Community Resilience
		4.2	Spatial Planning
		4.3	Sustainable Drainage Systems (SuDS)
		4.4	Enforcement and Consenting Powers
		4.5	Power to Carry Out Works
		4.6	Asset Management
		4.7	Reservoirs
		4.8	Designation of Features
		4.9	Investigations and Flood Reporting
		4.10	Communications and Public Engagement
		4.11	Preparedness and Emergency Response
4	To develop actions and interventions to reduce flood risk where appropriate.	5.2	Works to Mitigate or Reduce Flood Risk
		5.3	Maintenance
		5.4	Community Information Provision
		5.5	Funding
5	To undertake flood risk management in a sustainable manner.	6.1	National Strategy
		6.2	How the Local Strategy contributes to Sustainability?
		6.3	How the Local Strategy contributes to the Environment?

Objective 1: Risk Management Authorities and Responsibilities

2. Objective 1: Risk Management Authorities and Responsibilities

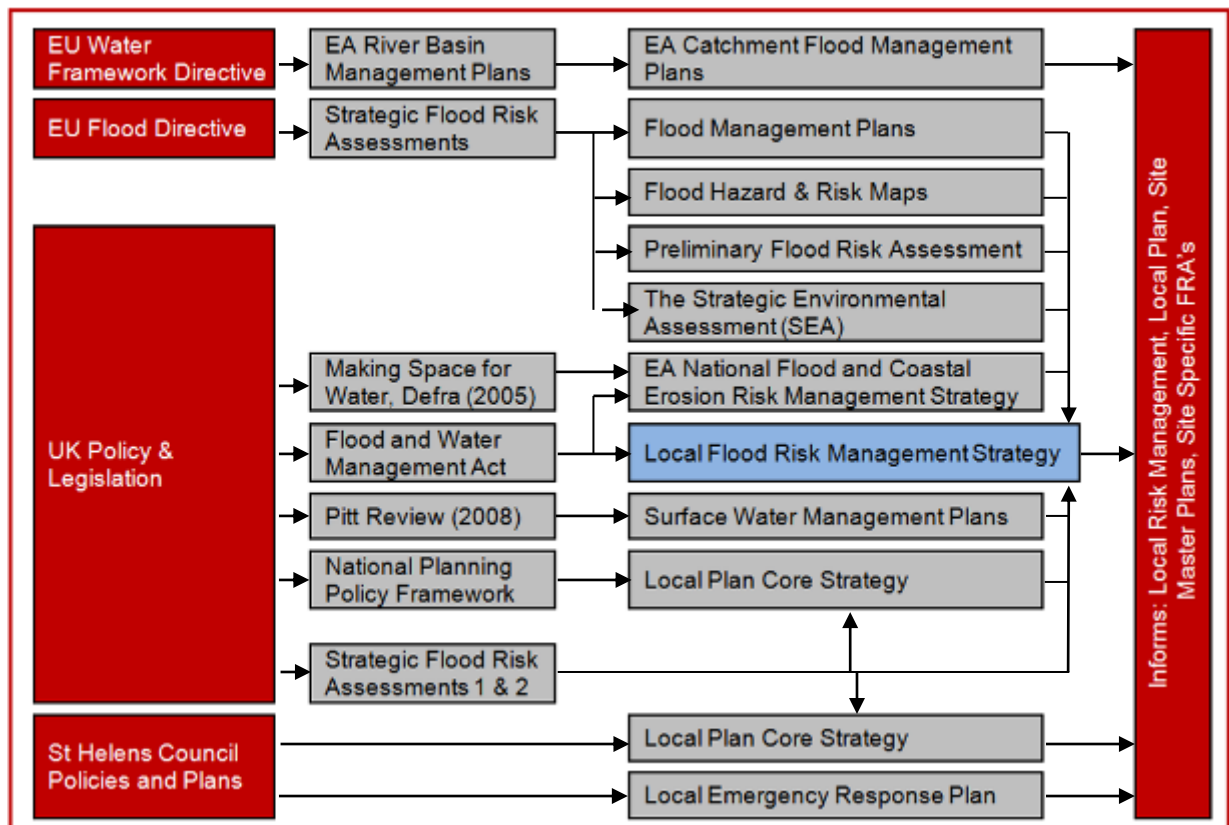
<p>The Act gives the Environment Agency a 'strategic overview' of Flood and Coastal Erosion Risk Management, and in turn takes forward recommendations from Sir Michael Pitt's inquiry into the 2007 floods.</p>	<p>What this section will cover:</p> <ul style="list-style-type: none"> ▪ National and local legislation; ▪ Roles and responsibilities; ▪ Governance arrangements.
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2.1 Background Legislation

REGS	<p>FWMA 2010 - Section 11. Effect of national and local strategies: England</p> <p>(1) In exercising its flood and coastal erosion risk management functions, an English risk management authority must - (a) act in a manner which is consistent with the national strategy and guidance, and (b) except in the case of a water company, act in a manner which is consistent with the local strategies and guidance.</p>
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2.1.1 The development and responsibility for flood risk management has evolved in recent years. It was the responsibility of the Local River Authorities, until 1989 when a new Water Act, privatised the Water and Sewerage functions across the country. The Environment Agency was established in 1995, replacing the National Rivers Authority and taking over the flood warning duties from the Police. The release of the Planning Policy Guidance 25 (PPG25) in 2001 was in response to major flood events in 1998 and 2000, and was recently superseded by the National Planning Policy Framework, which rationalises development legislation and processes. Following the 2007 floods, the Pitt Review (2008) led to the overhaul of flood risk legislation which emphasised greater responsibility particularly for surface water issues to upper tier Authorities. These responsibilities were brought about with the FWMA (2010). Figure 2.1 provides an overview of legislation contributing to current flood risk management:

❖ **Figure 2.1 - Overview of legislation contributing to current flood risk management**



Objective 1: Risk Management Authorities and Responsibilities**2.2 National Policy Context**

- 2.2.1 **The Pitt Review:** Following extensive flooding across the United Kingdom in 2007, Sir Michael Pitt on behalf of the UK Government undertook a comprehensive review of the lessons to be learned from the floods and made a series of recommendations. The Pitt Review (2008) was the catalyst for Local Authorities and partner agencies to become more responsible for flood risk with many of the recommendations incorporated into the Flood and Water Management Act 2010 (FWMA 2010) which in turn updated various sections of the Land Drainage Act 1991.
- 2.2.2 Alongside FWMA 2010, the EC Floods Directive (Directive 2007/60/EC) on the assessment and management of flood risk was transposed into domestic law in England and Wales under the European Communities Act 1972 via the **Flood Risk Regulations 2009** (FRR 2009). The purpose of the EC Floods Directive is to establish a framework for assessing and managing flood risk across the European Community.
- 2.2.3 The **National Flood and Coastal Risk Management Strategy for England 2011** sets out a framework for implementing the FWMA 2010 (Section 11), aiming to assist local authorities and communities with their responsibilities through taking a risk based approach to flood and coastal risk management and ensure a full range of options is managed in a co-ordinated manner. The National Strategy sets out what needs to be done to manage these risks by improving understanding where feasible reducing the likelihood of incidents happening, as well as managing the potential consequences to people, business, infrastructure and services. The National Strategy addresses these aims and shares them with the local level to:
- Encourage local innovations and solutions;
 - Improve response to flood incidents and recovery;
 - Help households, businesses and communities better understand and manage the flood risks they face;
 - Manage the risk of flooding to people / property and where possible, to improve standards of protection;
 - Invest in actions that benefit public at greatest risk, but who are least able to afford to help themselves;
 - Sustainability is focus of actions and work with nature to benefit the environment, people and economy;
 - Shift the focus from national government-funded activities towards localised/catchment level activities.

The Pitt Review: Lessons learned from the 2007 floods

<http://webarchive.nationalarchives.gov.uk/20100702214846/http://archive.cabinetoffice.gov.uk/pittreview/the pitt review.html>

Land Drainage Act 1991

www.legislation.gov.uk/ukpga/1991/59/contents

The Flood Risk Regulations 2009

www.legislation.gov.uk/uksi/2009/3042/contents

National Flood and Coastal Risk Management Strategy for England 2011

<https://www.gov.uk/government/publications/national-flood-and-coastal-erosion-risk-management-strategy-for-england>

"Understanding the risks, empowering communities, building resilience"

Flood and Water Management Act 2010

<http://www.legislation.gov.uk/ukpga/2010/29/contents>

MARKER 2.1

- 2.2.4 **The FWMA 2010** identified a number of responsibilities, powers and duties to be executed in phases to help manage flood risk and coastal erosion in a more holistic way. These are through either amending existing Acts, such as the Land Drainage Act 1991, or through the FWMA 2010 itself. The FWMA 2010 defines a lead role for local authorities and designated St.Helens Council a Lead Local Flood Authority (LLFA) responsible for the management of local sources of flooding such as surface water. The Environment Agency has operational responsibility for managing the risk of flooding from main rivers, reservoirs, estuaries and the sea, as well as being a coastal erosion risk management authority.

Objective 1: Risk Management Authorities and Responsibilities

2.2.5 The key powers and duties of FWMA 2010 are summarised in Table 2.1, with Section 3 setting out how St.Helens Council will develop these duties to manage flood risk.

❖ **Table 2.1 - Strategy Key Powers and Duties of the Flood and Water Management Act 2010**

Responsibility:		Details:
Preparation of an Asset Register.	Section 21 FWMA	The Council has a duty to maintain a register of structures or features, which are considered to have a significant effect on flood risk including details on ownership and condition as a minimum.
Power to designate flood risk management structures.	Schedule 1 Section 30 FWMA	The Council as well as other flood management authorities have powers to designate structures and features that affect flooding or coastal erosion in order to safeguard assets that are relied upon for flood or coastal erosion risk management.
Investigation of flood incidents.	Section 19 FWMA	The Council has a duty to co-ordinate the investigation and recording of significant flood events within their area. This duty includes identifying which authorities have flood risk management functions and what they have done or intend to do with respect to the incident, notifying risk management authorities where necessary and publishing the results of any investigation carried out.
Prepare a Local Strategy for Flood Risk Management.	Section 9 FWMA	The Council is required to develop, maintain, apply and monitor a Local Strategy for flood risk management in its area. The Local Strategy will build upon information such as the national risk assessment and will use consistent risk based approaches across different local authority areas and catchments.
SuDS Approval Body (SAB)	Schedule 3 FWMA	Under Schedule 3 of the FWMA 2010, LLFAs were required to establish SAB which would have required St Helens Council to approve and adopt SuDS for new developments. In December 2014, the Government announced changes to the planning system that would require developers to give priority use to Sustainable Drainage Systems (SuDS) and those LLFAs would become statutory consultees for major development proposals from April 2015. These changes are set out in Paragraph 103 of the National Planning Policy Framework 2012 (NPPF) and are supported by Defra's Non-Statutory Technical Standards for SuDS. Refer to section 4.3 and 4.4 for further information
Works powers and enforcement.	(Amendment to Land Drainage Act 1991, S.14)	The Council now has permissive powers to undertake works to manage flood risk from surface run-off and groundwater, consistent with the local flood risk management strategy for that area.
Consenting changes to Ordinary Watercourses	(Amendment to Land Drainage Act 1991, S.23)	If riparian owners wish to build a culvert/structure or make any alteration likely to affect the flow of an ordinary watercourse, land drainage consent is required from St Helens Council as an LLFA.
Powers to create Byelaws	(Amendment to Land Drainage Act 1991, S.66)	The Council may make such byelaws as they consider necessary for securing the efficient working of the drainage system within its administrative area.

Objective 1: Risk Management Authorities and Responsibilities

- 2.2.6 The **National Planning Policy Framework 2012 (NPPF)** provides the planning policy and guidance for England which informs local plans and decisions. There is a focus on the role of sustainable development which should underpin planning and decision making, particularly with regards to reducing the causes and impacts of flooding. It states that SuDS provide numerous opportunities in addition to reducing the causes and impacts of flooding. It advises on the need to plan for maintenance of SuDS to ensure effective drainage for properties and notes that local authorities and Developers should work together to implement SuDS. The **Planning Practice Guidance** relating to SuDS was revised 23rd March 2015 and highlights the considerations which should be made about the types of SuDS, operation and maintenance in relation to the Defra Non-Statutory Technical Standards for SuDS. **Planning Practice Guidance: Flood Risk and Coastal Change (2014)** advises how to take account of and address the risks associated with flooding and coastal change in the planning process.
- 2.2.7 St.Helens Council as an LLFA has a duty to prepare a **Preliminary Flood Risk Assessment (PFRA)** in accordance with Part 2 of the FRR 2009 which sets out the requirements. The PFRA is a high level screening exercise to identify areas in which the risk of local flooding is significant and warrants further examination (via desktop and historic analysis) through the production of maps (Flood Hazard and Flood Risk Maps) and various management plans. The first PFRA was completed in 2011 and updated in 2017. The latest review of the PFRA identified that St.Helens had no flooding issues that were nationally significant.

MARKER 2.3

National Planning Policy Framework (NPPF) 2012

<https://www.gov.uk/government/publications/national-planning-policy-framework--2>

Planning Practice Guidance: Flood Risk and Coastal Change (2014)

<https://www.gov.uk/guidance/flood-risk-and-coastal-change>

Preliminary Flood Risk Assessment (2017)

<https://www.sthelens.gov.uk/traffic-travel-parking/highway-maintenance/flooding-and-drainage/flood-and-water-management/>

Localism Act 2011

<http://www.legislation.gov.uk/ukpga/2011/20/contents/enacted>

- 2.2.8 The **Strategic Environment Assessment** has been carried out by MEAS (Merseyside Environmental Advisory Service) 2014; it contains the links and corresponding legislation and policies such as Biodiversity. This is a separate document to this Strategy. SEA is a statutory assessment process, required under the Environmental Assessment of Plans and Programmes Regulations (the SEA Regulations, Statutory Instrument 2004, No 1633) which provide the legislative mechanism for transposing into UK law the European Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment' (the SEA Directive). The SEA Directive and Regulations requires that an assessment be made of the effects that certain plans and programmes will have on the environment. It is understood that a SEA and HRA has been prepared for St.Helens Council proposed new Local Plan for 2018-2033, once this Local Plan is approved this strategy will also reference the new SEA and HRA's.
- 2.2.9 The **Localism Act** identifies a duty to co-operate in joint planning, in particular where sustainable development or use of land would have a significant impact on a minimum, of two Local Planning Authorities. Planning Authorities should consider issues relating to land and infrastructure that are strategic, Sites of Special Scientific Interests and Green Belt land. The Localism Act gives communities and local government greater powers, with respect to: Housing; General power of competence; Empowering cities and other local areas and Community Rights and Neighbourhood Planning.

2.3 UK Exit from European Union

- 2.3.1 Depending on the approach taken to European Union exit, there may be potential to make changes to the FRR and other associated legislation in the coming years. At present European Exit does not alter the requirement for LLFAs to adhere to current legislation and document review unless confirmed by Central Government.

Objective 1: Risk Management Authorities and Responsibilities

2.4 Local Policy Context

2.4.1 The **Mersey Estuary Catchment Flood Management Plan** examines 10 sub areas in the Mersey catchment. It notes that St.Helens (Area 3, 4 and 6) is a mainly rural area with patches of heavily urbanised sections around the town centre both north and south of East Lancashire Road (A580) and M62. St.Helens is at the top of the Mersey water catchment and is split into 3 separate policies but with the same level of flood risk associated, these policies are as follows:

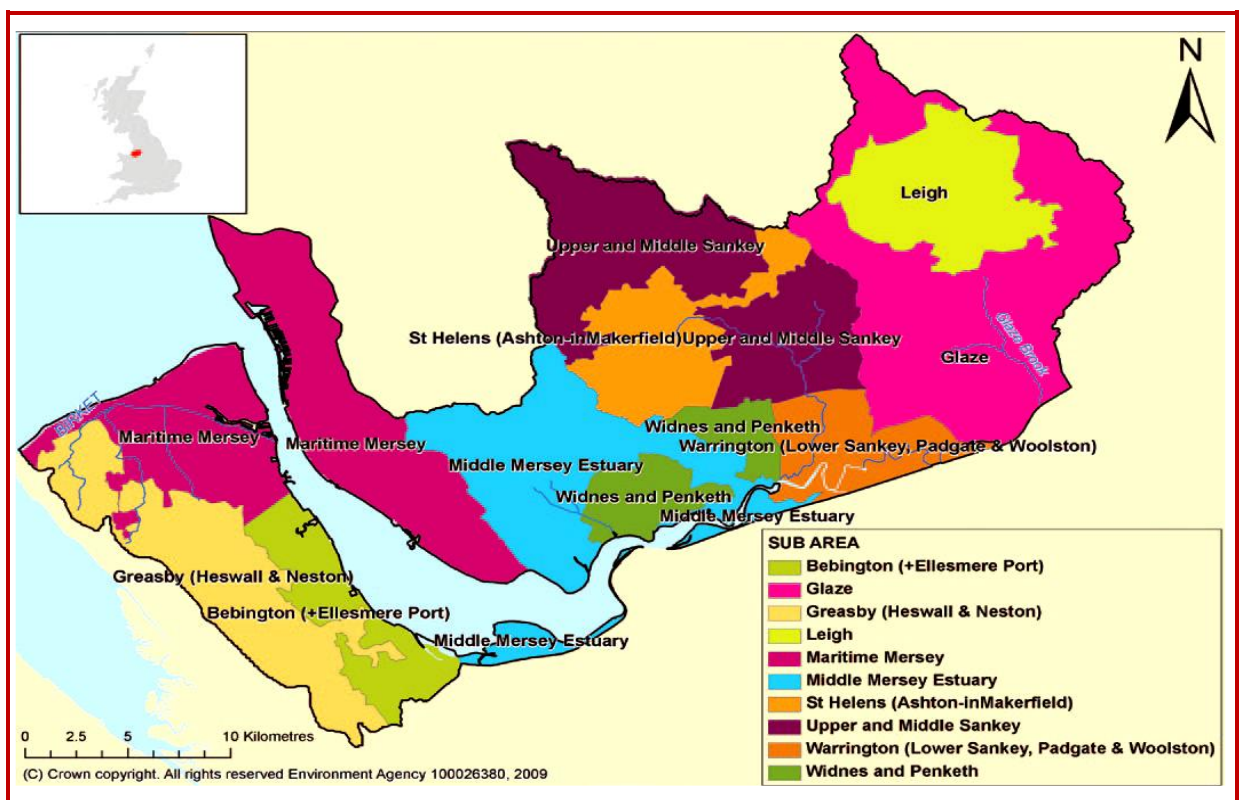
- Policy option 3 is in effect in this area in which St.Helens is classed as an area of generally low to moderate flood risk where flood risk is currently managed through a combination of maintaining existing defences and the management of vegetation within channels;
- Policy option 4: Areas of low, moderate or high flood risk where we are already managing the flood risk effectively but where we may need to take further actions to keep pace with climate change;
- Policy option 6: Areas of low to moderate flood risk where we will take action with others to store water or manage run-off in such a way as to provide overall flood risk reduction or environmental benefits.

2.4.2 The catchment flood plan identifies essential actions to achieve the policy aim which are listed below:

- Encourage the use of appropriately designed SUDS to control run-off at source;
- Investigate the feasibility of providing a Flood Warning Service to key flood risk areas;
- Seek to ensure that where development must take place in flood risk areas it is appropriately designed;
- Continue to investigate causes of sewer flooding and the standards of service in relation to problems;
- Identify opportunities to reduce level of maintenance and implement alternative actions to manage risk.
- Identify areas for reducing flood flow, by storing excess flood water in ponds etc.
- Consider appropriate detention times and maximum run-off to mitigate flood risk downstream.
- Flood risk management expenditure will be cost-efficient and risk-based.
- Work with local and national Government to create economic and social conditions that encourage appropriate land use and land management.

❖ **Figure 2.2 - Mersey Estuary Catchment Area**

(Map 3 Sub-areas, 2009, Environment Agency, Mersey Estuary Catchment Flood Management Plan, last accessed 19/06/2018)



Objective 1: Risk Management Authorities and Responsibilities

- 2.4.3 The **Merseyside Resilience Forum (MRF)** is a Multi-Agency Emergency Response Manual that sets out the co-ordinated response of agencies across Merseyside. It offers a framework to allow those involved in responding to an emergency to work together as efficiently and effectively as possible. The Forum covers the Merseyside Police Force area and includes the emergency services, local authorities, Environment Agency, health agencies, the Health & Safety Executive, transport and utility companies along with the voluntary agencies.
- 2.4.4 St.Helens Council is well placed to co-ordinate flood risk management through its other statutory functions including Local Highway Authority, Local Planning Authority and Civil Contingencies Act Category 1 Responder. St.Helens Council has a well-developed network of partners by virtue of our historical operational and strategic practices, especially in the case of the transport links via the Liverpool City Region development.

MARKER 2.4**Mersey Estuary Catchment Flood Management Plan (CFMP) 2009**

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/293769/Mersey_Estuary_Catchment_Flood_Management_Plan.pdf

Merseyside Resilience Forum (MRF)

<http://merseysideprepared.org.uk/about-us/>

2.5 St.Helens Council Policy Context

- 2.5.1 **Adopted Local Plan Core Strategy** sets out a series of policies for addressing the vision for 2027 and objectives to achieve this vision. The spatial policy reflects the need for sustainable development in the National Planning Policy Framework 2012. This ties with Policy CP1 (Ensuring Quality Development in St. Helens). The policy further states that “The adoption and/or aftercare of SuDS, flood defences and other appropriate measures will need to be carefully considered and agreed with the Council and other relevant parties”.
- 2.5.2 **The Strategic Flood Risk Assessment (SFRA)** both levels 1 and 2 provide detailed flood risk information that is utilised by the Local Plan. It focuses on the main sources of risk in the Borough including fluvial, pluvial, and groundwater and also other sources of flooding such as canals and sewers. It makes recommendations of a surface water management plan and water cycle strategy to aid decision making process on allocating sustainable development sites. The SFRA links to the **Mid Mersey Water Cycle Study 2011** which makes specific recommendations in relation to both planning and sustainable drainage and provides an Environment Agency checklist to encourage SuDS to be considered at the earliest opportunity. It also examines where infiltration SuDS would be applicable in St. Helens.
- 2.5.3 In 2012 a Surface Water Management Plan (SWMP) Strategic Risk Assessment & Scoping Study was undertaken. The report represents the first ‘Preparation Stage’ of the Defra SWMP Process Wheel and concluded that surface water flood risk in St Helens is characterised by the following. A small number of locations where different local flooding mechanisms appear to interact with Main River water levels over a wide area and there are potentially a large number of properties at risk. Several locations where local sources of flooding appear to be primarily responsible for a flood risk to significant number of properties.
- 2.5.4 Numerous small areas of flood risk where minor flow-paths and ponding areas cause flooding to individual or small groups, of properties. It was recommended that rather than undertake a universal approach to investigating flood risk, a number of specific studies should be carried out, targeting the apparent higher risk locations through site specific detailed or Intermediate investigation. These plans have now been superseded by updates to the PFRAs.
- 2.5.5 In St. Helens’ Local Development Framework there are a number of **Supplementary Planning Guidance Documents** including the two listed in marker 2.5. These planning documents detail the aspirations and aims of a number of areas to be developed. SuDS to be utilised in these areas should ensure that they are in keeping with the designs and maximise the benefits which can be derived from SuDS such as increasing green areas for recreation and improving the aesthetic quality of an area.

Objective 1: Risk Management Authorities and Responsibilities

- 2.5.6 **Adopted Local Plan Core Strategy** sets out a series of policies for addressing the vision for 2027 and objectives to achieve this vision. The spatial policy reflects the need for sustainable development in the National Planning Policy Framework 2012. This ties with Policy CP1 (Ensuring Quality Development in St. Helens). The policy further states that “The adoption and/or aftercare of SuDS, flood defences and other appropriate measures will need to be carefully considered and agreed with the Council and other relevant parties”.
- 2.5.7 In 15th April 2015 the Council Lead Local Flood Authority (LLFA) were designated via the FWMA 2010 as '**statutory consultee**' for major developments which have surface water or other local flooding impacts. New policies and standards for drainage have been released with effect from 6th April 2015 within the National Planning Policy Framework and the applicant is advised to ensure any drainage design meets these standards to avoid delays and changes to any submitted drainage designs. From this St.Helens Council has developed their own **Sustainable Drainage Systems (SuDS) Guidance** Document. This guidance is primarily aimed at Developers, to identify the information that they need to provide to enable the assessment of SuDS proposals by St.Helens Council as the LLFA and other Statutory Consultees.

MARKER 2.5

St.Helens Council Adopted Local Plan Core Strategy October 2012

<http://www.sthelens.gov.uk/media/354627/ldf43e.pdf>

St. Helens Council Strategic Flood Risk Assessment Final Report September 2014

http://www.sthelens.gov.uk/media/703136/st_helens_council_strategic_flood_risk_assessment_september_2014.pdf

Mid Mersey Water Cycle Study 2011, Surface Water Management Plan (SWMP), Sustainable Drainage System (SuDS) Guidance

<https://www.sthelens.gov.uk/traffic-travel-parking/highway-maintenance/flooding-and-drainage/flood-and-water-management/>

St.Helens Supplementary Planning Documents

<http://www.sthelens.gov.uk/media/112101/ldf27.pdf>

<http://www.sthelens.gov.uk/media/112106/ldf48c.pdf>

2.6 Other Relevant Legislation

- 2.6.1 There is a wide range of other relevant legislation, policy and guidance contributing to Flood Risk Management including:
- The Climate Change Act (2008);
 - The Conservation of Habitats and Species Regulations (2010);
 - The Civil Contingencies Act (2004);
 - The Strategic Environmental Assessment (SEA) Directive (2001);
 - The Land Drainage Act (1991 and 1998);
 - The Water Framework Directive (2003);
 - Wildlife and Countryside Act (1981);
 - Countryside and Rights of Way Act (2000);
 - Public Health Act (1936);
 - Highways Act (1980);
 - Reservoirs Act (1975);
 - Environment Agency - Water Cycle Study Guidance - January 2009;
 - Defra: National flood and coastal erosion risk management strategy for England (2011);
 - Defra: Co-operation and requesting information in flood and coastal erosion risk Management (2011);
 - Defra: Making Space for Water (2004);
 - Defra: Understanding the risks, empowering communities, building resistance (2011);
 - Local Government Association: Framework to assist the development of the Local Strategy for Flood Risk Management (2014).
- 2.6.2 Note: this list is indicative only and not meant to be definitive. Further information to these can be obtained from the following website: www.gov.uk.

Objective 1: Risk Management Authorities and Responsibilities**2.7 Risk Management Authorities**

2.7.1 Risk management is defined as anything done for the purpose of: analysing a risk, assessing a risk, reducing a risk, reducing a component in the assessment of a risk, altering the balance of factors combined in assessing a risk, or otherwise taking action in respect of a risk or a factor relevant to the assessment of a risk (including action for the purpose of flood defence). Table 2.2 summarises the roles and responsibilities of organisations associated with flood risk management within St.Helens. Under the provisions of the FWMA 2010, the following duties are common to all RMAs:

- A duty to cooperate with other risk management authorities;
- A duty to act consistently in accordance with the national and local strategies;
- Powers to take on flood risk functions from another risk management authority, and
- A duty to contribute towards the achievement of sustainable development.

❖ **Table 2.2 - Risk Management Authorities and Responsibilities**

Authority	Responsible for:	Activity:
Government (Defra)	Defra develops FCERM policy and is the lead Government department for flood risk management in England.	New or revised policies are prepared with other parts of government such as the Treasury, the Cabinet Office (for emergency response planning) and the Department for Communities and Local Government (land-use and planning policy). These national policies form the basis of the Environment Agency's work.
Environment Agency (RMA)	<p>As national co-coordinator, the Environment Agency has a strategic overview of all sources of flooding (as defined in the Flood and Water Management Act 2010).</p> <p>It is also responsible for regulating reservoir safety, and working in partnership with the Met Office to provide flood forecasts and warnings.</p> <ul style="list-style-type: none"> ▪ Main rivers ▪ Reservoirs over 10,000m³ 	<p>Developing long-term approaches to FCERM. This includes carrying out sustainable Catchment Flood Management Plans (CFMP's) to address flood risk in each river catchment and Shoreline Management Plans (SMPs) assess the risks of coastal flooding and erosion and propose ways to manage them.</p> <p>The EA collates and reviews assessments, maps and plans for local flood risk management (normally undertaken by Lead Local Flood Authorities). Providing evidence and advice to support others, including local authorities on planning and development issues. This includes national flood risk information, data and tools to help other risk management authorities and inform government policy.</p> <p>Working with others to share knowledge and the best ways of working. This includes work to develop FCERM skills and resources. Monitoring and reporting on flood and coastal erosion risk management and assessing the impact the national FCERM strategy is having across the country. The EA brings together local authorities and communities to share combined knowledge, and develop a sustainable framework for each community.</p>
United Utilities (RMA)	Work with flood authorities to co-ordinate the management of water supply and sewage systems.	Make sure their systems have the appropriate level of resilience to flooding, and maintain essential services during emergencies. Maintain and manage their water supply and sewage systems to manage the impact of flooding and pollution to the environment. Provide advice to LLFA's on how water and sewage company assets influences local flood risk. Work with developers, landowners and LLFA's to understand and manage risks.

Objective 1: Risk Management Authorities and Responsibilities❖ **Table 2.2 - Risk Management Authorities and Responsibilities (Continued)**

Authority	Responsible for:	Activity:
St.Helens Borough Council (LLFA, RMA)	<p>As local coordinators, the Flood and Water Management Act directs responsibility for the following types of flooding to LLFA's to:</p> <ul style="list-style-type: none"> ▪ Surface Water; ▪ Highway Drainage* ▪ Groundwater; and ▪ Ordinary Watercourses. <p>*Providing and managing highway drainage and roadside ditches under the Highways Act 1980.</p>	<p>Prepare and maintain a strategy for local flood risk management in our area, coordinating views and activity with other local bodies and communities through public consultation and scrutiny, and planning. Maintain a register of assets – these are physical features that have a significant effect on flooding in their area. Issue consents for altering, removing or replacing certain structures or features on ordinary watercourses.</p> <p>Play a lead role in emergency planning and recovery after a flood event. Set land use policy and manage development in relation to policy. The owners of land adjoining a highway also have a common-law duty to maintain ditches to prevent them causing a nuisance to road users. To manage these risks as set out in the national strategy, authorities will need to work effectively with the Environment Agency.</p>
Private Sewer Ownership	Property owners no longer responsible for private sewer, lateral drains or private pumping stations that connect their properties to public sewers	Legislation transferred responsibility of private sewers and lateral drains, to United Utilities 1 st October 2011. Private pumping stations were transferred to United Utilities on 1 st October 2016.
Canals and Rivers Trusts (Not a RMA) But added for completeness	<ul style="list-style-type: none"> ▪ Carr Mill Dam ▪ A section of canal immediately north of the sewage works ▪ A section of canal immediately south of Deacon Trading Estate ▪ A section of canal running from Sankey Valley Park to the confluence with Black Book 	C&R Trust have a number of assets located on the St. Helens Canal and the water storage reservoir located behind Carr Mill Dam. The extent of St. Helens canal that is owned and maintained by the Trust is limited. This is because many areas of the canal have been filled in and are now maintained by the Local Authority or Private Land Owners.
Connecting Authorities	<ul style="list-style-type: none"> ▪ Halton ▪ Knowlsey ▪ Warrington ▪ Wigan ▪ West Lancashire 	With neighbouring planning authorities should identify potential upstream and downstream developments that are likely to cause increased flood risk. Although the Borough of St. Helens has boundaries with 5 other Local Planning Authorities (LPSs) the impact of developments within these LPA areas on flood risk through St. Helens is minimal. The reason for this is that St. Helens Borough lies mainly in the upper Sankey catchment
Cheshire Police/Fire and Rescue (RMA)	Police and Fire and Rescue Service can identify locations at which they have been involved in flood incident management. Work with flood authorities to co-ordinate flood response or in emergency situations take the lead in the overall management.	
Residents, Businesses and Land Owners	Riparian Land Owners are responsible for the maintenance and upkeep of the watercourses on their land. Householders and businesses are responsible for the protection of their own properties.	

Objective 1: Risk Management Authorities and Responsibilities**2.8 Flood Type and Responsibility**

- 2.8.1 Over the last few years the frequency of flooding incidents reflecting unseasonable erratic weather pattern has increased across St Helens. This Strategy sets out a framework for managing current and future flood risk in a holistic way and will guide St.Helens Council as the LLFA in respect of managing local flood risks. “Significant harmful consequences” are considered to be impacts of flooding that may have negative consequences for human health, the social and economic welfare of individuals and communities, infrastructure, and the environment (including cultural heritage).
- 2.8.2 The definition of “significant” has been defined by St.Helens Council in Table 2.3. Irrespective of “significance”, St.Helens Council considers that all flood events that affect property or people justify consideration. Therefore, where known, information on all flood events has been gathered.

❖ **Table 2.3 - Flood Event of Significant Harmful Consequences**

Flooding Impact:	Category:	Details:
Human Health	Number of individuals	200+
Economic Activity	Number of critical services	2 or more
	Number of residential properties	83+
	Number of non-residential properties	20+
	Principal Highway Network	Transport links impassable for 5+ hours.

- 2.8.3 Following a flooding event St.Helens Council will undertake the necessary activities as required by FWMA 2010 in order to comply with its responsibilities as a RMA. Everyone has the responsibility to take steps to protect their own property from flooding. However the steps an individual takes to protect their property from flooding must be carried out with due care. A property owner must ensure that they do not cause harm to their neighbours or their property through their actions to reduce their own flood risk. Depending on the severity/frequency of flooding events, the LLFA may use permissive powers under the relevant legislation to intervene where it deems necessary in order to manage and reduce flood risk.
- 2.8.4 Table 2.4 indicates which organisations are responsible for management of the different types of flooding. Although these organisations may be responsible, this does not mean that they are liable for damage caused by flooding. Property owners who own land bounding a river, lake, or other water course are defined as ‘Riparian Owners’ and they have the responsibility of protecting their property and for maintaining the section of adjacent watercourse. It is noted that flooding can be the result of complex interactions between the different sources (e.g. Main River and surface water) and the degree of influence from other sources are not always completely understood.

❖ **Table 2.4 - Risk Management Authority for each Type of Flooding**

Flooding Type:	Details:	Risk Management Authority	Responsibility for flood protection	
Natural	River flooding (Fluvial)	Flooding from any type of watercourse, also known as fluvial flooding, occurs when intensive or prolonged rainfall causes a watercourse to exceed hydraulic capacity.	Ordinary Watercourse - St.Helens Council	Riparian land Owner
		The additional inflow causes the water to rise above its banks or retaining structures and subsequently flows onto the land.	Main River – Environment Agency	

Objective 1: Risk Management Authorities and Responsibilities❖ **Table 2.4 - Risk Management Authority for each Type of Flooding (Continued)**

Flooding Type:		Details:	Risk Management Authority	Responsibility for flood protection
Natural	Surface water flooding (Pluvial)	Surface water flooding, also known as pluvial flooding, results from overland flow before the runoff enters a watercourse or drainage system. It is usually the result of high intensity rainfall exceeding the hydraulic capacity of the receiving system. However it can also occur with lower intensity rainfall when the land has a low permeability and/or is already saturated, frozen or developed.	St.Helens Council	Land Owner
	Ground Water Flooding	This occurs when levels of water in the ground rise above the surface. It is most likely to happen in areas where the ground contains aquifers following periods of persistent rainfall These are permeable rocks that water can soak into or pass through.	St.Helens Council	Land Owner
	Tidal Flooding	This occurs due to a combination of low pressure weather systems and peak high tides which results in high water levels which can breach banks and flood defences. There is little flood risk in St.Helens associated with Tidal Flooding, however in times of extreme events the Sankey River is subject to Tidal Flow.	Environment Agency	Riparian Land Owner
Joined	Highway Flooding	Flooding is caused by heavy rainfall or water overflowing from blocked drains and gullies causing water to pond within the highway network.	St.Helens Council as Highway Authority	St Helens Council
Unnatural	Public Sewer Flooding	Sewer flooding is often caused by drainage systems exceeding hydraulic capacity during periods of intensive, or prolonged, rainfall. Flooding may also occur due to operational issues such as blockages or asset failure. Land and property can be flooded with water contaminated with raw sewage as a result. Sewers which contain an overflow can also pollute receiving watercourses.	United Utilities	United Utilities
	Water Supply Flooding	When flooding occurs as a result of manmade water supply, for example a burst water mains.	United Utilities or asset owner if in private ownership	United Utilities or asset owner if in private ownership
	Canal	These engineered systems are heavily controlled and are unlikely to respond in the same manner during periods of rainfall as natural watercourses. The probability of flooding is more associated with residual risks, such as overtopping of canal banks, breaching of embanked reaches or asset (e.g. gate) failure. Each canal also has significant interaction with other sources of flood risk, such as the main rivers and minor watercourses that feed them, or drains that cross beneath them	Rivers and Canals Trust / Canal Owner / Navigation Authority/ Local Authorities	Canal Owner

Objective 1: Risk Management Authorities and Responsibilities**2.9 Governance and Coordination of Flood Risk Management**

2.9.1 Local knowledge and technical expertise necessary for St.Helens Council to fulfil its duties as a LLFA lies with the Council and other partner organisations. It is therefore crucial that St.Helens Council works alongside these partners as they undertake their responsibilities to ensure effective and consistent management of local flood risk. Due to the Borough being situated within the upper reaches of the River Mersey catchment, since 2010 the Council has been in partnership with two sub-regional LLFA working groups; the Cheshire and Mid-Mersey Flood Partnership and Merseyside Flood Partnership. The partnership operates at operational, tactical and strategic levels. Coordinator and arrangements with other authorities and risk management authorities links to section 13 of the FWMA 2010.

FWMA 2010 - Section 13 Co-operation and Arrangements

REGS

- (1) A relevant authority must co-operate with other relevant authorities in the exercise of their flood risk management functions.
- (2) A relevant authority may share information with another relevant authority for the purpose of discharging its duty under subsection.
- (4) A risk management authority may arrange for a flood risk management function to be exercised on its behalf by - (a) another risk management authority, or (b) a navigation authority (within the meaning given by Section 219 of the Water Industry Act 1991).

2.9.2 The Partnerships have critical roles to play in managing the risk of flooding from all sources and in working with communities to help them become more resilient. It provides a forum to enable RMAs, other partners and communities, to identify how they can work together to deliver an improved, more effective and efficient flood risk management service. It is the role of the Local Authority Flood Risk Coordinator (Match Funded Posts) to oversee the delivery of FWMA 2010 between the local authorities in a coordinated manner. The Risk Management Authorities (RMAs) of the Partnerships are indicated in Table 2.5 below.

❖ **Table 2.5 – Partner Authorities**

Cheshire Mid Mersey Flood and Coastal Risk Management Group	Merseyside Flood and Coastal Risk Management Group
Cheshire East Council	Knowsley Council
Cheshire West and Chester Council	Liverpool City Council
Halton Borough Council	Sefton Council
St.Helens Council	St Helens Council
Warrington Borough Council – Partnership Lead	Wirral Council
Staffordshire County Council	Environment Agency
Environment Agency	United Utilities
United Utilities	

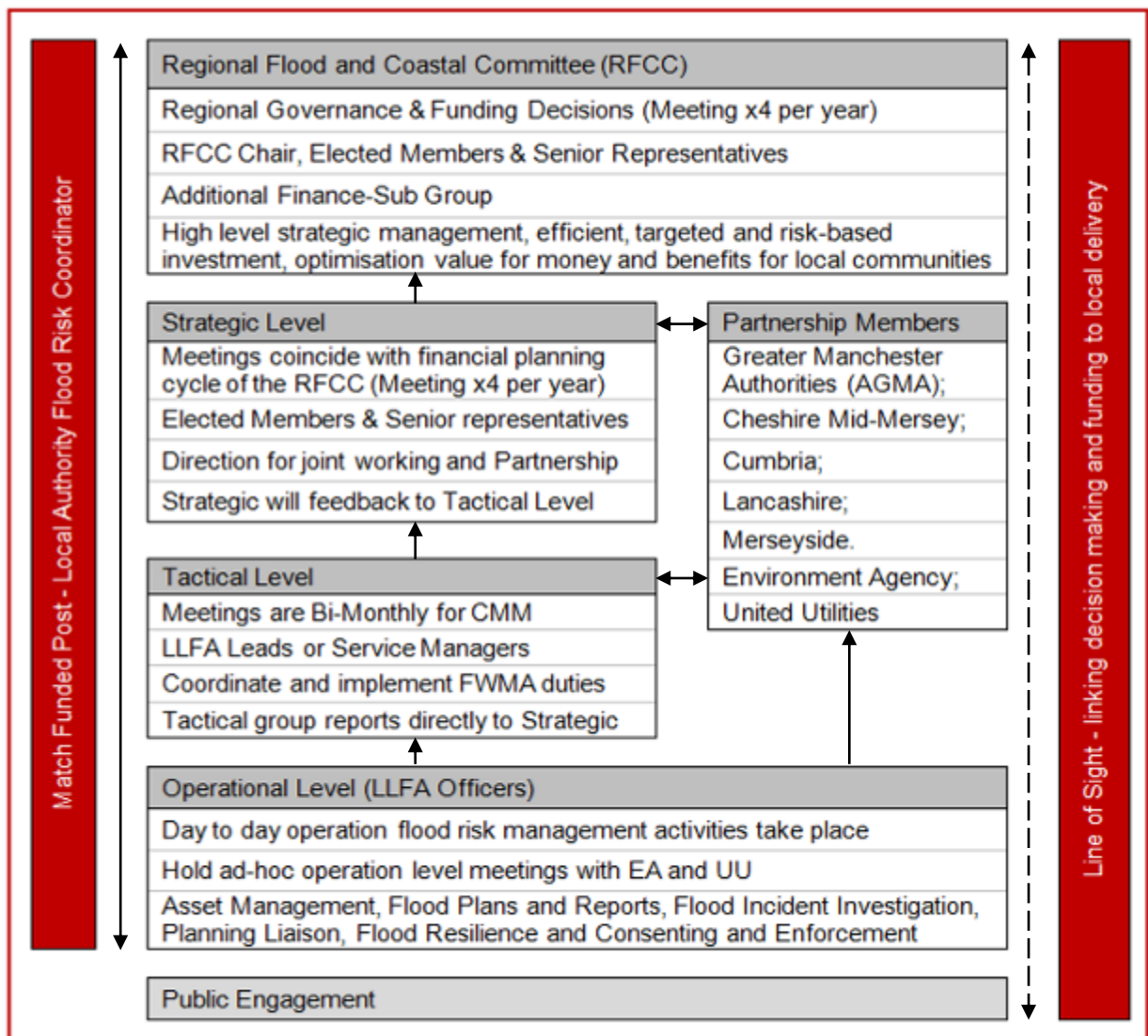
2.9.3 As part of the **Operational Group**; Engineers from St.Helens Council, United Utilities and Environment Agency meet on a bi-annual basis, or as required, if flood events occur to discuss issues and scheme delivery. The Operational Level is where day-to-day Flood Risk Management activities take place. The **Tactical Group** includes technical and operational leads/managers who meet on a bi-monthly basis, or as required on a project driven basis, to coordinate delivery, share skills and implement decisions made at the Strategic level. The Tactical Group reports directly to the Strategic Group who are responsible for setting the overall strategic direction of the partnership. The **Strategic Group** contains Elected Members and senior representatives from the RMAs who meet each quarter, or as required on a project driven basis. The meetings are timed to coincide with the financial planning cycle of the Regional Flood & Coastal Committee (RFCC). The Strategic Group sets the direction for joint working and the management of flood risk across the Partnership.

Objective 1: Risk Management Authorities and Responsibilities

2.9.4 The **Regional Flood & Coastal Committee (RFCC)** for the North West region provides a local democratic role in the management of flood and coastal erosion risk in order to ensure the purposeful and efficient spending of public money and other resources. The RFCC works across LLFAs, the Environment Agency and other RMAs to develop a mutual understanding of risk across its locality, and use this understanding to help develop plans to manage risk reflecting Defra’s aims for flood and coastal erosion risk management. RFCC meetings are held each quarter, although there may be additional meetings at a sub-group level where local authorities work together. The RFCC provides a platform for frequent knowledge transfer with all Partnerships situated in the North West region. These are the Cheshire Mid-Mersey, the Association of Greater Manchester Authorities (AGMA), Cumbria, Lancashire and Merseyside.

2.9.5 It is recognised that members of the public may also have valuable information to contribute to local flood risk management; therefore **Public Engagement** is a key priority. The Environment Agency’s ‘Building Trust with Communities’ (2005) document provides the basis of how to communicate risk including the causes, probability and consequences to the general public and professional forums such as local resilience. The FRR 2009 and FWMA 2010 accelerated the need for Councils to increase public engagement. This has brought significant benefits to local flood risk management including building trust, gaining access to additional local knowledge and increasing the chances of stakeholder acceptance of options and decisions proposed in future flood risk management plans.

❖ **Figure 2.2 - Overview of legislation contributing to current flood risk management**



3. Objective 2: Assessment of Flood Risk in St.Helens

Assessment of the Flood Risk in St.Helens is developed by researching the area to identify flooding issues and produce Risk Assessments using a range of internal and external datasets, liaising with flood risk partners and the public.

What this section will cover:

- Climate Change;
- Overview of flood risk across St.Helens;
- Data sources to assess the impact of past, present and future flooding locations.

3.1 Assessment Background Legislation

3.1.1 The assessment of flood risk in St.Helens (similar to neighbouring partner authorities) is produced using a range of internal and external datasets, up-to-date Environment Agency Mapping and Modelling techniques and gathering historical and current local knowledge. Assessment of the local flood risk is required in section 9 of the FWMA 2010.

REGS

FWMA 2010 – Section 9 Local flood risk management strategies: England

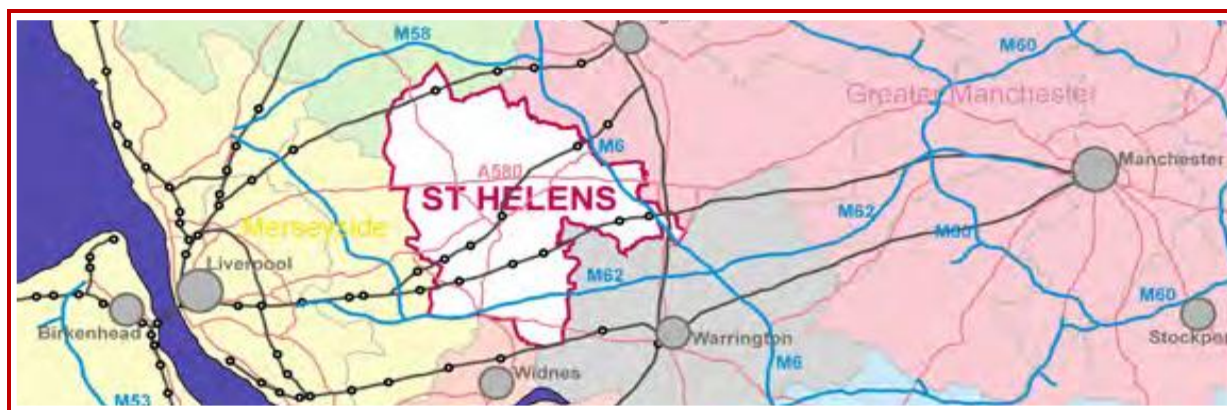
- (4) The strategy must specify- (a) the risk management authorities in the authority's area, (g) the assessment of local flood risk for the purpose of the strategy and (i) how the strategy contributes to the achievement of wider environmental objectives.

3.2 Assessment of the Borough

3.2.1 St. Helens Borough covers approximately 13,900 hectares, used primarily for agricultural purposes, and is generally 48.8 metres above sea level. The 2018 government estimate of the population of St. Helens is approximately 179,594. The vast majority of the Borough lies within the catchment of the River Mersey and in the Sankey sub catchment, the remainder lies within the Alt Catchment; there is a watershed boundary in the Borough on the approximate line of the M62 motorway. Figures 3.1 and 3.2 show the St.Helens Council Administrative area in relation to the Merseyside and Cheshire Authorities (North West) and a identification of the main watercourse system. An updated Preliminary Flood Risk Assessment (PFRA) in 2017 concluded that compared to the National defined thresholds, and there were no events which had significant harmful consequences of flooding.

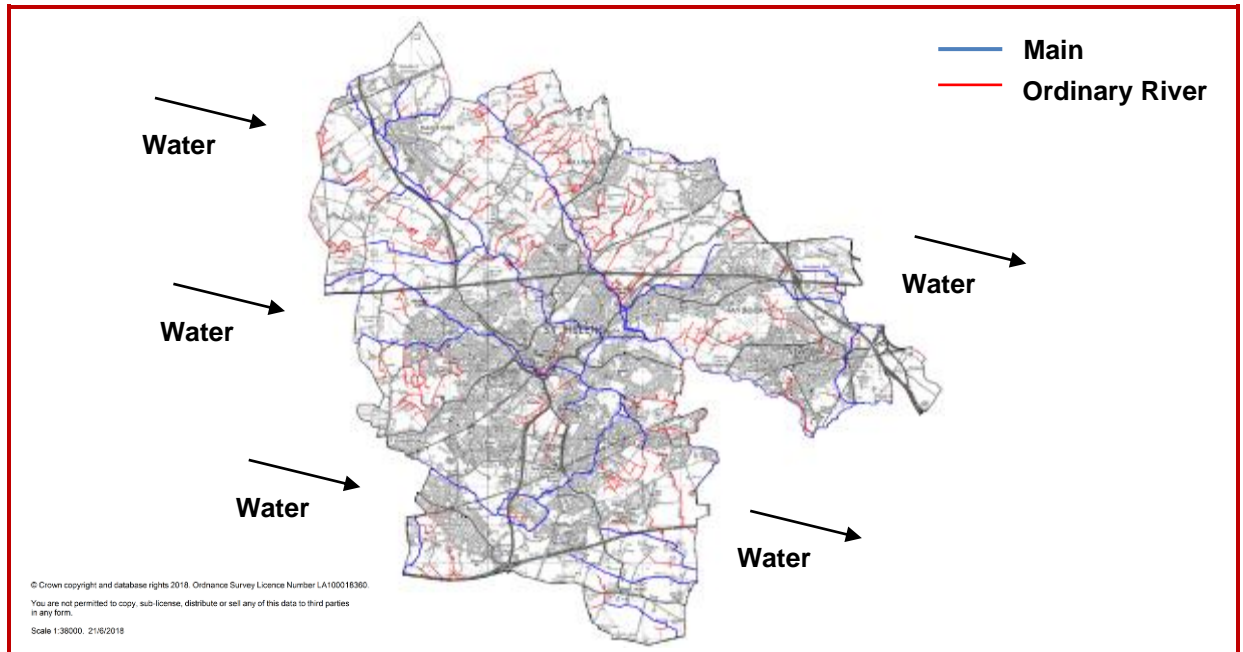
3.2.2 The Sankey Brook is the primary watercourse draining St. Helens which runs from the central low lying lands of the Borough, east and then south, into the River Mersey at Sankey Bridges in Warrington. The central area of the Borough is drained by a radial pattern of tributaries including Black Brook draining the north and running west of Billinge Hill, Rainford Brook and Windle Brook to the north-west and west respectively, and Sutton Brook to the south draining Rainhill. To the south of the M62, the Borough drains direct to the Mersey through the small tributaries of Whittle. Union Bank and Penketh Brook. Simonswood Brook in the northwest of the Borough drains to the River Alt to the west.

❖ Figure 3.1 – St.Helens Council Administrative Area (North West Placement)



3.2.3 Due its location at the top of the Sankey and Mersey Sub Catchment, the St.Helens area generally has a low flood risk rating compared to neighbouring downstream authorities. However St.Helens is still subject to local flooding hotspots given the historical industrial past, unpredictability of the climate and quick change from farmland and rural areas to heavily urbanised locations.

❖ **Figure 3.2 – St.Helens Council Administrative Area (Watercourse System)**



3.2.4 The years 2010 and 2011 experienced the most prolonged dry periods since 1953 and also the worst winters for 100 years. 2012 exhibited a similar pattern of dry weather with early drought orders in many parts of the country however, the early part of June the weather patterns changed drastically. The Borough experienced three significant flood events over the summer of 2012 (25th and 26th September) in which 90mm of rain fell in just 48 hours where the September average is 73mm for the whole month due to a deep low air pressure system. 2012 became the second wettest year on record for England, with 4 out of the 5 wettest years since the year 2000. Erratic, un-seasonal and extreme weather seemed to be increasing with flooding becoming a priority issue. It is against these unpredictable backgrounds that assessments of flood risk are made.

3.2.5 This erratic weather pattern continued in November and December 2015, in which the UK had a period of unseasonably mild conditions resulting from a warm and moist tropical air mass. This led to regular deep air depressions, record-breaking rainfall and exceptionally wet and windy frontal systems. This pattern of weather resulted in the named storms of Desmond, Eva and Frank hitting Scotland, Wales and northern England with December 2015 now becoming the second wettest on record. Rainfall of 120mm fell in just 24 hours on the 26th December (average is 145mm for the month) leading to significant wetted ground conditions thus resulting in limited soil storage capacity and increased surface runoff from permeable areas.

3.2.6 St Helens was at the southern edge of Storm Eva and a significant amount of rainfall fell causing significant flooding across the north of the Borough most notably West End Road, Beech Gardens, Peasley Cross Lane, College Street, Island Brow and Merton Bank Road. At the time of the incident St.Helens Council were assessing the storm front in which flood warnings showed the weather system to the north of the Wigan Area, however the early hours on the 26th December 2015 saw the weather change and shift over the St.Helens area. The Causey Bridge River Gauge is the nearest recorded river gauge to St.Helens (typical range of 1.991m between the levels 0.209m and 2.200), the highest level recorded at this gauge is 3.202m (October 30th 2000) on the 26th December 2016 the recorded level was at 2.95m. From 2015 to 2018 there have been a number of localised heavy flash flood events that have been difficult to monitor or predict resulting in property flooding and disruption of the road network.

3.3 Data Availability and Limitations

3.3.1 Due to collaborative working at the catchment scale the following authorities and organisations regular share information to keep an accurate record of flooding incidents within the St.Helens area, these include: United Utilities, Environment Agency, Emergency Services and Merseyside Fire and Rescue Service. Since implementation of the FWMA 2010 a number of processes have improved but a number of limitations still remain. Limitations of the available data are shown in table 3.1 and 3.2 below.

❖ **Table 3.1 - Data Limitation**

Limitation:	Reasoning:
Inconsistent Recording Systems	Previously the lack of a consistent flood data being captured within one central recording system has led to inconsistencies in the recording of flood event data. The Council addressed this issue as part of undertaking Sections 19 and 21 of the FWMA 2010. Only sections of the St.Helens area that have recently been flooded have been scrutinised for consistency. The limitation of inconsistent recording still applies for those sections of the St.Helens area that have only experienced flooding historically.
Incomplete Datasets	Some of the datasets collated are not exhaustive. St Helens Council along with the other stakeholders, have strived to reduce the number of incomplete datasets since 2011. Records for recent flooding locations are now comprehensive, however knowledge gaps still remain in sections of St Helens that have only experienced flooding historically and therefore hinder the identification of accurate flood risk areas.
Varied Quality of Data	Depending upon stakeholder objectives, when collecting information there has been varied quality in historic flood records. This has made it difficult to accurately assess the consequences of historic local flooding.
Records of Consequences of Flooding	It is not always possible to clearly identify and compartmentalise flooding, particularly from engineered systems that are typically interconnected, which results in flooding from a combination of sources. Data records provided by the other partner organisations were not always comprehensive for specific past flood events. Since 2011 there has been increased co-operation with stakeholders to standardise the recording procedure to become more aligned and comprehensive, increasing confidence to identifying flooding source and consequence.
Quality Assurance	Data collected was subject to quality assurance measures to monitor and record the quality and accuracy of acquired information and datasets. A data quality score was given, which is a qualitative assessment based on the Data Quality System provided in the Surface Water Management Plans (SWMP) Technical Guidance document (March 2010). This system is explained in Table 3.1. A confidence rating for the dataset was then determined as summarised in Table 3.3.

❖ **Table 3.2 – Recording of the Quality of Data**

Quality:	Description:	Explanations:	Example:
1	Best possible	No better available; not possible to improve in the near future	High resolution LIDAR River/sewer flow data Rain gauge data
2	Data with known deficiencies	Best replaced as soon as new data are available	Typical sewer or river model that is a few years old
3	Gross assumptions	Not invented but based on experience and judgement	Location, extent and depth of surface water flooding. Operation of un-modelled highway drainage 'future risk' inputs e.g. rainfall, population
4	Heroic assumptions	An educated guess	Ground roughness for 2D models

3.3.2 Table 3.4 catalogues the relevant information and datasets received from partner organisations and provides a description of each of the datasets that were obtained by St Helens Council. The data is geo-referenced where possible. This has made it possible to display this information using GIS software and overlay layers to identify the spatial distribution of historic flood events and relate these datasets to receptor information, in order to assess the overall flood risk. The data was specifically provided for this initial PFRA study and is not publicly available due to data protection requirements, therefore there are restrictions on data use. St Helens Council must adhere to these data security measures. All data collected is stored on secured local servers, which are password protected. Table 3.3 illustrates the restrictions on the use of this data.

❖ **Table 3.3 - Summary of Data Restrictions and Licensing Details**

Phase:	Description:
United Utilities	The use of provided data is restricted to St Helens Council and their partners for the preparation of its preliminary flood risk assessment
Environment Agency	The use of some data is restricted to St Helens Council and their consultants for the preparation of its preliminary flood risk assessment. The use of other data is unrestricted.

❖ **Table 3.4 - Relevant Information and Datasets Description**

Quality:	Dataset	Description	Rating:
Environment Agency	Risk of Flooding from Surface Water (RoFSW)	Published 2013 national surface flood map supersedes: Areas Susceptible to Surface Water Flooding maps (2008) Updated Flood Map for Surface Water (2010) Dataset provides banding for High, Medium and Low risk to depth and velocity. Dataset is updated annually.	2
	Flood Map (Rivers & Sea)	Shows the extent of flooding from rivers with a catchment of more than 3km2 and from the sea.	2
	Areas Susceptible to Groundwater Flooding (AStGF)	1 kilometre square grid that identifies at a broad scale areas susceptible to flooding from groundwater on the basis of geological and hydrogeological conditions.	3
	National Receptor Database (NRD)	A national dataset of social, economic, environment and cultural receptors including residential properties, school, hospitals, transport infrastructure and electricity substations.	2
	Indicative Flood Risk Areas	Nationally identified flood risk areas, based on the definition of 'significant' flood risk described by DEFRA & WAG.	2
	Historic Flood Map (HFM)	GIS layer showing the maximum extent of all individual Recorded Flood Outlines from river, the sea and groundwater springs and shows areas of land that have previously been subject to flooding	3
	Mersey Estuary Catchment Flood Management Plan (CFMP)	CFMP's consider all types of inland current and future flooding, from rivers, groundwater, surface water and tidal flooding and are used to plan and agree the most effective way to manage flood risk in the future.	2
	LiDAR Data	Topographic Information held for St Helens Council is generally high resolution data.	1
	Rain Gauge Information	Gauge information available at one site in St Helens Council (Billinge) – available on request	2
	Telemetry	EA operates telemetry system in Warrington, (which is nearest telemetry point) where watercourse level and flow information is collected. – available on request	1

❖ **Table 3.4 - Relevant Information and Datasets Description (Continued)**

Quality:	Dataset	Description	Rating:
St.Helens Council	Anecdotal information	Anecdotal information: flood risk, flood history and local flood hotspots.	4
	Area Flood Risk Studies	Commissioned by the Council for: Bell lane Beech Gardens, College Street, West End Road, Warrington Road.	2
	CMM Ordinary Watercourse Critical Asset Identification & Condition Survey	Outputs from partnership work consist of: Identification of critical assets, CCTV survey of identified culverts, Flood modelling, Ordinary Watercourse Condition data	2
	St Helens Council Flood Risk Asset Inspection Project	Borough wide asset inspection works undertaken by Consultant on behalf of St Helens Council & Blockage Sensitivity Testing.	2
	Strategic Flood Risk Assessment Level 1	The Stage 1 SFRA focuses on collecting information regarding all sources of flooding. This helps to identify the spatial distribution of flood risk sources.	3
	Strategic Flood Risk Assessment Level 2	The Stage 2 SFRA focuses on the details nature of flood hazard taking into account the presence of flood risk management measures such as flood defences and the location of key development and regeneration areas.	2
	Critical Infrastructure dataset	Contains information of critical infrastructure.	2
	Water Cycle Strategy	The Water Cycle Strategy identifies the water services infrastructure that is needed to support and enable sustainable development in the mid Mersey area.	2
	Surface Water Management Plan	Information on future surface water flood risk is outlined in these documents.	2
	S19 Flood Investigation reports	LLFAs have a duty to investigate and record details of significant flood events within their area. Reports include photographic evidence during and after flood event.	2
	Historic Flooding Records	Historic records of flooding from surface water, groundwater and ordinary watercourses.	2
	Asset Register / Record	Register of flood risk management assets.	2
	Scheme Business Cases	Business cases for schemes contain information regarding risk and potential solutions.	2
United Utilities	Flooding Register	Registers logs and records of sewer flooding incidents for each area.	2
	Modelling Information	Models of drainage systems operated and maintained by United Utilities.	2
	Asset Register	Asset register available to St Helens Council on request.	2
	Telemetry	Information regarding sewer performance	2
Fire & Rescue	Incident Response Register	Issue logs of all events recorded by Merseyside Fire and Rescue Service. This includes internal floods such as burst pipes and sewerage problems	2
Other Sources	Media Records	Information obtained from online media – news websites / social media etc.	2

3.4 Historic Flood Risk (Assessment of Past Flooding)

3.4.1 This section summarises the readily available and relevant information on historic flooding. This document will contain base information from the previous version of this strategy along with the updated Preliminary Flood Risk Assessment (PFRA) 2017-2023.

3.5 Historic Surface Water Flooding (Overland Flow)

3.5.1 Surface water flooding, also known as pluvial flooding, results from overland flow before the runoff enters a watercourse or drainage system. It is usually the result of high intensity rainfall exceeding the hydraulic capacity of the receiving system. However it can also occur with lower intensity rainfall when the land has a low permeability and/or is already saturated, frozen or developed. Surface water flooding within the United Kingdom is becoming a regular issue due to the high rate of developments creating large impermeable surfaces. There are certain locations within the St Helens area where this flooding mechanism is more prominent due to the increased urban nature of the catchment, combined with the complex hydraulic interactions between urban watercourses, surface water drainage systems, and combined sewer systems at overflow locations such as an example of Peasley Cross in St Helens.

3.5.2 Some records do not identify the number, and duration, of properties flooded. This has led to low confidence as often only street names have been reported, regularly from local media, and do not specifically identify the nature of the flooding, possible causes, or exact locations. Appendix A Figure 2 shows the locations of all known past flood events collated from key RMAs and stakeholders. There are a total of 37 recorded historical surface water flooding events of varying significance and type. St Helens Council has identified no incidents of historically significant harmful consequences for surface water flooding. Areas affected by surface water flooding which have not been classified as having significant harmful consequences will be reviewed as part of St Helens Council longer-term strategy.

3.6 Historic Ordinary Watercourse Flooding (Fluvial)

3.6.1 Flooding from any type of watercourse, also known as fluvial flooding, occurs when intensive or prolonged rainfall causes a watercourse to exceed hydraulic capacity. The additional inflow causes the water to rise above its banks or retaining structures and subsequently flows onto the land. All watercourses within the St Helens area have been identified using the Environment Agency's Detailed River Network (DRN) and are classified as either main river or Ordinary Watercourse. These are indicated in Figure 5c.

3.6.2 Main rivers are usually larger rivers and streams. Other rivers are called Ordinary Watercourses. The Environment Agency carries out maintenance, improvement or construction work on main rivers to manage flood risk under the Water Resources Act 1991. Environment Agency powers to carry out flood defence work apply to main rivers only. Lead local flood authorities, district councils and internal drainage boards carry out flood risk management work on ordinary watercourses. The Environment Agency decides which watercourses are main rivers. It consults with other risk management authorities and the public before making these decisions.

3.6.3 The main river map is then updated to reflect these changes. Inclusion of main rivers is beyond the scope of this PFRA. Ordinary Watercourses are any watercourses that are not designated a main river by the Environment Agency and therefore come under the powers of St Helens Council. These include every river, stream, ditch, drain, cut, dyke, sluice, sewer (other than a public sewer) and passage through which water flows and which does not form part of a main river. Ordinary Watercourses with known flood risks associated to them (limited channel capacity, channel constrictions or a poor maintenance regime) were previously designated Critical Ordinary Watercourses (COWs). These were not classified as main river but which the Council had agreed with the Environment Agency to be critical because they have the potential to put at risk from flooding large numbers of people or property.

3.6.4 In 2006/7, the Environment Agency reclassified all COWs as main rivers and took over responsibility for their maintenance and management, in a process known as enmainment. St Helens Council has identified no historically significant harmful consequences for fluvial flooding from Ordinary Watercourses. Areas affected by fluvial flooding which have not been classified as having significant harmful consequences will be reviewed as part of St Helens Council longer-term strategy.

3.7 Historic Interaction with Main River Flooding (Fluvial)

- 3.7.1 It is identified in previous version of the Flood Risk Management Strategy and in the Mersey Estuary Catchment Flood Management Plan (CFMP) that there is a long history of flooding from Main River network within St Helens. Historic issues such as Rainford Brook, Black Brook and Clipsley Brook are the main issues in relation to flood risk across the borough mainly due to the change in climate, historic development and previous land use across the borough.
- 3.7.2 Ordinary Watercourses flow into main rivers, and vice versa, and main rivers flow into or under canals and urban drainage systems outfall into main rivers. Flooding mechanisms associated with these interactions are often the result of flow backing up because another source has prevented normal discharge. Information about historical flooding will often be due to an unknown source, or because of interactions between sources. This interaction will be difficult to identify without detailed flood risk studies. Concerning flooding directly from main rivers, the Environment Agency has legal responsibility for them and as such has not been discussed within this Strategy.

3.8 Historic Sewer Flooding

- 3.8.1 Sewer flooding is often caused when drainage systems exceed their hydraulic capacity during periods of intensive, or prolonged, rainfall. However sewer flooding can also be caused when a blockage occurs on the network restricting the flows. These drainage systems are owned and maintained by the sewage undertaker (United Utilities). There are 3 types of sewer:
- Foul only flows;
 - Surface water flows;
 - Both foul and surface water flows (combined system).
- 3.8.2 Combined sewerage systems are mostly associated with sections of the St Helens area developed during the Victorian era. To maintain hydraulic efficiency the combined system contains a number of relief structures to divert excess flows to adjacent watercourses to reduce the risk of sewer flooding from manholes. These structures are known as Combined Sewer Overflows (CSOs). The operation of these increases the risk of fluvial flooding, as well as pollution of the watercourse. Each CSO has a permit from the environment agency which outlines the conditions in which the asset can discharge. Developments from the late 1970s / early 1980s have been constructed using individually separate foul and surface water systems.
- 3.8.3 There are some housing developments from the early 20th century that utilise the principles of the separate system where both foul and surface water flows are routed in the one manhole. These dual manholes operate in a similar manner to CSOs and are normally situated at the head of the sewerage network, whereas CSOs are situated in the main body of the system. Dual manholes can cause major pollution problems from storm sewage discharges or dry weather discharges via surface water sewers as a result of foul sewer blockages.
- 3.8.4 Some of the sewers across St.Helens date back to Victorian times. The population and size of St.Helens has grown as the community around St.Helens expanded. More houses and businesses mean an increase in the amount of drainage systems and discharges and less permeable surfaces for rainwater to drain into. Climate change is also leading to longer, heavier periods of rain. These two factors can result in the existing sewers and drains not being able to cope at certain times during heavy rainfall.
- 3.8.5 United Utilities have provided an incident register for locations that have experienced internal (i.e. flooding within a property) and external flooding from a number of sources. The register has been filtered to identify hydraulic issues, such as overloading of the sewerage system or restriction at outfall locations caused by high level in the receiving watercourse. "Other" causes of flooding, for example blockages, asset failure or other operational issues, have been discounted from this PFRA. Figure 6 in Appendix A presents the historic sewer flooding (information provided by United Utilities). There have been a total of 270 flooding incidents (213 external and 57 internal - period 2008-13) across the St Helens area. Areas affected by sewer flooding which have not been classified as having significant harmful consequences will be reviewed as part of St Helens longer-term strategy.

3.9 Historic Groundwater Flooding

3.9.1 Groundwater flooding occurs when the water table rises above normally expected and anticipated levels and emerges at the ground surface. Groundwater flooding occurs in response to a combination of already high groundwater levels (regularly during mid or late winter) and intense or unusually prolonged periods of rainfall. Other mechanisms which produce groundwater flooding including:

- Artificial structures;
- Mine water rebound;
- High in-bank river levels;
- Groundwater rebound (which occurs when abstraction, typically for drinking water, industrial or mine dewatering purposes, stops and water levels return to pre-abstraction levels).

3.9.2 The occurrence of groundwater flooding is usually localised and, unlike flooding from watercourses, does not generally pose a significant risk to life due to the slow rate at which the water level rises but can last several months and can cause significant social and economic disruption to the affected areas. There are known locations with high groundwater within St Helens however, there are no specific records or reported incidents of groundwater flooding. Therefore it is considered currently that there are no groundwater flood incidents that would result in 'significant harmful consequences'.

3.10 Historic Groundwater Flooding

3.10.1 Groundwater flooding occurs when the water table rises above normally expected and anticipated levels and emerges at the ground surface. Groundwater flooding occurs in response to a combination of already high groundwater levels (regularly during mid or late winter) and intense or unusually prolonged periods of rainfall. Other mechanisms which produce groundwater flooding including:

3.11 Historic Flooding from Canals

3.11.1 The Canal & Rivers Trust, formerly British Waterways, is the organisation delegated for the maintenance of 2,000 miles of waterways in England and Wales. These engineered systems are heavily controlled and are unlikely to respond in the same manner during periods of rainfall as natural watercourses. The probability of flooding is more associated with residual risks, such as overtopping of canal banks, breaching of embanked reaches or asset (gate) failure.

3.11.2 Each canal also has significant interaction with other sources of flood risk, such as the main rivers and the minor watercourses that feed them, or drains that cross beneath them. St Helens Council has one major Canal within its boundary (St Helens Canal) which is maintained by a number of parties (Canal & Rivers Trust, Local Authority and Private Landowners). Out of 3 historical flood events with significant harmful consequences, St Helens Council has identified 2 in relation to canal. Areas affected by canal flooding which have not been classified as having significant harmful consequences will be reviewed as part of the longer-term strategy.

3.12 Future Flood Risk

3.12.1 Whilst analysis of past flooding provides valuable information on the nature and extents of flooding that have occurred in St.Helens in the past, it does not necessarily inform about how and where flooding may occur in the future. Predictions of future flood risk are produced using combinations of hydrological and hydraulic modelling and analysis of past hydrological records to make future predictions. The following sources of flooding have been considered in subsequent sections of this report: Ordinary watercourses (fluvial), Surface water; Groundwater and Canals. Further information of past risk can be found in the marker box below:

MARKER 3.1

Future and Historic Flood Risk

Information can be found by accessing the EA links the Council Website.

<https://www.sthelens.gov.uk/traffic-travel-parking/highway-maintenance/flooding-and-drainage/flood-and-water-management/>

3.13 Future Surface Water Flooding

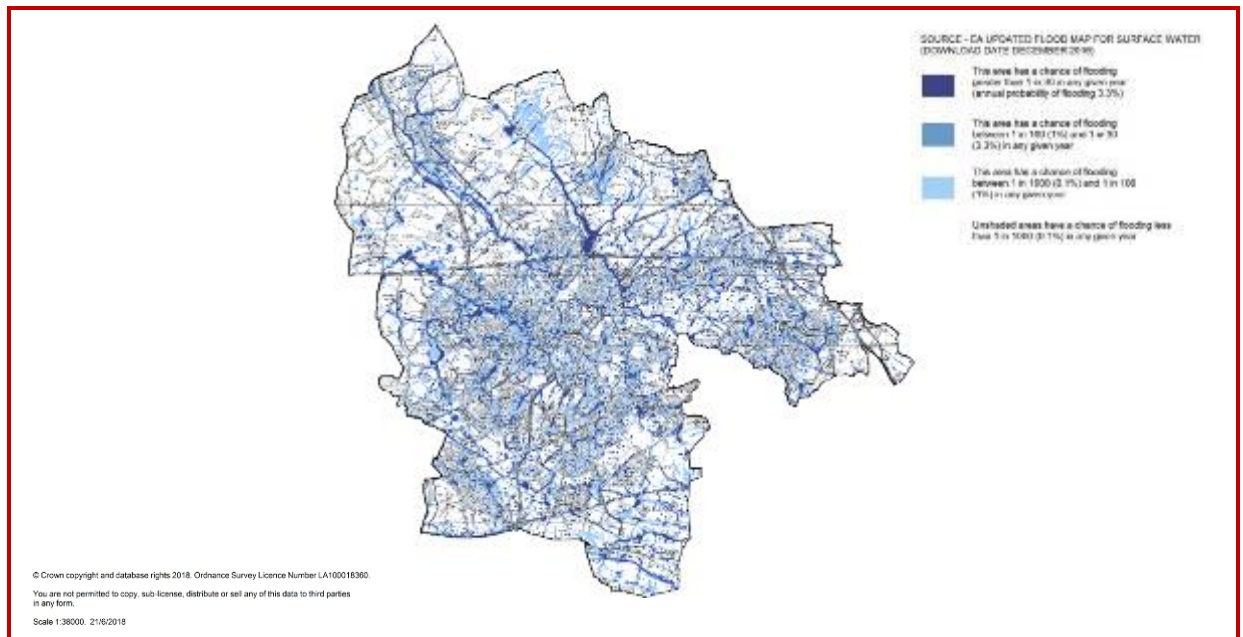
3.13.1 Since 2008, the Environment Agency has produced a series of surface water flood maps to aid local authorities in determining areas at risk of flooding. The latest incarnation of the maps is the Risk of Flooding from Surface Water (RoFSW) maps. Environment Agency guidance on using surface water flood risk information recommends that St.Helens Council, as an LLFA, should: review, discuss, agree and record, with the Environment Agency, United Utilities, and other interested parties, what surface water flood data best represents their local conditions, known as “locally agreed surface water information”. Whilst this is not a requirement under the Regulations, it does inform the PFRA process as this information should play an important role in identifying FRAs.

3.13.2 St.Helens Council has agreed with all interested parties that the Risk of Flooding from Surface Water (RoFSW) mapping is the most appropriate dataset that represents the risk of flooding from surface water within St.Helens at a high level. Further information to the limitations of this dataset is contained within St.Helens PFRA 2017. Table 3.5 show the breakdown of the type of service at risk by ward area and Figure 3.3 shows this data in a visual map format. In summary there are 1,159 Critical Services, 6276 Non-Residential and 82,347 Residential Services affected by potential future surface water flooding.

❖ **Table 3.5 - Ward Extract from the Future Surface Water Flooding (EA Dataset)**

Ward	Low (1-1000yr)			Moderate (1-100yr)			Significant (1-30yr)		
	Critical Service	Non-Residential	Residential	Critical Service	Non-Residential	Residential	Critical Service	Non-Residential	Residential
Numbers of Features Potentially at Risk from Surface Water Flooding in the Future (includes those situated on upper levels) (>50% wetted parameter. Includes features on upper floor levels - max value)									
Billinge & Seneley Green	66	232	4,613	-	3	98	-	-	16
Blackbrook	32	150	4,473	-	1	64	-	2	29
Bold	77	425	4,482	-	1	25	-	4	15
Earlestown	57	436	5,085	-	9	157	-	5	40
Eccleston	62	151	4,900	2	-	78	1	-	17
Haydock	83	553	5,119	7	6	59	2	2	48
Moss Bank	35	155	5,011	2	5	32	-	3	16
Newton	62	255	5,274	-	-	66	1	-	62
Parr	66	249	5,715	1	5	78	2	2	17
Rainford	65	417	3,630	-	4	46	-	5	40
Rainhill	74	236	4,803	1	6	72	2	2	35
Sutton	53	180	5,328	1	3	76	-	2	25
Thatto Heath	60	280	5,883	3	4	57	-	1	31
Town Centre	241	1,902	6,200	3	25	35	2	26	42
West Park	37	247	5,451	2	6	127	1	1	110
Windle	56	269	4,697	-	3	47	-	3	23
Sub Totals	1,126	6,137	80,664	22	81	1,117	11	58	635
Totals	87,927			1220			635		

❖ **Figure 3.3 – Extract of the Future Surface Water Flooding Map (EA Dataset)**



3.14 Future Sewer Flooding

3.14.1 Hydraulic (1D) sewer models have been created which cover the majority of the sewerage network maintained by United Utilities. These have been verified against a flow survey to provide an accurate representation of network performance during both dry weather and storm conditions. A suite of design storm events of differing return periods, durations, and inclusive of the effects of climate change, are then applied to the models to assess hydraulic performance. The outputs include a range of predicted surcharge levels and flood volumes at individual node locations. Clusters of flooding nodes are then grouped based upon the common hydraulic deficiencies and/or geographic location and are checked against historical records to confirm existing flooding locations, and used to predict future flooding locations. Whilst this data allows a high-level analysis of sewer flood risk, there are a number of limitations with the data:

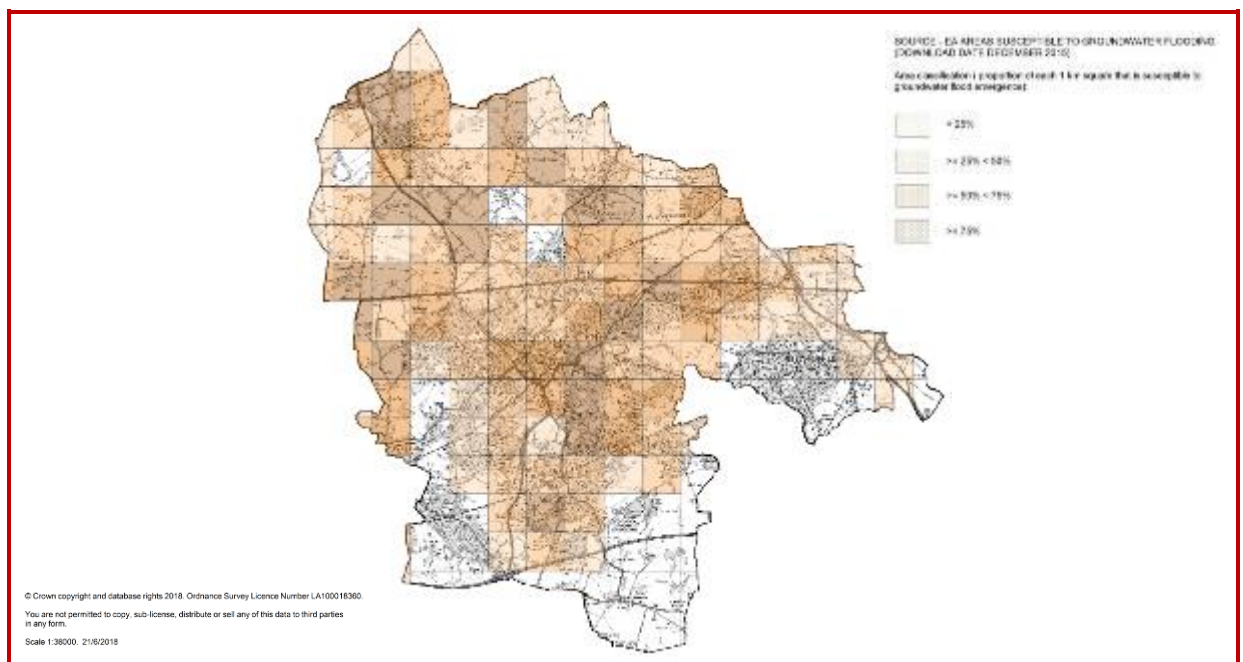
- Not all sewer networks are modelled;
- Model confidence is low in sections of the network that were not covered by flow monitor during the survey period, or where conditions were too poor to record accurate data;
- The models are calibrated for a particular period and conditions the flow survey was installed and may not fully take into consideration the effects of seasonality;
- 1D models do not represent the flow path unlike 2D and Integrated Catchment Modelling (ICM) models. Predicted flood volume in 1D models departs and returns to the system at the same node location, in truth this may not be the case;
- Not all models accurately represent interaction watercourses at outfall locations. A number of 1D models are to be upgraded to include representation of watercourses, Integrated Catchment Modelling (ICM) which includes the 2D element, during the coming years. This will enable increased understanding of hydraulic interactions of all systems, in particular the operational performance of CSOs and flood routing paths of surface waters.

3.14.2 Appendix A figure 6 presents the historic sewer flooding information provided by United Utilities. There have been a total of 270 flooding incidents (213 external and 57 internal) across St.Helens which are coherent with predictions from the hydraulic sewer model. Based on information readily available on their website in their "Strategic Direction Statement" United Utilities are proposing to address a significant number of sewer flooding problems by 2020. Based on figures from 2015, this will include a 40% reduction to the number of properties experiencing internal foul flooding. This is to be achieved through investment in the completion of a number of studies and capital works projects.

3.15 Future Groundwater Flooding

3.15.1 The Environment Agency's national dataset, Areas Susceptible to Groundwater Flooding (AStGWF) provides the main dataset used to assess the future risk of groundwater flooding. The AStGWF map (Figure 3.4) uses four susceptible categories to show proportion of each 1km grid square where geological and hydrogeological conditions show that groundwater might emerge. It does not show the likelihood of groundwater flooding occurring. In common with the majority of datasets showing areas which may experience groundwater emergence, this dataset covers a large area of land, and only isolated locations within the overall susceptible area are actually likely to suffer the consequences of groundwater flooding. Unless an area identified as "susceptible to groundwater flooding" is also identified as "at risk from surface water flooding", it is unlikely that this location would actually experience groundwater flooding to any appreciable depth, and therefore it is unlikely that the consequences of such flooding would be significant.

❖ **Figure 3.4 – Extract of the Areas Susceptible to Groundwater Flooding (EA Dataset)**



3.15.2 The AStGWF dataset was derived using the British Geological Society (BGS) 1:50,000 scale Groundwater Flood Susceptibility Map produced in 2010, utilising the top two susceptibility bands. Two hydrogeological conceptual models have been used in the development of the susceptibility dataset. These are:

- Permeable Superficial Deposit (PSD) flooding - Associated with shallow unconsolidated sedimentary aquifers which overlies non-aquifers. These aquifers are susceptible to flooding as the storage capacity is restricted. Direct rainfall recharge can be relatively high and the sediments may be very permeable thus creating a good hydraulic connection with adjacent watercourses. Intense rainfall can cause a rapid response in groundwater levels; rising river levels. As the upstream catchment responds to the rainfall, this can create increased heads that drive water into the aquifer;
- Clearwater flooding - caused by the water table in an unconfined aquifer rising above the land surface in response to extreme rainfall. Occurs when antecedent conditions of high groundwater levels and high unsaturated zone moisture content combine with intense rainfall.

3.15.3 The Groundwater Flood Susceptibility Map does not incorporate anomalous discharge from springs or flooding associated with urban groundwater rebound, mine water discharge, urban drainage, or any other flooding associated with changes in the engineered environment. Figure 3.4 shows the AStGWF map whilst Table 3.6 provides a breakdown of data, however, it is not backed up by historical evidence and is subject to varying weather and climate change when readings are undertaken.

❖ Table 3.6 - Summary Extract from the Areas Susceptible to Groundwater Flooding (EA Dataset)

Flood Type and Class	Critical Services	Non-Residential	Residential	Totals
Clearwater	13	41	837	891
< 25%	13	36	834	883
>= 25% <50%	-	5	3	8
>= 50% <75%	-	-	-	-
>= 75%	-	-	-	-
Clearwater and Superficial Deposits	72	484	5,772	6,328
< 25%	3	35	39	77
>= 25% <50%	29	80	3,277	3,386
>= 50% <75%	31	225	1,874	2,130
>= 75%	9	144	582	735
Superficial Deposits	886	4,767	60,333	65,986
< 25%	114	503	9,043	9,660
>= 25% <50%	277	1,323	25,841	27,441
>= 50% <75%	307	2,127	15,383	17,817
>= 75%	188	814	10,066	11,068
Total	971	5,292	66,942	73,205

❖ Table 3.7 - Ward Extract from the Areas Susceptible to Groundwater Flooding (EA Dataset)

Ward	Critical Services				Non-Residential				Residential			
	< 25%	>=25% <50%	>=50% <75%	>= 5%	< 25%	>=25% <50%	>=50% <75%	>= 5%	< 25%	>=25% <50%	>=50% <75%	>= 5%
Billinge & Seneley Green	5	21	11	29	23	89	51	72	126	2,030	1,463	1,108
Blackbrook	-	7	6	19	-	41	32	80	-	1,383	1,830	1,353
Bold	9	36	3	21	59	216	17	69	206	2,830	213	954
Earlestown	5	-	-	-	23	3	-	-	1,277	-	-	-
Eccleston	30	5	18	-	33	12	53	20	1,900	383	1,502	366
Haydock	8	29	53	2	51	202	298	9	46	1,522	3,118	540
Moss Bank	-	29	5	-	-	135	9	-	-	3,803	394	161
Newton	18	-	-	-	89	-	-	-	1,047	-	-	-
Parr	-	27	28	14	-	98	90	68	-	2,765	2,197	848
Rainford	2	13	29	18	8	76	95	220	32	1,101	658	1,810
Rainhill	15	-	-	-	15	2	-	-	372	14	-	-
Sutton	-	21	20	13	1	29	127	28	77	2,561	1,336	1,455
Thatto Heath	20	38	3	-	126	136	10	-	2,587	2,945	-	-
Town Centre	1	19	145	81	24	114	1,423	392	32	1,078	3,114	2,053
West Park	17	17	5	-	122	59	68	-	2,214	2,734	637	-
Windle	-	44	12	-	-	196	79	-	-	3,972	795	-
Sub Total	130	306	338	197	574	1,408	2,352	958	9,916	29,121	17,257	10,648
Total	971				5,292				66,942			

3.15.4 As well as the national Groundwater Flood Map, there are a number of other national and more local datasets and studies which contain some details about possible groundwater flooding in St.Helens. The Environment Agency's Catchment Flood Management Plans (CFMP's) and the Lower Mersey and North Merseyside Water Resources Study in 2009 (Final Report 6588R4). Defra also have groundwater information in the form of Groundwater Emergence Maps (GEMs), however these maps do not necessarily imply flooding of properties, only that groundwater would emerge at the surface first within the indicated areas.

3.16 Future Ordinary Watercourse Flooding

3.16.1 There is at present no specific Borough wide modelling for ordinary watercourses however the Environment Agency have produced Flood Zone Maps which shows the results of coarse modelling of catchments over 3km² (Figure 4 in Appendix A). The Environment Agency Flood Map does not provide information on flood depth, speed or volume of flow. In order to better understand the risk of flooding from ordinary watercourse, St Helens Council Borough Council in 2012 commissioned JBA Consulting to assist the Council with development of an asset database and also to determine the flood risk associated with the assets collated. JBA Consulting simulated flooding caused by 100% blockage scenario in pipes, culverts or bridges using JScreen software. JScreen defined the extent of flood, and analysed its consequences highlighting the different property types that are vulnerable to flood risk if a culvert or any other flood risk asset were to fail.

3.16.2 In 2014/15, St Helens Council as part of the Cheshire Mid-Mersey Partnership (CMMP) undertook a project to improve the knowledge of flood risk from the ordinary watercourse network across the partnership area by undertaking asset inspections, topographical surveys and modelling works on ordinary watercourses which had been identified using the best available information at the time as potentially high risk. This project was considered to build upon the previous work completed by JBA due to the increase in collection of information. CH2M Hill was appointed in November 2014 under the Water and Environment Management (WEM) Framework to undertake appropriate assessment of more than 30 km of non-main watercourse across the CMMP areas. Three separate surveys were outlined to capture the required data for the proposed study outputs including: T98 Conditional Asset Assessment, CCTV survey and Topographical survey.

3.16.3 Catchment wide modelling and mapping was undertaken by CH2M following the completion of the survey investigations enabling visualisation of possible implications of events with return periods of 1 in 5 year, 1 in 30 year and 1 in 100 year. The modelled flood risk mapping represents the current situation of assets on the ground using the surveyed data to populate model data. Model results have been used to produce depth grids, flood outlines and property counts based on properties from the Nation Receptor Database (NRD) to identify properties at risk. Summary of property counts (locations extracted from NRD) within flood outline for modelled reach as part of CH2M Hill study are shown in the table 6c below. The small size of the watercourses considered within this study means there were no observed flow data sets available, therefore best practice outlined by the Environment Agency was followed. Although it appears that flooding may occur and meets criteria to indicate 'significant harmful consequences' per grid square the overall risk does not meet the criteria for a 'Flood Risk Area'.

- Catchments delineated using GIS and FEH CDROM;
- Catchment descriptors from FEH CDROM used within ReFH analysis to calculate inflows for required return periods.

❖ **Table 3.8 – Ordinary Watercourse Additional Modelling Results**

Location	Grid Area (km ²)	Property Count		
		1 in 5yr	1 in 30yr	1 in 100yr
Bold Heath	1	2	3	4
Eccleston	1	0	0	0
Wargrave	1	0	0	0
Billinge	4 (1)	375 (94)	414 (103)	430 (107)

3.17 Future Main River Watercourse Flooding

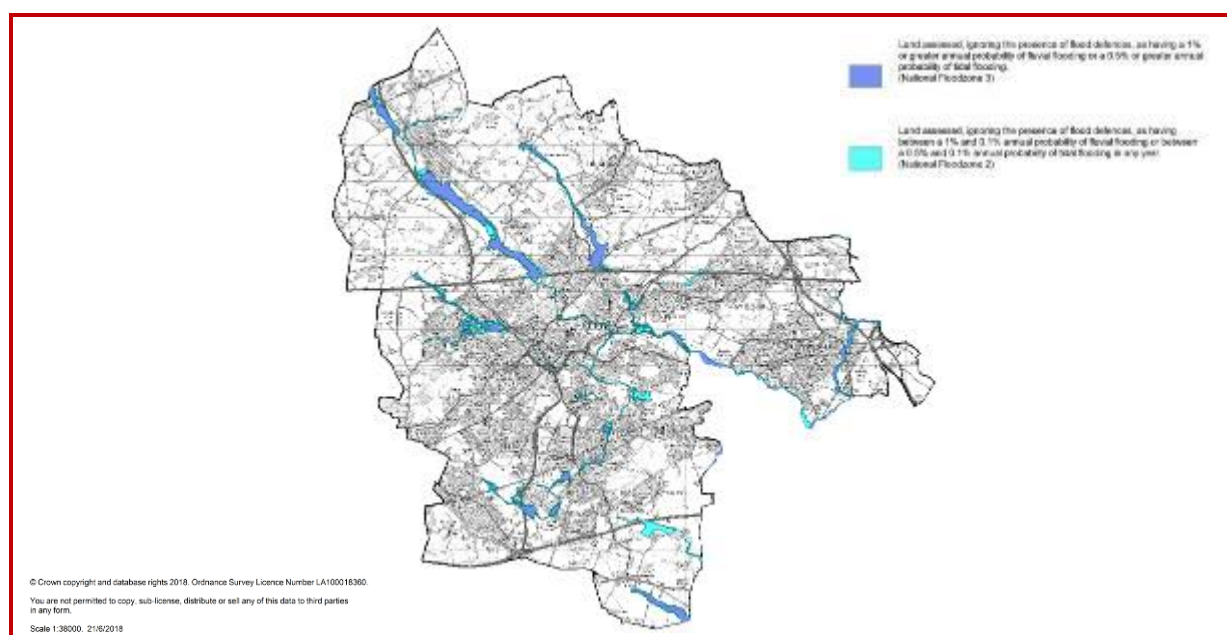
3.17.1 The Flood Map for Planning (Rivers and Sea) dataset is designed to support flood risk assessments in line with Planning Practice Guidance; and raise awareness of the likelihood of flooding to encourage people living and working in areas prone to flooding to find out more and take appropriate action. The information provided is based on modelled data and is therefore indicative rather than specific. Locations may also be at risk from other sources of flooding, such as high groundwater levels, overland run off from heavy rain, or failure of infrastructure such as sewers and surface water systems. The Flood Map for Planning (Rivers and Sea) does not provide information on flood depth, speed or volume of flow. It doesn't show flooding from other sources, such as groundwater or surface water runoff.

3.17.2 The EA updates the data every three months. The data is released as a whole dataset quarterly, but only update it in locations where new information is available. The Flood Map for Planning (Rivers and Sea) only shows the predicted likelihood of flooding from rivers or the sea for defined areas, and is not detailed enough to account for precise addresses (Appendix A figure 4). Individual properties therefore may not always face the same chance of flooding as the areas that surround them. The flood zones do not take into account the possible impacts of climate change and consequent changes in the future probabilities. Table 3.9 indicates the various definitions of flood zones and Figure 3.5 shows the extents in St.Helens.

❖ **Table 3.9 – Flood Zone Definition**

Flood Zone		Definition
1	Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding (all land outside Zones 2 and 3)
2	Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding.
3a	High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding
3b	The Junctional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. LPAs should identify in SFRAs areas of functional floodplain and its boundaries accordingly (Not separately distinguished from Zone 3a on the Flood Map)

❖ **Figure 3.5 – Extract of the (EA Dataset)**



3.17.3 Table 3.10 below shows the risk of Main River flooding (flood zones 2 and 3) to the St.Helens Borough and the individual wards. The risk to residential properties and people is also highlighted further.

❖ **Table 3.10 - Ward Extract from the Flood Risk Mapping for Planning (EA Dataset)**

Ward	Population	Flood Zone 2			Flood Zone 3			Flood Warning Area		
		Critical Service	Non-Residential	Residential	Critical Service	Non-Residential	Residential	Critical Service	Non-Residential	Residential
Numbers of Features Potentially at Risk from Main River Flooding using the Flood Mapping for Planning (Flood Zones 2 and 3). Ward Population is an estimate based on the time this report was written.										
Billinge & Seneley Green	10,399	-	-	-	-	1	2	-	1	2
Blackbrook	10,045	-	4	41	-	4	19	-	8	60
Bold	9,948	1	1	33	1	2	69	2	3	102
Earlestown	11,620	-	2	-	-	1	-	-	3	-
Eccleston	10,989	2	2	88	-	2	25	2	4	117
Haydock	11,497	-	-	-	-	1	-	-	1	-
Moss Bank	11,130	-	-	10	-	2	2	-	2	12
Newton	11,884	-	-	4	-	6	45	-	7	49
Parr	12,782	4	4	39	-	1	-	4	5	39
Rainford	8,175	1	3	13	2	38	19	3	41	33
Rainhill	10,802	-	-	-	-	-	-	-	-	-
Sutton	11,944	-	1	48	-	3	56	-	4	105
Thatto Heath	13,136	-	-	-	-	-	-	-	-	-
Town Centre	13,809	-	-	12	2	3	-	2	3	12
West Park	12,514	-	2	40	-	-	-	-	2	40
Windle	10,487	3	7	105	-	19	18	3	26	124
Sub Totals	181,163	11	26	433	5	83	255	16	110	695
Totals			470			343			821	
Residential Properties at Risk			433			255			695	
Number of People at Risk			953			561			1529	

3.18 Future Canal Flooding

3.18.1 All the historic Canals with St Helens Council Boundary are classed as main river watercourses (except section of Havana Flashes downstream of the Blackbrook Sankey brook confluence); therefore any risk designated with the canal will be looked as main river watercourse. Where issues arise with the canal sections, this will be discussed with the Canals and Rivers Trust and/or relevant land owners (in which Local Authority is one).

3.19 Significant Flood Risk Designation

3.19.1 Based on DEFRA thresholds of more than 30,000 people at flood risk, there is no evidence to indicate that there is a significant flood risk from local flooding sources in St Helens Council. However as stated in Table 6a there are up to 1816 properties potentially at risk during a flood event with a 1% (1 in 100 - annual probability). Majority of risk in St Helens comes from Main River, unmaintained disused Canals and/or historic hydraulic urban connections.

3.20 Climate Change and Long Term Development

3.20.1 Generally, preliminary assessment reports in 2011 described only the broad implications of climate change at river basin district level, based on UK Climate Projections, 2009 (UKCP09). Since then, some LLFAs have carried out local studies that included climate change assessments on flood risk. Whilst a significant amount of work has been completed since the introduction of the PFRA in 2011 it is still recognised that the implications of climate change for local flood risk are still not well understood.

REGS

UK Climate Projections

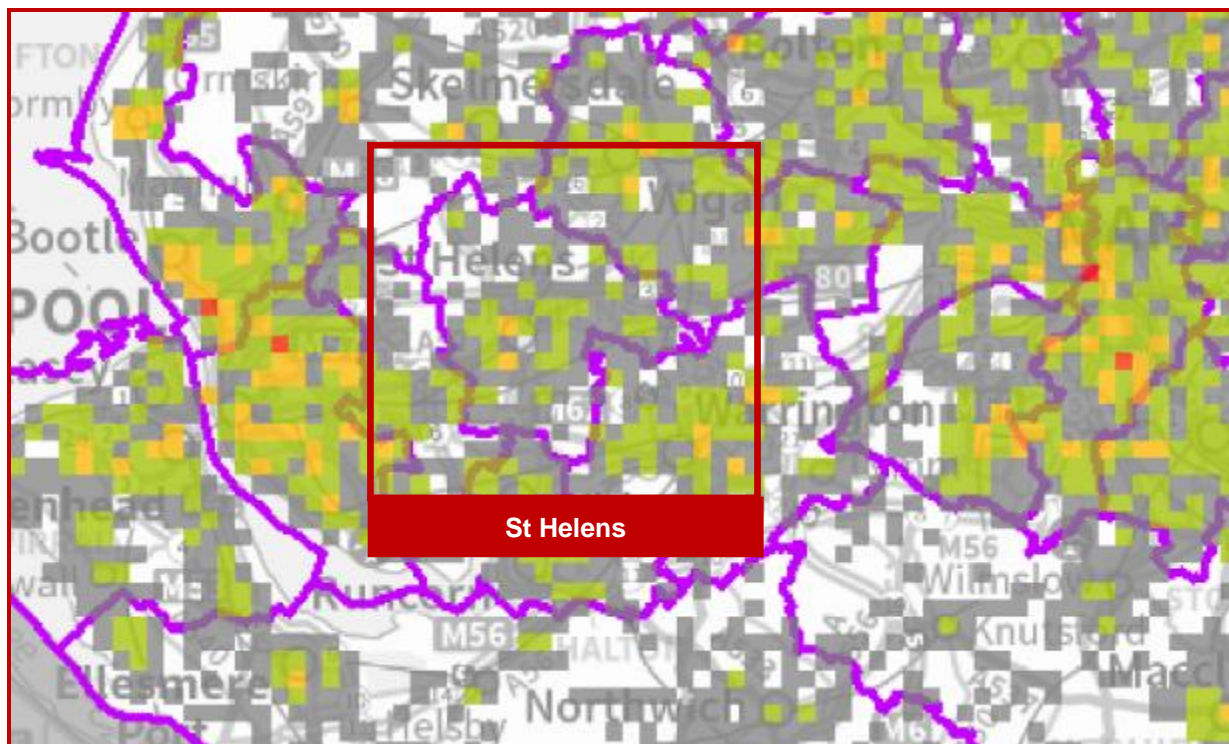
The next set of climate projections is due in 2018 (UKCP18). Until then UKCP09 is still a valid tool to aid decision-makers to assess the full range of risks from the changing climate and advise to adapt.

<http://ukclimateprojections.metoffice.gov.uk/>

3.20.2 For the 2017 PFRA review, the Environment Agency have carried out a simple analysis at the national level to compare the number of people at risk from surface water flooding for a rainfall event with a 1% chance (1 in 100 year return period) of occurring in any year with the number at risk from an event with a 0.1% chance (1 in 1000 year return period) of occurring in any year. The numbers of people at risk are counted per 1 kilometre grid square across England. The resulting 'heat map' shows how the absolute number of people at risk increases between these two rainfall events for each 1km grid square.

3.20.3 This method is not based on climate projections, and it does not account for future population growth. It does provide a simple way, however, of identifying areas that could be susceptible to increased rainfall intensity as a proxy for climate change. It is a reasonable proxy for an upper end climate change scenario for the end of the century, both in the pattern of change across the country and the percentage increase in intensity compared to the current climate. Figure 3.6 shows an extract from the 'heat map'. Red and orange squares indicate the highest increase in numbers of people at risk, and green and grey indicate lower increases.

❖ **Figure 3.6: Extract from the 'heat map' illustrating absolute increase in numbers of people at risk from surface water flooding for a 0.1% (1000 year) rainfall event compared to a 1% event (100 year)**



3.20.4 This 'heat map' provides an initial understanding of how climate change may affect local flood risk in the future, and helpful when considering the indicative FRAs as part of this PFRA review. At the national scale the administrative area of St Helens Borough Council is positioned 108th out of 152 LLFAs when reviewing the percentage increase in people at risk of flooding in LLFAs for the 0.1% rainfall event compared with the 1% event. St Helens Borough Council is positioned 132th in absolute increase in people at risk of flooding. Need to also understand that due to the drainage network and St Helens sitting in the top of the catchment the downstream flow Local Authority of Warrington Borough Council is 7th out of 152 LLFAs for percentage increase in people at risk of flooding.

❖ **Table 3.11: Absolute and percentage Increase in the number of people at risk of flooding by LLFA for 0.1% (1000 year) rainfall event compared with 1% (100 year) event**

Rank	LLFA Name	Residential properties (1 in 100 year)	Residential properties (1 in 1000 year)	Non residential properties (1 in 100 year)	Non residential properties (1 in 1000 year)	Key Services (inc electricity Sub station) (1 in 100 year)	Key Services (inc electricity Sub station) (1 in 1000 year)	Number of People (1 in 100 year)	Number of People (1 in 1000 year)	Absolute increase between 1 in 100 and 1 in 1000 year	Percentage increase in people at risk
7	Warrington (B)	890	7,298	117	855	25	142	2,083	17,077	14,994	720
17	Liverpool District (B)	2,839	18,152	466	2,573	52	270	6,643	42,476	35,833	539
29	Knowsley District (B)	1,013	5,483	100	426	28	109	2,370	12,830	10,460	441
30	Cheshire West & Chester	1,767	9,403	251	1,096	43	159	4,135	22,003	17,868	432
47	Halton (B)	809	3,886	127	830	18	59	1,893	9,093	7,200	380
48	Wirral District (B)	2,367	11,355	202	876	43	206	5,539	26,571	21,032	380
53	Cheshire East	2,204	10,481	430	1,343	31	148	5,157	24,526	19,369	376
98	Staffordshire County	8,074	32,580	1,029	3,912	87	412	18,893	76,237	57,344	304
107	Cornwall	3,745	14,543	1,373	3,822	41	142	8,763	34,031	25,268	288
108	St. Helens District (B)	1,650	6,363	133	566	33	126	3,861	14,889	11,028	286
109	Northumberland	2,365	9,101	396	1,227	29	112	5,534	21,296	15,762	285
147	Sefton District (B)	17,388	35,772	1,501	2,886	288	500	40,688	83,706	43,018	106

3.21 Impact Evidence of Climate Change

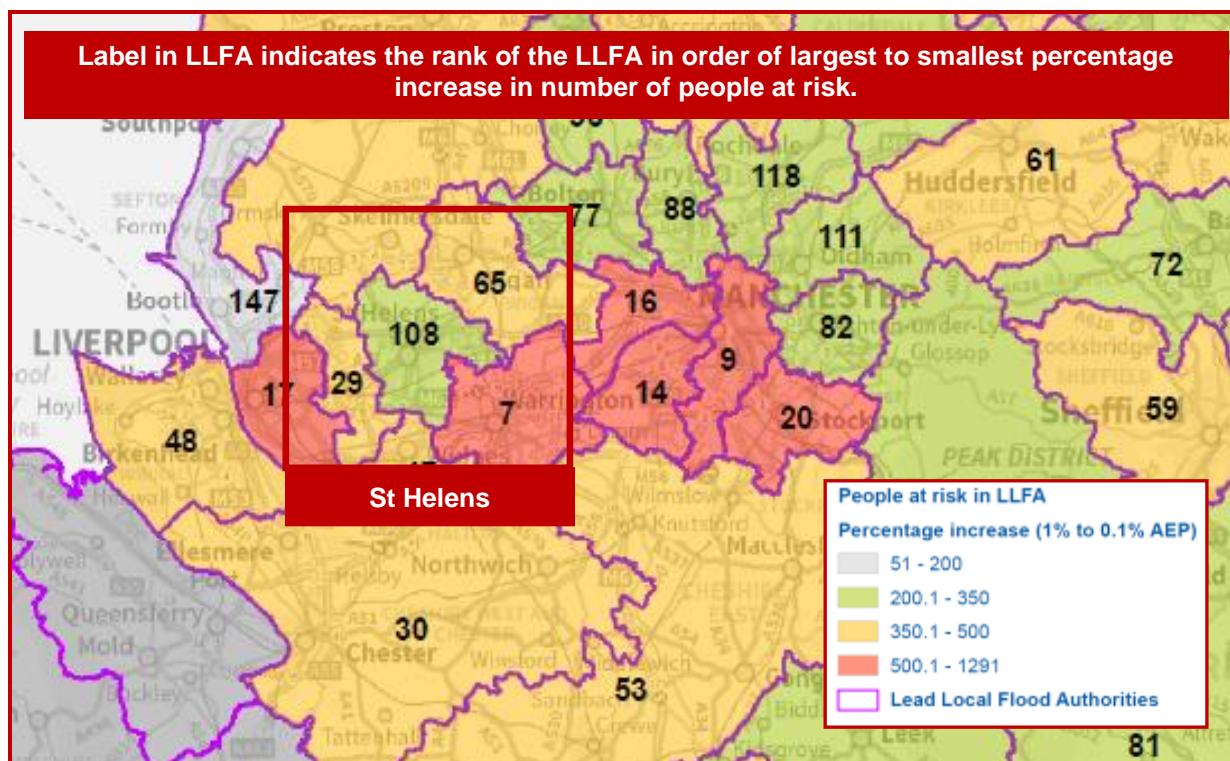
3.21.1 Over the past century around the UK sea level rises have occurred and more of our winter rain falling in intense wet spells. Seasonal rainfall is highly variable. It seems to have decreased in summer and increased in winter, although winter amounts changed little in the last 50 years. Some of the changes might reflect natural variation; however the broad trends are in line with projections from climate models. Greenhouse gas (GHG) levels in the atmosphere are likely to cause higher winter rainfall in future. Past GHG emissions mean some climate change is inevitable in the next 20-30 years.

3.21.2 Lower emissions could reduce the amount of climate change further into the future, but changes are still projected at least as far ahead as the 2080's. By 2080, the latest UK climate projections (UKCP09) are that there could be around three times as many days in winter with heavy rainfall (more than 25mm in a day). It is plausible that the amount of rain in extreme storms (with a 1 in 5 annual chance or rarer) could increase locally by 40%. Increased rainfall affects river levels and land and urban drainage systems. Table 3.12 shows anticipated changes in extreme rainfall intensity in small and urban catchments.

❖ **Table 3.12: Peak rainfall intensity allowance in small and urban catchments**

Changes to extreme rainfall intensity compared to a 1961 – 90 baseline applied to:	Total potential change anticipated for the ‘2020s’ (2015 to 2039)	Total potential change anticipated for the ‘2050s’ (2040 to 2069)	Total potential change anticipated for the ‘2080s’ (2070 to 2115)
North West England			
Upper end estimate	25%	35%	65%
Change factor	15%	25%	30%
Lower end estimate	5%	10%	10%
All of England			
Upper end estimate	10%	20%	40%
Change factor	5%	10%	20%
Lower end estimate	0%	4%	10%

❖ **Figure 3.7: Extract from percentage increase in the number of people at risk of flooding by LLFA for 0.1% (1000 year) rainfall event compared with 1% (100 year event)**



3.22 Projections for North West River Basin

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

- Winter precipitation increases of around 14% (very likely to be between 4 and 28%);
- Precipitation on the wettest day in winter up by around 11% (very unlikely to be more than 25%);
- Relative sea level at Morecambe very likely to be up between 6 and 36cm from 1990 levels (not including extra potential rises from polar ice sheet loss);
- Peak river flows in a typical catchment likely to increase between 11 and 18%;
- Increases in rain are projected to be greater near the coast than inland.

3.23 Implications for Flood Risk

3.23.1 Climate changes can affect local flood risk in several ways. Impacts will depend on local conditions and vulnerability. Wetter winters and more of this rain falling in wet spells may increase river flooding especially in steep, rapidly responding 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.

3.23.2 Rising sea or river levels may also increase local flood risk inland or away from major rivers because of interactions with drains, sewers and smaller watercourses. Where appropriate, St Helens Council will be involved in local studies to understand climate impacts in detail, including effects from other factors like land use. Sustainable development and drainage will help with adaptation to climate change and manage the risk of damaging floods in future. Table 3.13 below provides a rank (of percentage of population of flooding by ward area summarising the previous flood risk data (United utilities and highway data is not included only natural methods of flood risk)).

❖ **Table 3.13 - Ward Extract from the Flood Risk Mapping for Planning (EA Dataset)**

Ward Areas (16 in total) (1-16 point scale with 1 the highest)	Surface Water Risk			Flood Zone 1	Flood Zone 2	Groundwater Flooding (AStGWF)	Average Rank	Overall Rank
	Low (1-1000 yr)	Moderate (1-100 yr)	Significant (1-30 yr)					
Billinge & Seneley Green	13	3	14	12	8	8	10.5	14
Blackbrook	15	9	9	4	5	9	6.75	5
Bold	14	16	16	7	1	11	8.75	12
Earlestown	8	1	5	12	10	14	10.25	13
Eccleston	10	4	12	2	4	12	7.5	6
Haydock	7	10	3	12	10	6	7.75	8
Moss Bank	9	15	14	10	8	10	10.5	14
Newton	6	8	2	11	3	15	7.75	8
Parr	3	4	12	6	10	2	7.5	6
Rainford	16	13	5	8	5	13	7.75	8
Rainhill	11	7	7	12	10	16	11.25	16
Sutton	5	6	10	3	2	5	5	2
Thatto Heath	2	11	8	12	10	4	8.5	11
Town Centre	1	14	4	9	10	1	6	3
West Park	4	2	1	5	10	3	4.75	1
Windle	12	12	11	1	7	7	6.5	4

3.24 Adapting to Change

3.24.1 Past emission means some climate change is inevitable. It is essential St Helens Council and the UK respond by planning ahead. St Helens Council can prepare by understanding current and future vulnerability to flooding, developing plans for increased resilience and building the capacity to adapt. Regular review and adherence to these plans is key to achieving long-term, sustainable benefits. Although the broad climate change picture is clear, St Helens Council has had to make local decisions with less certainty. A range of measures therefore will need to be considered to retain the flexibility to adapt. This approach, embodied within flood risk appraisal guidance, will help to ensure that St Helens Council does not increase the vulnerability to flooding.

3.25 Long Term Developments

- 3.25.1 It is possible that long term developments might affect the occurrence and significance of flooding. However current planning policy aims to prevent new development from increasing flood risk. In England, Section 10 of National Planning Policy Framework (section of relevance formally Planning Policy Statement 25 - PPS25) on development and flood risk aims to ensure that flood risk is taken into account at all stages in the planning process to avoid inappropriate development in areas at risk of flooding, and to direct development away from areas at highest risk. Where new development is, exceptionally, necessary in such areas, policy aims to make it safe without increasing flood risk elsewhere and where possible, reducing flood risk overall.
- 3.25.2 However, in exceptional circumstances the Local Planning Authority may accept that flood risk can be increased contrary to Government policy, usually because of the wider benefits of a new or proposed major development. Any exceptions would not be expected to increase risk to levels which are "significant" (in terms of the Government's criteria). St Helens Council will ensure new developments will manage surface water at source and ensure developments do not contribute to flooding problems elsewhere. Where possible, new developments may relieve existing problems by improved management of surface water flows.

3.26 Local Drainage Capacity

- 3.26.1 Since the introduction of the FWMA 2010 St Helens Council has strived to increase its knowledge to the local drainage systems in order to ascertain capacity. This has been documented as part of the asset register, although there still remains a knowledge gap in sections of the study area. To develop flood alleviation strategies within the study area, additional investigation to identify these local drainage systems are required. This is an ongoing exercise and will be addressed in future reports.

4. Objective 3: Managing Local Flood Risk

St.Helens Council, as the LLFA, will **coordinate and manage** flood risk and where appropriate reduce the risk and consequences of flooding through a range of activities, across internal departments and external partners.

What this section will cover:

- Flood risk management functions;
- Sustainable Drainage Systems (SuDS);
- Spatial Planning and Council Policy's;
- Collaborative Working.

4.4 Management Overview

4.4.1 Objective 3 is about how to manage flood risk and the impact of flooding through a range of activities and by effective management. A number of these duties have been brought about by the Flood and Water Management Act 2010 and are as follows:

- Community Focus, Partnership Working and Encouraging Community Resilience;
- Spatial Planning Policy and Development Management;
- Sustainable Drainage Systems (SuDS);
- Watercourse Regulation: Enforcement and Consenting Powers;
- Power to Carry out Works;
- Asset Management;
- Reservoirs;
- Designation of Features;
- Reporting of Flood Investigations;
- Communications and Public Engagement;
- Emergency Preparedness and Response.

4.2 Community Focus, Partnership Working and Encouraging Community Resilience

4.2.1 People who live and work in flood risk areas have a critical role in managing the risks they and their communities face. St.Helens Council and other risk management authorities will support this role. Communities and individuals in areas at risk of flooding should take responsibility for understanding the risks and, where appropriate, take steps to protect themselves. For example:

- Signing up to the Environment Agency's flood warning system in the designated areas;
- Preparing a flood plan for their household or business;
- Creating or joining a local flood action group;
- Taking steps to protect their property and others (for example, where they own land adjoining ordinary watercourses and have maintenance responsibilities).

4.2.2 **Riparian owners** have responsibilities for maintaining watercourses so that they are free of obstructions and able to transmit flows downstream without putting other properties at risk. Further details are available in the Environment Agency's publication '**Living on the Edge**'. St.Helens Council will work with partners to make communities and individuals more aware of flood risks. The aim of this is to help communities to participate as far as possible in Local Flood Risk Management. To do this, St.Helens Council will work with partners to publish up to date information on risks and liaise with those groups who may be better placed to provide links with communities.

4.2.3 Communities at risk, led by St.Helens Council, will plan for the future and take appropriate steps to adapt to changing flood risks. In particular, these will focus on adaptation, planning, engagement and implementing long term innovative solutions with multiple benefits. Defra, the Environment Agency, St.Helens Council and others will support communities by working with them to:

- Develop an understanding of how they can adapt to change;
- Identify the costs and benefits of different approaches;
- Providing practical approaches and examples that can be shared.

- 4.2.4 **Householders and businesses** at flood risk should take appropriate steps to better protect their properties through property-level resistance and resilience measures. St.Helens Council will support this work by raising awareness and understanding, and in some cases supporting the wider up-take of flood resistance and resilience measures to reduce damage to buildings. When flooding does occur, St.Helens Council will provide advice and liaise with specialist groups such as the National Flood Forum to aid recovery. St.Helens Council will publicise the importance of insurance as a means of protection. Affordable and widely available flood insurance is a means of sharing the risk between individuals, businesses, and insurance companies.
- 4.2.5 Flood risk has long been included as standard in most building and contents **insurance policies**. The Government and insurance industry both aim to support the wide availability of insurance beyond the expiry of the Statement of Principles in 2013, whilst recognising that policy terms are likely to reflect. **Flood RE**, created in April 2016, which replaced the Statement of Principles agreed between the government and insurance companies to provide flood insurance coverage to domestic properties deemed at significant risk of flooding (1.3% or 1 in 75 annual probability of flooding). Further information can be obtained from the Association of British Insurers and Flood RE websites.
- 4.2.6 The **Localism Act 2011** aims to facilitate the devolution of decision-making powers from central government control to individuals and communities. The Localism Act 2011 identifies a duty to cooperate in joint planning, in particular where sustainable development or use of land that has or would have a significant impact on at least two planning areas and therefore cannot be addressed by a single authority. The priority given to any strategic issues will be dependent on local circumstances. However this may include consideration of infrastructure, greenbelt land at sites of special scientific interest. The main measures of the Act include:
- New freedoms and flexibilities for local government;
 - New rights and powers for communities and individuals;
 - Reform to make the planning system more democratic and more effective;
 - Reform to ensure that decisions about housing are taken locally.

MARKER 4.1

Environment Agency: Living on the Edge

<https://www.gov.uk/government/publications/riverside-ownership-rights-and-responsibilities>

National Flood Forum

www.nationalfloodforum.org.uk

Association of British Insurers – Flooding

<https://www.abi.org.uk/products-and-issues/topics-and-issues/flooding/>

Flood RE

<http://www.floodre.co.uk/>

Localism Act 2011

<http://www.legislation.gov.uk/ukpga/2011/20/contents/enacted>

4.3 Spatial Planning

- 4.3.1 Spatial planning is fundamental to reducing flood risk in the St.Helens area. Spatial planning is the responsibility of St.Helens Council as the Local Planning Authority (LPA). It therefore allows for close working arrangements with the Councils other statutory function as the LLFA. The Planning and Compulsory Purchase Act 2004, Localism Act 2011, and accompanying regulations require LPA's to produce spatial plans in the form of Local Planning Frameworks. These documents will form the statutory development plans against which planning applications must be determined, unless material considerations indicate otherwise. St.Helens Local Plan Core Strategy was adopted by the Council in October 2012. St.Helens Council is preparing a new Local Plan for 2018-2033. This Plan will set how much new development for housing, employment and other uses should take place in the Borough. It will identify where new development should take place and set out the policies for assessing planning applications.

-
- 4.3.2 Spatial planning creates a policy framework where all those connected to planning process can actively contribute to a more sustainable approach in managing flood risk. This provides opportunities to:
- Adopt a catchment-wide approach;
 - Develop integrated sustainable developments, which deliver multiple benefits;
 - Factor flood risk into planning decisions from the outset of the spatial planning process;
 - Develop developer and community-led initiatives to reduce flood risk/enhance the environment;
 - Ensure that direct/cumulative impacts of development on flood risk are acknowledged and mitigated;
 - Ensure that decisions fully consider the implications of climate change and provide greater clarity and certainty to developers regarding which sites are suitable for developments of different types.
- 4.3.3 Spatial planning is further enhanced by St.Helens Council looking to adopt a Sankey Catchment Action Plan to address issues of flood risk, river water quality and water dependent biodiversity in an integrated and strategic manner, which can harness a range of funding opportunities and provide solutions with multiple benefits. Sankey Catchment Action Plan will link to the EU Water Framework Directive (WFD) as it establishes a framework for the protection and enhancement of the inland surface water bodies and groundwater and also Defra's policy framework to encourage the wider adoption of an integrated catchment based approach to improving the quality of the water environment. The Catchment Action Plan also supports the Councils SuDS Guidance and Draft Local Plan Policy LPC12: Flood Risk and Water Management. In respect of flood risk the following documents will inform the Local Planning Framework:
- St.Helens Council Surface Water Management Plan (SWMP) 2012;
 - Mersey Estuary Catchment Management Plan (CFMP) 2009;
 - Strategic Flood Risk Assessment Level 2 (SFRA Level 2);
 - Mid Mersey Water Cycle Strategy Study 2011;
 - National Planning Policy Framework (NPPF) 2012;
- 4.3.4 The Environment Agency advises that LPAs and developers should carry out assessments of surface water flooding in line with National Planning Policy Framework (NPPF) 2012. Since 2008, the Environment Agency has produced a series of surface water flood maps to aid local authorities in determining areas at risk of flooding. The latest incarnation of the maps is the Risk of Flooding from Surface Water (RoFSW) maps. Environment Agency guidance on using surface water flood risk information recommends that St.Helens Council, as an LLFA, should: review, discuss, agree and record, with the Environment Agency, United Utilities, and other interested parties, what surface water flood data best represents their local conditions, known as "locally agreed surface water information".
- 4.3.5 The mapping has been reviewed against local historic data and local knowledge. St.Helens Council has agreed with all interested parties that the RoFSW mapping is the most appropriate dataset that represents the risk of flooding from surface water within the St.Helens area at a high level. The Environment Agency's RoFSW mapping is not appropriate to use as the sole evidence for any specific planning decision, at any scale, without further supporting studies or evidence. The RoFSW will act as a starting point to highlight areas where the potential for surface water flooding needs particular assessment and review.
- 4.3.6 The output from these assessments can then be used to inform development allocations within the local development plan and outline the requirements for site level flood risk assessments to be carried out by developers. The LPA is required to appraise risk, manage risk and reduce risk using a partnership approach. Risk appraisal entails:
- Identifying land at risk;
 - Assessing the degree of risk of flooding from river, sea and other sources;
 - Preparing Strategic Flood Risk Assessments (SFRA's) as freestanding assessments that contribute to the sustainability appraisals of Development Plan Documents (DPDs).
- 4.3.7 The Sequential Test advised by the NPPF Guidance Document is used by St.Helens Council in allocating sites for development, or determining planning applications. In using the sequential test, sites are "zoned" in order of preference according to the flood risk probability, identified by the SFRA.
-

4.3.8 Appropriate land uses for each flood zone are also listed to provide guidance for LPA's when they are considering appropriate use of sites within each zone. Strategic development will be approached through planning, appropriate design, situation and location of future development, all of which can contribute to reducing the risk of flooding, including:

- Application of SuDS techniques with new developments;
- Application of property and location-specific flood protection measures;
- Reference to the LLFA developments affecting ordinary watercourses;
- Planning enforcement in respect of unauthorised development undertaken in liaison with the LLFA;
- Identify river corridors and the natural flood plain to provide potential riverside storage and urban river corridors in built up areas.

4.4 Sustainable Drainage Systems (SuDS)

4.4.1 Approaches to managing surface water which take account of water quantity, water quality, public amenity and biodiversity issues are collectively referred to as Sustainable Drainage Systems (SuDS).

FWMA 2010 – England Section 27: Sustainable Development

In exercising a flood or coastal erosion risk management function, an authority listed in subsection (3) must aim to make a contribution towards the achievement of sustainable development.

Schedule 3 – “Sustainable Drainage”

(2) “sustainable drainage” means managing rainwater (including snow and other precipitation) with the aim of – (a) reducing damage from flooding, (b) improving water quality, (c) protecting and improving the environment, (d) protecting health and safety, and (e) ensuring the stability and durability of drainage systems.

4.4.2 Conventional drainage systems employ underground pipe networks which prevent localised flooding by conveying water away as quickly as possible; they are only effective at managing water quantity (flows and volumes). SuDS are able to manage surface water flows and volumes in open features on the ground surface, whilst also providing benefits to water quality, public amenity and biodiversity. These systems are more sustainable than conventional drainage methods because they:

- Manage runoff volumes and flow rates, reducing the impact of urbanisation on flooding;
- Protect or enhance water quality;
- Are sympathetic to the environmental setting and the needs of the local community;
- Provide a habitat for wildlife in urban watercourses.

4.4.3 Under Schedule 3 of FWMA 2010, LLFAs were to be required to establish a SuDS Approval Body (SAB) which would have required St.Helens Council to approve, adopt and maintain SuDS features in new developments. In December 2014, the Government announced that Schedule 3 would not be enacted because SuDS would be dealt with by strengthening existing planning policy instead. This change, which took effect in April 2015, required LPAs to make the final decision about the suitability of the SuDS provision on new developments and whether it is proportionate to the level of flood risk affecting the site. These changes are set out in Paragraph 103 of the NPPF and are supported by Defra's Non-Statutory Technical Standards for SuDS; consequently Schedule 3 in the FWMA 2010 is currently lying 'dormant'.

4.4.4 St.Helens Council is, at present, not required to establish a SAB. The Council is a statutory consultee for major developments which have surface water implications. This responsibility requires St.Helens Council to provide comments in relation to surface water drainage aspects of planning applications, usually within 21 days. In considering planning applications, the LPA should:

- Consult the relevant LLFA on the management of surface water;
- Satisfy themselves that the proposed minimum standards of operation are appropriate;
- Ensure through the use of planning conditions or planning obligations that there are clear arrangements in place for ongoing maintenance over the lifetime of the development.

- 4.4.5 St.Helens Council has produced a SuDS Guidance document. This guidance is primarily aimed at Developers, to identify the information that they need to provide to enable the assessment of SuDS proposals by St.Helens Council as LLFA and other Statutory Consultees. Providing both design and technical guidance, the document is intended to provide a standardised approach to the selection of appropriate SuDS and identify the information that the Developer is required to provide to enable the Local Authority and Statutory Consultees to effectively review planning applications.

MARKER 4.2

Sustainable Drainage System (SuDS) Guidance

Guidance contains three separate files, the main guidance document which looks at what is required at each planning stage and technical standards on SuDS components, the second file is a consultant created surface water discharge estimator tool and thirdly a detailed spreadsheet checklist and SuDS matrix.

<https://www.sthelens.gov.uk/traffic-travel-parking/highway-maintenance/flooding-and-drainage/flood-and-water-management/>

4.5 Watercourse Regulation: Enforcement and Consenting Powers

- 4.5.1 The following changes in legislation give administrative powers to the Lead Local Flood Authority, 'Regulation' is the management of any activity that has the potential to create obstructions to flow in watercourses and comprises two key activities: Consenting of works (including any temporary works) before they are constructed, and the enforcement actions to bring about the remediation of any unconsented or unacceptable work or the removal of obstructions. Any work that is carried out without consent has the potential to increase flood risk to people and property, including those unconnected with the works. Consenting by LLFAs is undertaken through the use of powers under sections 23, 24 and 25 of the Land Drainage Act 1991.

REGS

Schedule 2, paragraph 30 of FWMA 2010 repeals Section 17 of the Land Drainage Act 1991

Requires Local Authorities to exercise their powers in accordance with their local FRM strategy.

Schedule 2 paragraph 32 (6) of FWMA 2010 amends Section 23 of the Land Drainage Act 1991

The Environment Agency's role as a drainage board for ordinary watercourses outside an internal drainage district is taken over by Lead Local Flood Authorities.

Schedule 2, paragraph 33 of FWMA 2010 amends Section 25 of the Land Drainage Act 1991

Give the powers of the Environment Agency to Lead Local Flood Authorities.

REGS

No person shall obstruct the flows in a watercourse under Section 23 of the Land Drainage Act 1991.

No person shall erect any obstruction or culvert in any ordinary watercourse that would be likely to affect flow of any ordinary watercourse without the written consent of the Local Authority. An application fee of £50 is required and consent will not be unreasonably withheld.

A notice shall be produced under Section 24 if any person fails to comply with Section 23 of the Land Drainage Act 1991.

If any persons acts in contravention of, or fails to comply with, any notice served a fine shall be issued not exceeding level 5 on the standard scale and, if failure to continue after conviction, to further fine not exceeding £40 for every day on which the contravention or failure is so continued. Failure to comply the Local Authority may, without prejudice to any proceedings, take such actions as may be necessary to remedy the effect of the contravention or failure, and recover the expenses reasonably incurred by the person.

Powers to require works for maintaining flow of watercourse are contained in Section 25 of the Land Drainage Act 1991.

If the proper flow of water in an ordinary watercourse is impeded then the Local Authority concerned may, by serving a notice under Section 25 require that person to remedy that condition. Before exercising their powers under Section 25 the Local Authority shall, under Section 26, notify either the drainage board for that district or the Environment Agency.

4.5.2 Formal consents will be approved and issued by the Engineering and Flood Risk Management Team. Typical conditions will be used to ensure that works are carried out responsibly and within a given time frame. St.Helens Council have consulted with the Environment Agency and adapted existing procedures to suit the needs of the Council. Works will eventually be recorded onto GIS and the asset database. The Environment Agency will retain an overview role and LLFAs must consult the Environment Agency when they are consenting work that they are themselves proposing to minimise the potential for conflict of interest. St.Helens Council also have local land Drainage Bye-laws, the purpose of these are to apply detail to the Enforcement and Consenting powers to ensure the basic powers within the Land Drainage Act 1991 are strengthened and provide effective flood risk action at the local level.

MARKER 4.3

St.Helens Council – Consent form application and guidance notes

St.Helens Council – Land Drainage Bye-laws

<https://www.sthelens.gov.uk/traffic-travel-parking/highway-maintenance/flooding-and-drainage/flood-and-water-management/>

Environment Agency – Consent Information

<https://www.gov.uk/permission-work-on-river-flood-sea-defence>

Guidance – Local Government Legislation: Byelaws

<https://www.gov.uk/guidance/local-government-legislation-byelaws>

4.6 Powers to Carry Out Works

4.6.1 General powers to undertake flood risk management works by Local Authorities are provided by Schedule 2, Section 29 of the Flood and Water Management Act 2010, which adds Section 14A Land Drainage Act 1991 and gives general powers to Local Authorities in relation to flood risk management works. This work has to be undertaken having regard to the Local Flood Risk Management Strategy for an authority's area. Operations to manage a flood risk include maintaining existing works, improving existing works, constructing new works and altering or removing works. To undertake works, on land owned by others, facilitating powers (powers of entry, compensation and compulsory purchase) are provided.

- Powers of entry are needed to get access to land;
- Compensation powers are needed if damage occurs when carrying out works, for example it may be necessary to move heavy equipment across a garden damaging the lawn and flowerbeds;
- Compulsory purchases - It may be necessary for the risk authority to own the land in order to carry out and maintain works. If the land cannot be bought by agreement, a compulsory purchase order could be applied as a last resort.

REGS

FWMA 2010 – Development Schedule 2 Section 29 makes amendment to the Land Drainage Act 1991 Section 14A

LLFAs to undertake flood risk management works for the purpose of managing a flood risk in the authority's area from surface runoff or groundwater.

FWMA 2010 – Works powers are extended to ordinary watercourses by the Land Drainage Act 1991 under Schedule 2 Section 32 (6) FWMA 2010

(6) to allow for work to be undertaken to reduce flooding. For subsection (8) (b) substitute – “(b) in relation to a watercourse in an area outside an internal drainage district, are references to the lead local flood authority for the area.”

Section 62 Land Drainage Act 1991:

Powers to acquire and dispose of land, including compulsorily.

FWMA 2010 – Schedule 2 Section 29 provides clarity to Land Drainage Act 1991 (Section 14A - General powers: flood risk management works)

(12) The powers under Section 62 and 64 are available to an authority for a purpose in connection with the exercise of powers under this section.

- 4.6.2 Powers to acquire and dispose of land, including compulsorily, are provided within Section 62 of the Land Drainage Act 1991. These powers are not altered by the FWMA 2010 - Schedule 2 Section 29 (12) and the powers in Section 62 are available for use with the flood risk management works powers, as Section 14A is inserted into the Land Drainage Act 1991. Where such powers may be needed, for example in Section 29 FWMA 2010, they are provided for within Section 14A of the Land Drainage Act 1991 which requires the Minister to apply compensation provisions, together with powers of entry and compulsory purchase provisions, to the incidental flooding or coastal erosion powers. The Water Resources Act provisions are slightly different from those found in the Land Drainage Act 1991. The Minister must use the Water Resources Act 1991 provisions but may amend them.

MARKER 4.4

Water Resources Act 1991

The Water Resources Act regulates water resources, water quality and pollution, and flood defence. Part II of the Act provides the general structure for the management of water resources. Part III then explains the standards expected for controlled waters; and what is considered as water pollution. Part IV then provides information on mitigation through flood defence.

www.legislation.gov.uk/ukpga/1991/57/contents

4.7 Asset Management (Ordinary Watercourse, Main River and Surface Water Flooding)

- 4.7.1 Since the introduction of the FWMA 2010, St.Helens Council has ensured there are records of all significant assets available for use by risk management authorities (asset record) and for inspection by the public (asset register). This is available online via the St.Helens Council website which is updated on a regular basis. Assets are in relation to ordinary watercourses and surface water flooding only.

REGS

FWMA 2010 – Section 21 Lead Local Authorities: Duty to Maintain a Register

(1) A lead local flood authority must establish and maintain –

(a) A register of structures or features which, in the opinion of the authority, are likely to have a significant effect on a flood risk in its areas, and (b) a record of information about each of those structures or features, including information about ownership and state of repair.

(3) The lead local flood authority must arrange for the register to be available for inspection at all reasonable times.

- 4.7.2 St.Helens Council has defined the criteria of “features” which are likely to have a significant effect on flood risk in its area. These features can be either natural or manmade and may include, but not limited to: Sluices, Channels, Culverts; Walls, Embankments, Bridges, SuD Systems, Grillages and Screens. Significant effect is classed as the following:

- Resulted in major disruption to the flow of traffic;
- Posed, or could have posed, a risk to human health;
- Adversely affected the functioning of critical infrastructure;
- Caused harmful impacts to environmentally and socially important assets;
- Caused internal flooding to a property used for residential or commercial purposes.

- 4.7.3 The asset record includes a map of local flood risk assets along with clarification as to whether the asset is publicly or privately owned. The asset register provides further information about each asset, for example condition status. By collating information and mapping flood risk assets, St.Helens Council is able to:

- Develop informed maintenance regimes, which can take account of assets important for managing flood risk, particularly in high-risk areas;
- Establish where the entire surface water drainage and watercourse systems are, allowing for quicker identification of the responsible authority in incidences of flooding;
- Produce and publish a maintenance schedule for the assets as well as providing guidance to riparian owners as to how they should maintain their assets.

MARKER 4.5

St.Helens Council Asset Register

<http://www.jbamap.co.uk/map/la/sthelensassetregister/>

**Environment Agency: Asset Performance Tools
 Asset Inspection Guidance**

http://evidence.environment-agency.gov.uk/FCERM/Libraries/FCERM_Project_Documents/APT_2_report.sflb.ashx

- 4.7.4 Although a significant amount of information has already been collated from a variety of sources there is a programme in place to regularly review and update the register when new, modified and/or abandoned assets have been identified via responding to flooding incidents, flood incidents, investigations and maintenance works, and adopt third party developments. Records are held on GIS and on the Council's asset management system. Any inspections undertaken follow the established Environment Agency assessment template which has been identified by St.Helens Council as a best practice approach.
- 4.7.5 The Environment Agency's Creating Asset Management Capacity (CAMC) is an ongoing programme to develop its asset management capability. An outcome of this was the Asset Information System (AIMS) which replaced the National Flood and Coastal Defence Database (NFCDD). AIMS is an inventory of all assets relevant for flood risk management from main rivers, estuaries and the coast, and is continuously updated following review or inspection of assets. Information contained on AIMS is not currently available to the general public but is available to Local Authorities. The information has been utilised to develop the St.Helens Council asset register, in particular for main river assets where the Council is riparian land owner, as well as understanding interactions in flood risk areas.

❖ **Table 4.1 - Overview of Asset Management Responsibilities**

Body	Main River	Ordinary Watercourses	Surface Water	Ground Water
Environment Agency	Management of river network and flood warning service. Enforcement of riparian owners.	N/A	N/A	N/A
St.Helens Council	Inspection and maintenance of assets on Council owned land.	Maintenance of assets on Council owned land. Advice to private land owners on management.	Maintenance of highway drainage and water courses on Council owned land.	Management on Council owned land.
		Permissive intervention for maintenance of riparian owned assets.	Advice or Enforcement of private land owners causing flood discharge.	Advice to riparian land owners.
		Enforcement in respect of riparian owners where integrity of water course is compromised.	Permissive intervention for maintenance of riparian owned assets as deemed appropriate.	
United Utilities	N/A	N/A	Maintenance of adopted surface water, foul & combined sewers.	N/A
Riparian Land Owners	Maintenance of private assets to prevent flooding. Responsibility to accept incoming natural flow.	Maintenance of private assets to prevent flooding. Responsibility to accept incoming natural flow.	Prevention of surface water discharge from private land.	Management on privately owned land.

4.8 Reservoirs

REGS

FWMA 2010 – Schedule 4 Reservoirs

Multiple changes throughout schedule 4 (summary added below)
Changes made in connection with the Reservoirs Act 1975

- 4.8.1 The Environment Agency is responsible for regulating reservoir safety, flooding and water scarcity, via the Reservoirs Act 1975. Sections of the Act were updated in the FWMA 2010 (Schedule 4) which included:
- Reducing the capacity at which a reservoir will be regulated from 25,000m³ to 10,000m³;
 - Ensuring that only those reservoirs assessed as a higher risk are subject to regulation;
 - All undertakers with reservoirs over 10,000m³ must register their reservoirs with the EA;
 - Inspecting engineers must provide a report on their inspection within 6 months;
 - All undertakers must prepare a reservoir flood plan;
 - All incidents at reservoirs must be reported.
- 4.8.2 High-risk reservoirs are those where human life would be endangered if there were an uncontrolled release of water from the reservoir. Owners of 'high risk' reservoirs will need to comply with all the requirements of the Act. Owners of reservoirs that are not designated as 'high risk' still need to register, but will not need to comply with the inspection and supervision requirements of the Act. Registering the reservoirs means that in case of maintenance or flood risk incidents clear communication lines can be set up to manage maintenance work and flood risk incidents.
- 4.8.3 The main reservoirs with the administrative area of St.Helens Council are:
- Alexandra;
 - Carr Mill;
 - Eccleston Mere;
 - Prescott No.3;
 - Prescott No.4;
 - Sutton Mill;
 - Taylor Park Big Dam;
 - Willows Park Lake.
- 4.8.4 There are no recorded incidents of reservoir flooding due to failure or damage at the aforementioned locations; however some of the reservoirs are within watercourse systems which contain known flooding hotspots. Compliance with the requirements listed above aims to ensure that there are no such incidents in the future.
- 4.8.5 In April 2008, Defra instructed the Environment Agency to assess the impact of dam breach flooding from all large raised reservoirs in England and Wales registered under the Reservoirs Act 1975, and produce flood maps for Local Resilience Forums to use for emergency planning. The maps provide an indication of the areas that could be affected by reservoir flooding and together with local knowledge can be used to plan for emergency response. The maps should be used to prioritise areas for evacuation/early warning to the effected receptors, help reservoir owners produce on-site plans and Local Resilience Forums engage with Cat 1 and Cat 2 responders.
- 4.8.6 The model outputs of a dam breach do not:
- Show the risk to individual properties of dam breach flooding;
 - In any way reflect the structural integrity of the dam or the chance of it failing;
 - Indicate or relate to any particular probability of dam breach flooding.
- 4.8.7 The detailed maps are available on the Resilience Direct website for Local Resilience Forums to use as part of their emergency role under the Civil Contingencies Act 2004.

4.9 Designation of Features

REGS

FWMA 2010 – Section 30: Designation of features Schedule 1 (Designation of features) shall have effect.

Effect of Designation 5:

- (1) A person may not alter, remove or replace a designated structure or feature without the consent of the responsible authority
- (2) A designation is a local land charge.

- 4.9.1 LLFAs and the Environment Agency are known as ‘designating authorities’. They may ‘designate’ natural or artificial features or structures that are significant for flood risk management. The process is set out within the FWMA 2010.
- 4.9.2 The aim of designating flood risk assets is to safeguard them against unchecked works which could increase flood risk in the area. Designation of features or structures is not something that will be done regularly but only when there are concerns about the asset. The following conditions need to be satisfied to designate a feature or structure.
- (1) The designating authority considers the existence or location of the structure or feature affects:
 - (a) flood risk, or;
 - (b) coastal erosion risk;
 - (2) The designating authority has flood or coastal erosion risk management functions in respect of the risk which is affected;
 - (3) The structure or feature is not designated by another authority;
 - (4) The owner of the structure or feature is not a designating authority.
- 4.9.3 If an asset becomes ‘designated’ its owner cannot alter or remove it without first consulting the designating risk management authority. The designation process covers both the initial designation by the designation authority and an appeals process which is available to the owner of the structure or feature. Once designated the designating authority will have enforcement powers should the structure or feature be altered or modified without permission.
- 4.9.4 An individual may appeal against a designation notice, refusal of consent, conditions placed on consent or an enforcement notice. In addition to garden walls and other structures, many sustainable drainage systems (SuDS) may be designated and will be issued with a Provisional Designation Notice. As a minimum the notice will set out the following important information about provisional designation:
- The feature in question;
 - Why the feature is being provisionally designated;
 - The period in which representations may be made;
 - The date from which the feature is provisionally designated, and;
 - How the owner of the feature may make representations to the LLFA in respect of the notice.
- 4.9.5 During the period of notice, the owner has the right to make representations to the designating authority on the provisional designation, which the authority must consider before confirming a designation by means of a designation notice. The LLFA may cancel a designation (including a provisional designation). It may do so at the owner’s request or where it thinks it appropriate for another reason, for example if a new flood defence system has been provided that negates the need for the designation. An owner may appeal if their request for a cancellation is denied.
- 4.9.6 Although there is no obligation on the riparian landowner to maintain a designated feature, the owner will be able to do so provided that they are maintaining it to at least its existing state/standard when designated. St.Helens Council will act with due diligence before designating any features and taking on maintenance liabilities.
- 4.9.7 St.Helens Council anticipates any additional features considered for designation will be identified via the continual development of the Asset Register.

4.10 Investigations and Flood Reporting

FWMA 2010 – Section 19. Local authorities: Investigations

REGS

(1) On becoming aware of a flood in its area, a lead local flood authority must, to the extent that it considers it necessary or appropriate, investigate-

- (a) which risk management authorities have relevant flood risk management functions, and
- (b) whether each of those risk management authorities has exercised, or is proposing to exercise, those functions in response to the flood.

(2) Where an authority carries out an investigation under subsection (1) it must-

- (a) publish the results of its investigation, and
- (b) notify any relevant risk management authorities.

4.10.1 St.Helens Council will, on becoming aware of a flood incident, undertake a Post Incident Review to determine the consequences of the flooding incident. The Post Incident Review will determine the likely cause of the flooding and what was flooded during the incident. If a flood event is deemed to have had a significant consequence, then a Formal Investigation of the flooding incident will be undertaken. A flood event with significant consequences is one that has had, or could have had if action had not been taken, one or more of the following impacts:

- Resulted in major disruption to the flow of traffic;
- Posed, or could have posed, a risk to human health;
- Adversely affected the functioning of critical infrastructure;
- Caused harmful impacts to environmentally and socially important assets;
- Caused internal flooding to one property used for residential or commercial purposes.

4.10.2 A Formal Investigation may be undertaken by St.Helens Council at the discretion of the Flood Risk Manger if a flood event has not met the above criteria but considered appropriate. It should be noted that initial reports are likely to be received as anecdotal evidence from members of the public; in depth investigations will likely require officers to visit and undertake their own evidence collection. The published report does not have to detail the specific detail of what was affected or proposed mitigation, e.g. specific addresses. Generic areas can be referred to. However it is worth noting that if properties have flooded then the owners have obligations to declare flood information in any insurance contract or property sale.

4.10.3 Flooding incidences that ARE deemed significant will be investigated by St.Helens Council and recorded internally. A published Formal Investigation will be initiated for every flood event captured and reported by a member of the LLFA. Therefore, it is essential that the threshold for triggering a Formal Investigation should recognise the actual significance of the flooding incident with any repeated events also recorded but not published.

4.10.4 All events will be reviewed at operational level with flood risk partners. Continual mapping of flood incidents and the results of investigation will inform future work programmes and maintenance regimes. The purpose of flood investigation reports is to inform which risk management authorities have relevant functions relating to the flood incident. Flood investigation reports will include, but not be exclusive of, the following information:

- Site location, maps and photos;
- Site characteristics and drainage;
- Flood history and extent;
- Incident reference number;
- Date of flood event and date of investigation;
- Date flood event reported to St.Helens Council;
- Threshold for investigation;
- Rainfall analysis, identified sources / probably causes;
- Role and responsibilities;
- Outcomes of investigation including proposed activities and recommendations.

4.10.5 St.Helens Council has set the following targets to complete a formal flood investigation report:

“Timescales for FWMA Section 19 investigations and publication are subject to the scale and complexity of incidents being investigated”

❖ **Table 4.2 - Targets to complete a formal flood investigation report**

Local Investigation Targets	Time scale following event
Ascertaining responsibility	One week
Agree with responsible actions and timescales	One month
Final report	Two months

4.10.6 The findings of all formal flood investigation reports will be made publicly available via the Council website and linked to internal records. The internal records will contain all flooding incidents reported to St.Helens Council and will not be available to the general public.

- Ensure understanding of the roles and responsibilities of the flood risk partners (St.Helens Council, Environment Agency, and United Utilities);
- Manage expectations and be clear about what can and cannot achieve;
- Build a greater awareness of flood risk and ownership of the problem at a local level;
- Generate a culture of personal responsibility for being prepared for flooding;
- Coordinate with the Council’s Emergency Plan.

4.10.7 Identifying and raising awareness of areas as potentially at risk of surface water flooding and managing risks collaboratively are the objectives that have been set to guide St.Helens Council’s communications with its community and stakeholders.

4.10.8 Table 4.3 provides a summary to but not exclusive of the main Consultation Stakeholders within the administrative area of St.Helens.

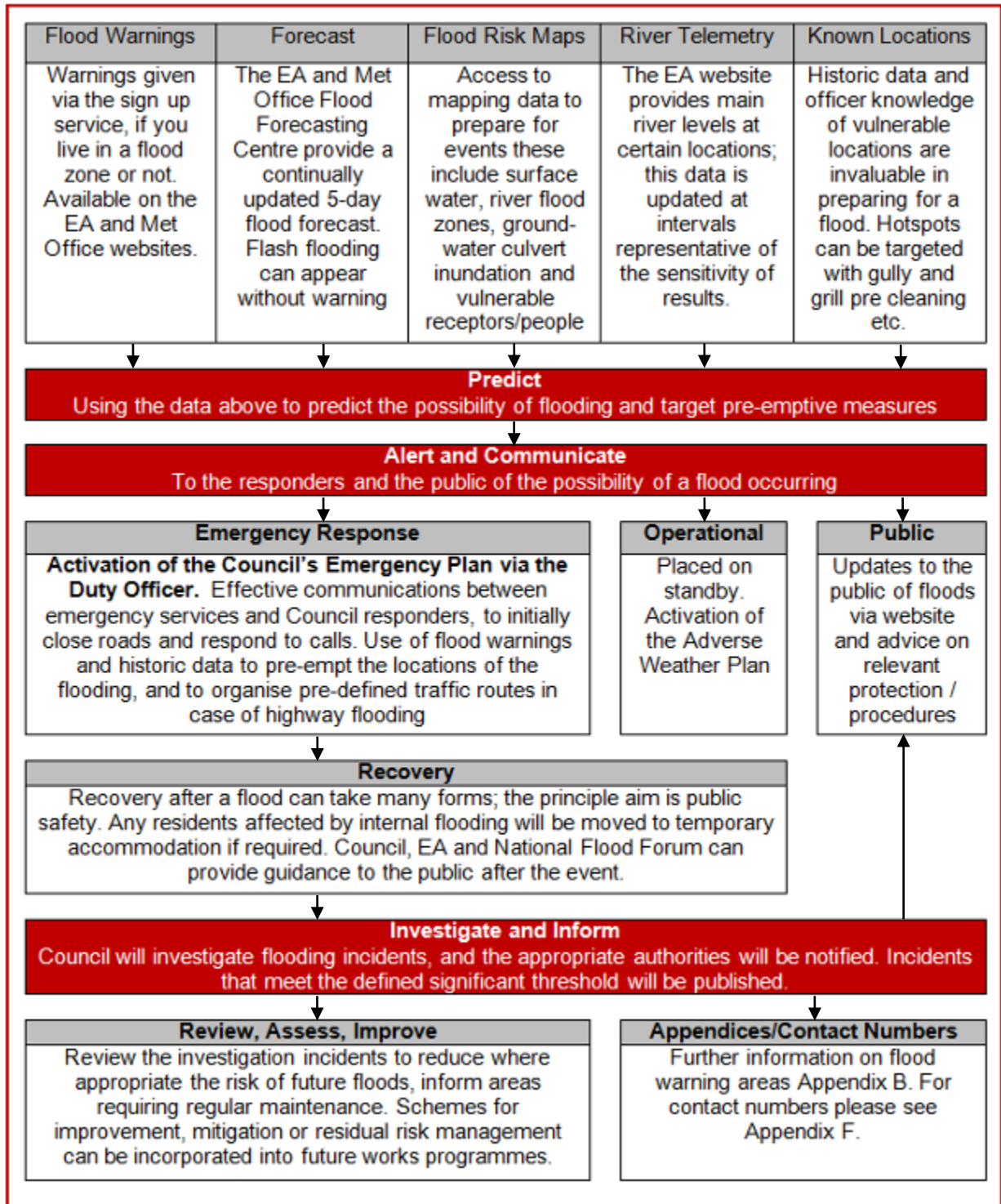
❖ **Table 4.3 - Consultation Stakeholder Identification**

Consult Criteria	Identification
Local Authorities and Partners	RFCC , Cheshire Mid-Mersey Partnership (Strategic and Tactical), Merseyside Partnership (Strategic and Tactical), United Utilities, Environment Agency, Resilience Forum.
Political stakeholders	MPs and MEPs, Portfolio heads, Ward members, Parish councillors, Neighbouring Authorities.
Transport and infrastructure	Highways Agency, Planning Department, Other utility companies, Transport Operators (e.g. Network St.Helens)
Environmental stakeholders	RSPB, NFU, Environment Agency, English Heritage, Natural England.
Emergency services	Fire service, Other “blue light” services, Police Community Support Officers,
Business and industry	St.Helens Chamber, Local Businesses, Business Forums, Employees, Landowners where known.
Communities and individuals	Resident Association Groups, Faith centres, Doctors and community services, Landlords, Housing associations, Recreation groups – Friends of Parks, Cycling groups, Ramblers Association, Hospitals, Schools, Local Media.

4.11 Preparedness and Emergency Response

4.11.1 St.Helens Council aims to reduce flood risk and minimise the harm caused by flooding by taking a risk-based approach to achieve the best results possible using the budget and resources available. St.Helens Council continues working to reduce both the likelihood and impact of flooding. Sufficient lead time is vital to inform communities at risk of flooding in order to action protection measures. Figure 4.1 provides an overview to how St.Helens Council prepares for a potential flood emergency.

❖ **Figure 4.1 - Preparedness and Flood Risk Predictions**



-
- 4.11.2 The Civil Contingencies Act 2004 is one of the most relevant pieces of legislation in relation to emergency planning for flooding. It formalises a number of duties on Local Authorities, the emergency services and other organisations involved in responding to any emergency. Amongst these are contingency planning and risk assessment for emergencies at the local level, including flooding. The Environment Agency is the Lead Responder for provision of flood warnings and information to the public. All Category One responders have a role to play in communicating with the public and will either lead or play a significant part at some stage in a flood event. Merseyside Police will work with partners during a civil emergency and work together to formulate a consistent media message to the public.
- 4.11.3 The principal method of warning the public of flood risk in St.Helens is via the Environment Agency's Flood Line Warnings Direct system, and messages that the Environment Agency issue via local media. It is the property owner's responsibility under law to protect their own property from flooding. However the Environment Agency, St.Helens Council and the Emergency services where possible will offer assistance in the event of a flood. The Council has a Multi-Agency Flood Response Plan which allows all responding parties to work together on an agreed coordinated response to flooding. Local Resilience Forums (LRFs) bring together Category 1 and 2 responders within a local police area for the purpose of cooperation in fulfilling their duties under the Civil Contingencies Act 2004. The Multi-Agency Flood response Plan is activated upon the request of the emergency services or other responding agencies via a 24/7 duty Emergency Planning officer service. The aim of the plan is to:
- Save life and treat casualties and facilitate evacuation and shelter;
 - Minimise damage / Minimise disruption to essential services;
 - Provide flood warning messages and other information;
 - Restore normality at the earliest opportunity.
- 4.11.4 The Council will respond and advise on the following:
- Surface water, groundwater flooding, flooding from non-main rivers and coordinate the response with other Flood Management Authorities for main river;
 - Work with the other Category 1 and 2 responders as part of the multi-agency response to floods;
 - Activate and coordinate emergency support from the voluntary sector;
 - Liaise with responders, share information and provide support to emergency services as appropriate;
 - Manage local transport and traffic networks initially on safety grounds followed by diversionary routes;
 - Mobilise trained Crisis Support workers and emergency assistance;
 - Deal with environmental health issues, such as contamination and pollution;
 - Coordinate the recovery process.
- 4.11.5 If serious flooding involves people having to be evacuated, the Council may be able to offer temporary shelter in the form of Rest Centres where basic practical support can be provided such as refreshments, access to information and other support services where available. Emergency services (Fire, Police, Ambulance and the Army) will help to evacuate people who are stranded or in danger. Where required, they will also provide medical assistance and emergency life-saving treatment. It is **important** to understand that although these bodies can assist at the time of flooding, they are not required by the law to protect residential or other properties from flooding. The responsibility to do that lies with the property holder.
- 4.11.6 Good communications are vital on the build up to, and during an emergency. This is an area St.Helens Council continually refines as forecasting techniques and information technology develops particularly in the use of social media. Public advice/information and press releases will be agreed and co-ordinated at the multi-agency commence and control. The Council's website has proved to be a most effective and easily accessed source of information at times of flooding and thus utilised as the primary source of information. Local media (i.e. radio stations), agency websites and social media will utilised as secondary sources. When appropriate the Councils network of highway variable message signs will be used to inform of road closures. St.Helens Council will continue to work with our partners at the Environment Agency to raise awareness of the flood warning service in the designated high-risk zones. Further information can be obtained via the web links in marker 4.6.

The Civil Contingencies Act 2004

<http://www.legislation.gov.uk/ukpga/2004/36/contents>

Flooding Advice for Residents

<https://www.sthelens.gov.uk/traffic-travel-parking/highway-maintenance/flooding-and-drainage/advice-for-flood-events/>

Environment Agency – Flooding From Groundwater Advice

https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/297421/flho0911bugi-e-e.pdf

St.Helens Council – Emergency Planning

<https://www.sthelens.gov.uk/council/emergency-planning-business-continuity/>

St Helens Council Facebook

<https://www.facebook.com/sthelenscouncil>

St Helens Council Facebook Twitter

<https://twitter.com/sthelenscouncil>

4.12 Sandbag Policy

4.12.1 The Council has no legal duty to provide sandbags to the community unless the flooding is due to flooding from the Highway or other Council owned land. Although the Council has no legal responsibility to provide assistance to residents during times of flooding, where possible, the Council will provide sandbags and other equipment to protect people or property within areas being affected by flooding. However, in times of emergency the Council will be trying to protect the public at large and may not be able to assist a large number of individual homeowners who find their properties threatened. Further information to Sandbag Policy is contained within Appendix G of this document.

4.13 Culvert Policy

4.13.1 St.Helens council considers it be beneficial for watercourses to remain in an open state for both flood defence and environmental purposes. Conserving watercourses is one of the councils main aims as a lead local flood authority (LLFA) and, where possible will encourage and promote the removal of culverts in order to restore a more natural river environment (the culverting policy can be found in Appendix K). In considering new development proposals the LLFA objective is to retain open watercourses with a corridor of open land on both sides. This maintains a flood channel and creates a valuable environmental feature which can enhance the site. St Helens Council will encourage developers to incorporate open watercourses within their site design. Such features are of particular importance to wildlife by providing valuable open land in developed area. Culverting should not be considered until other options have been thoroughly explored, for example:

- Clear open span bridges with existing banks and beds retained;
- Revision of site layout to incorporate an open watercourse;
- Diversion of the watercourse in an environmentally sympathetic channel and corridor;

4.14 Continuous Improvement

4.14.1 All partners are committed to continually improving capability to predict and respond to flooding events. St.Helens Council will:

- Continue to improve operational practices by regularly reviewing Operational Plans.
- Provide secure remote sand bag stores on a priority risk basis for self-use;
- Continue to evaluate light weight flood defence equipment for emergency use;
- Review the sandbag policy on an annual basis;
- Continue to work with the Environment Agency as the national providers of the Flood Warning Service to improve our understanding of flood risk through correlation of rainfall and river gauge data to improve our ability to respond and prepare for likely events at a local level;

5. Objective 4: Funding, Actions and Interventions

St.Helens Council, as the LLFA, will look where possible to undertake actions and interventions to reduce flood risk across the borough (mainly with properties and businesses) and use appropriate funding to undertake these actions.

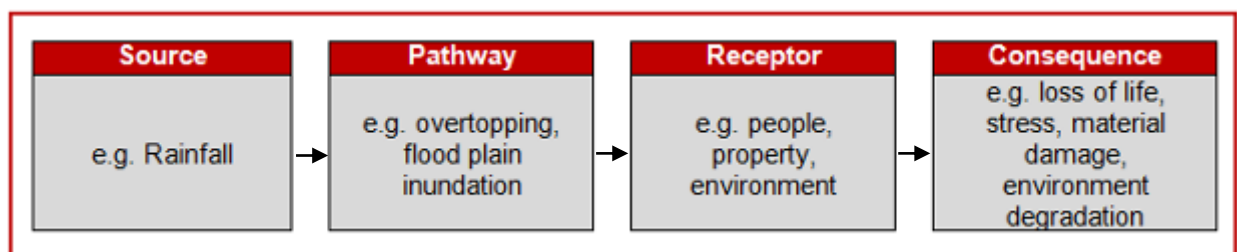
What this section will cover:

- Approach to maintenance regimes and works;
- Works and maintenance schedules;
- Improving information provision;
- Funding improvements.

5.1 Funding Overview

5.1.1 There are many different options that can be utilised to reduce the risk of flooding to individuals. However these options cannot remove the risk completely as there can always be an extreme event that may exceed the design standard of the measure put in place. It is also important when considering measures to consider the Source, Pathway, Receptor and Consequences Conceptual model.

❖ Figure 5.1 – Source, Pathway, Receptor and Consequences Conceptual Model



5.1.2 When deciding what combination of flood risk management measures or strategies to adopt it is important that the same general performance features are considered for each and every option. These should be considered together with the specific characteristics that affect the performance of that option. St.Helens Council believes it is important to use every approach available to manage risk and this strategy reflects this thinking throughout from prevention to intervention. In considering interventions and works the emphasis will be on supporting individuals, businesses, and communities.

5.1.3 Appendix H provides an overview to some of the options available to managing flood risk within St.Helens utilising the conceptual model. St.Helens Council will work with a wide range of partner organisations and communities so that, where appropriate, it can identify sustainable measures to reduce the risk of flooding. A catchment wide-approach that addresses flooding issues with green infrastructure solutions is currently employed in order to maximise opportunities for wider community or environmental benefits. Where appropriate, actions may focus on identifying a range of opportunities, which cumulatively provide significant improvement. This can range from enhanced management of current infrastructure, such as regular blockage removal from river channels, to adaption of small areas of land along a river valley, to hold flood water.

5.1.4 For the urban areas the emphasis will be on managing the social and economic dimensions. In rural areas the emphasis will be on working with natural processes and promoting biodiversity. St.Helens Council's approach therefore to developing maintenance and intervention measures in respect of reducing flood risk will be undertaken as follows:

- Consider managing residual risk where it is not economically feasible to undertake works through property resilience and flood warning site telemetry;
- Identify as far as possible responsible riparian owners;
- Consider long term sustainable solutions encompassing leisure and habitat creation.
- Develop risk based maintenance programmes to maximise reducing financial resources;
- Collaboration with United Utilities and other interested stakeholders to identify and implement partnership working.

5.2 Works to mitigate or reduce flood risk

5.2.1 Mapping evidence collated by St.Helens Council and partner organisations has identified a number of “hotspot areas” to indicate the pathway to flooding and is assessed against the RoFSW maps produced by the Environment Agency. To date records indicate flood events are mostly the result of main rivers overtopping. In these cases the Environment Agency are the lead authority. The degree of intervention by the Environment Agency is based on flood risk to property. St.Helens Borough Council will continue to work closely with the Environment Agency especially in seeking funding where the cost benefit is low when taken on a national basis (see Section 5.5 Funding).

5.3 Maintenance

5.3.1 Maintaining surface water assets within the highway is undertaken to relevant service standards by St.Helens Council as the Highways Authority. The maintenance of assets other than the highway gullies, such as ordinary watercourses and ditches, is often poor where local land owners are responsible especially when culverting has taken place. Dumping of waste is problematic and causes blockages which increase the risk of flooding. In many cases the location of assets is unknown. Management of these assets requires significant development. Since the introduction of FWMA 2010 St.Helens Council has done extensive work to locating features, inspecting and establishing ownership. Risk based regimes can then be established or in the extreme situation enforcement action taken.

5.4 Community Information Provision

5.4.1 In times of adverse events, the Flood Risk and Water Management section on St.Helens Council’s website has recorded large numbers of visits. The Council will therefore utilise this as the main form of information provision and continue to develop the web pages with appropriate links to specialist publications, and social media as outlined in Section 4.10 and 4.11.

5.5 Funding

REGS

FWMA 2010 – Section 16. Funding

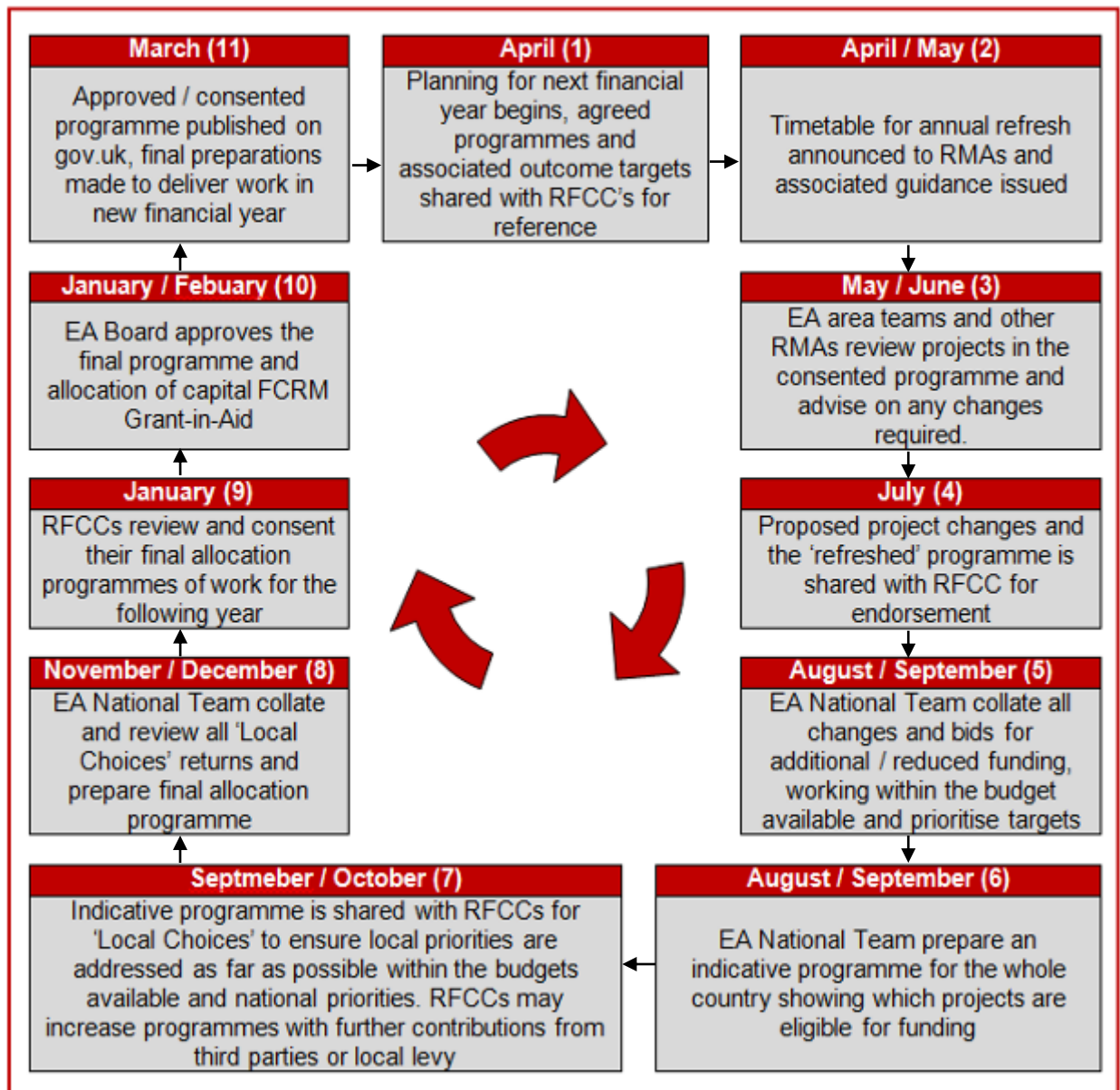
(1) The Environment Agency may make grants in respect of expenditure incurred or expected to be incurred in connection with flood or coastal erosion risk management in England. (3) A grant may be subject to conditions (including conditions as to repayment and interest).

5.5.1 It is important that the Strategy sets out how the proposed actions and measures will be funded and resourced. It is also important that this strategy sets out the different types of funding that are available to St.Helens Council at both the national and local level. The Government, through Defra, provides the majority of funding for Flood and Coastal Risk Management (FCRM) activities in England in the form of Grant in Aid (GiA). This is administered by the Environment Agency through its Regional Flood and Coastal Committees (RFCCs). FCRM GiA is either capital or revenue funding in which FCRM GiA capital funding is only available to St.Helens Council. Capital funding is generally used for new assets, or extending the life of existing assets, and is available to all Risk Management Authorities. Revenue funding is generally used for ‘day-to-day’ Environment Agency activities and maintenance activities.

5.5.2 The Environment Agency currently has a 6 year capital programme with confirmed funding up until 2020/21. A separate project is currently taking place to put proposals together for the next long term capital funding programme beyond 2021. Before Central Government committed to a 6 year funding period, Environment Agency programmes were substantially revised and changed each year as part of the annual funding process. With the 6 year programme, the Environment Agency largely expect all RMAs to adhere to the approved programme as far as possible, and undertake an annual refresh of the programme to allow projects to be removed or added where priorities or deliverability has changed. This annual refresh of the programme and subsequent approval by RFCCs is a constant cyclical process.

5.5.3 The process for allocating FCRM GiA capital funding and refreshing the programme is summarised in Figure 5.2. It sets out where RFCCs input and approve the programme as part of the annual cycle of Committee meetings.

❖ **Figure 5.2 – Annual Process for Allocating Capital Funding**



5.6 Attracting Funding

5.6.1 There are four categories under which projects can attract FCRM GiA capital funding. These are:

- All benefits arising as a result of the investment, less those valued under the other outcome measures (Outcome Measure 1 – OM1);
- Households moved from one category of flood risk to a lower category (Outcome Measure 2 – OM2);
- Households better protected against coastal erosion (Outcome Measure 3 – OM3);
- Statutory environmental obligations met through flood and coastal erosion risk management (Outcome Measure 4 – OM4).

5.6.2 The maximum amount of FCRM GiA funding available is calculated using a formula which considers the monetary value of the above benefits against projected project costs. Some projects will qualify for full national capital funding, but others may need to identify cost savings or must attract other sources of funding to proceed under the partnership approach described in Partnership Funding Approach.

5.7 Partnership Funding Approach

- 5.7.1 Defra's current policy provides a system of funding which applies to all FCRM projects seeking GiA funding. It is a way of increasing overall investment in FCRM by encouraging external contributions as a means to unlock GiA funding. GiA is capped based on the number of outcome measures a project will deliver, with each project having a Partnership Funding score as a means of prioritisation. It is expressed as the percentage of project costs and all projects must score a minimum of 100% to be eligible for central funding.
- 5.7.2 Projects will go ahead if costs can be reduced or if money can be found to meet shortfalls in central funding. If a scheme qualifies for partial funding, then local partners including local authorities can decide what action to take. For example, a project qualifying for 90% funding can still go ahead if costs are reduced by 10%, or a 10% contribution is found, or a combination of the two. FCRM projects, on average, prevent damages worth eight times the cost of the investment over the lifetime of a scheme, so even a small contribution would deliver a significant return on the level of local investment. It is important to note that, whilst central funding will be more in some years based on the number of projects coming forward, the funding is limited and payments are subject to availability.
- 5.7.3 Key partners with direct interest in schemes are potential funders or may be able to contribute to schemes in other ways such as coordinating their work to achieve scheme objectives or allowing works to take place on their land. Where there is a shortfall of funding, St.Helens Council as a scheme promoter is encouraged to look more widely for alternative sources of funds. Where the circumstances of flooding dictates or where there are related implications for flood risk management, the following partner organisations (not exclusive to) will be approached as potential partners as appropriate:
- United Utilities;
 - The Highways Agency;
 - Network Rail;
 - Housing Associations and Registered Social Landlords;
 - Private Developers.
- 5.7.4 Since 2010 St.Helens Council is continuing to develop and delivering multi-source funded schemes. Success has been down to early identification of areas at risk to flooding, development of supporting documentation, early interaction with partner organisations, and early involvement of elected representatives in choices that may require political support. Water and sewerage companies (i.e. United Utilities) play an important role in local flood risk management. Their sewer networks provide drainage for a significant proportion of rainfall, particularly that falling in urban areas.

REGS

Water Industry Act 1991 - Section 94

Section 94 of the Water Industry Act 1991 effectively sets out a flood risk management function for water and sewerage companies. It imposes a duty to 'effectually drain' their areas of responsibility. They also have a responsibility to resolve sewer flooding affecting properties. Partnership funding will be sought particularly where flood risk arises from sewer under-capacity and when there is correlation with United Utilities sewer Asset Management Programme (AMP) and co-ordination with their planned capital schemes.

<http://www.legislation.gov.uk/ukpga/1991/56/contents>

5.8 Local Levy

- 5.8.1 The local levy is an additional, locally-raised, source of income for the RFCC. The income is raised by way of a levy on the County Councils and Unitary Authorities within the committee boundaries, which is voted for by the local authority members of the committee and administered by the Environment Agency on behalf of the RFCC. The local levy is used to support, with the approval of the committee, flood risk management projects that are not considered to be national priorities and hence do not attract full national funding through GiA. The local levy also allows locally important projects to go ahead to reduce the risk of flooding within the committee area.

6. Objective 5: Environment and Sustainability

St.Helens Council aim is to support local communities by managing risks in ways that take account of all impacts of flooding (e.g. people, properties, cultural heritage, infrastructure, environment and the local economy) and to address the whole-life costs of investment in risk management.

What this section will cover:

- Funding improvements. How to undertake flood risk management in a sustainable manner.

6.1 Environment and Sustainability Overview

- 6.1.1 Risk management measures take account of potential risks that may arise in the future and be adaptable to climate change. Where possible, opportunities need be taken to enhance the environment and work with natural processes. Adopting more sustainable approaches to the management of flood risks can greatly improve the environmental condition of rivers, wetlands, coastal areas, and the social and economic circumstances around and within St.Helens.
- 6.1.2 Flood risk management can bring significant economic, environmental and social benefits. It can enhance and protect the built and natural environment, cultural heritage and biodiversity by preventing loss and damage to habitats and heritage assets and reducing pollution. It can contribute to regeneration and income generation, protect infrastructure and transport links, and contribute to economic growth. In all instances, flood risk management should avoid damaging the environment and seek to provide environmental benefit. It is important that communities are able to shape risk management actions to take account of local priorities, and that this is supported, where appropriate, by local contributions to achieve additional benefits that might not be possible otherwise. This principle should also apply to other activities, for example development, land use or infrastructure planning where flood risk management benefits may also be achieved alongside the main objectives.

FWMA 2010 – Section 27: Sustainable Development

REGS

In exercising a flood or coastal erosion risk management function, a lead local flood authority must aim to make a contribution towards the achievement of sustainable development.

Sustainable Development is defined as "... development that meets the needs of the present without compromising the ability of future generations to meet their own needs". Bruntland Commission, 1987 (UK Government Adopted Definition)

6.2 National Strategy Approach

- 6.2.1 Referring to Section 2.14, The National Flood and Coastal Erosion Risk Management Strategy for England (2011) sets out five objectives to support delivery of FWMA 2010 and ensure that it is properly managed by using the full range of options available in a co-ordinated way. The main purpose of this Local Strategy document is to set out the strategy for implementing flood risk management measures across St.Helens with respect to the national objectives. However there is an opportunity to derive significant benefit in the process, in respect to borough and country-wide aspirations in the wider context of sustainability, environmental and social improvement. The range of options are as follows:
- (1) 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;
 - (2) Avoiding inappropriate development in areas of flood and coastal erosion risk and being careful to manage land elsewhere to avoid increasing risks;
 - (3) 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;
 - (4) 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;
 - (5) Improving the detection, forecasting and issue of warnings of flooding,

6.2.2 Delivering multiple benefits will require working with partners to identify local priorities and opportunities. Where appropriate, and in line with the principles of the National Strategy, contributions that help to deliver these additional improvements could be sought from those partners that benefit. Higher levels of government funding may also be accessible when wider benefits are delivered as part of the Local Strategy. To achieve this St.Helens Council will utilise, where known, the most up to date and best practice advice and guidance where applicable when undertaking its duties with regard to flood risk management.

6.3 How does the Local Strategy contribute to the Environment?

6.3.1 The strategy should also contribute where possible to achieving national environmental objectives; these are contained within the documents and legislation as outline in the Way Markers of this document. The Local Strategy should not hinder aims and objectives but has the potential to contribute to the achievement of them. Through undertaking its duties the Council can have a positive impact on the environment. The environmental objectives and measures specific to the Local Strategy which will contribute to the effective management of local flood risk are as follows:

- To reduce the impact and consequences for individuals, communities, businesses and the environment from flooding and coastal erosion;
- To ensure that planning authority decisions are properly informed by flooding issues and the impact future planning may have on flood risk management and long term developments;
- To improve and/or maintain the capacity of existing drainage systems by targeted maintenance;
- Sustainable approach to flood risk management balancing economic, environmental and social benefits;
- Promote, and provide guidance, to the use of SuDS and other natural flood management schemes.

6.4 Ordinary Watercourses: Enforcement and Consenting

6.4.1 Ordinary watercourse regulation is to control certain activities that may have an adverse impact on flood risk and the environment (Refer to Section 4.4 of this document for further information) If works are carried out without consent, the Council has enforcement powers to remove or modify them. The ordinary watercourse consenting process is in place to ensure that any works carried out do not have a detrimental effect on other people or the environment. It also ensures that any works which may affect flood risk are properly designed and where necessary environmental considerations are designed for i.e. fish passes etc. In determining an application it is necessary to consider other Legislation including, but not exclusively:

- The Environment Act (1995);
- The Conservation of Habitats and Species Regulations (2010);
- The Water Framework Directive (2003);
- The Countryside and Rights of Way Act (2000);
- The Salmon and Freshwater Fisheries Act (1975);
- The Eel Regulations (2009).

6.5 Designation of Third Party Assets

6.5.1 The purpose of this legislation is to try and ensure that owners do not inadvertently alter structures and other features and potentially increase flood risk to themselves, their neighbours and the wider community hence having a negative social effect.

6.6 SuDS

6.6.1 SuDS play a crucial role in managing the surface water from developments on site and hence reducing the flood risk. As well as planning for new Green Infrastructure, Local Flood Risk Management Strategies need to protect existing wetlands due to their important role in surface water management. Suds also have many environmental and social benefits, including; protecting and potentially enhancing surface water quality by filtering pollutants; improving groundwater recharge; providing habitats for wildlife and providing landscape amenity for the community (Refer to Section 2.3.6 of this document for further information).

6.7 Capital Works

- 6.7.1 In assessing potential solutions there may be conflicts between measures that are more or less sustainable. St.Helens Council will assess sustainability with the economic, environmental and social benefits of any proposed scheme. St.Helens Council will be transparent about the trade-offs in both the short and long term and explain decisions taken.

6.8 Maintenance Works

- 6.8.1 Some rivers are designated under the Habitats Directive as Special Areas of Conservation (SAC). Any maintenance activities that St.Helens Council may wish to carry out, including dredging and weed cutting, must comply with the requirements of the Habitats Directive. This may affect the amount or timing of what St.Helens Council is permitted to undertake. In some exceptional cases it may prevent any dredging or weed cutting at all. The Water Framework Directive does not prohibit dredging. The Directive calls for the reinstatement of natural river channels and, as far as possible, for a reduction in interference in the natural river process. Other miscellaneous items such as utility company services may well intersect run parallel or be within the watercourse area; this restricts or limits maintenance activities.

The Conservation of Habitats and Species Regulations 2017

REGS

The Conservation of Habitats and Species Regulations 2017 consolidate the Conservation of Habitats and Species Regulations 2010 with subsequent amendments. The Regulations transpose Council Directive 92/43/EEC, on the conservation of natural habitats and of wild fauna and flora (EC Habitats Directive), into national law. They also transpose elements of the EU Wild Birds Directive in England and Wales. The Regulations came into force on 30th November 2017.

<http://www.legislation.gov.uk/ukxi/2010/490/contents>

7. Appendices

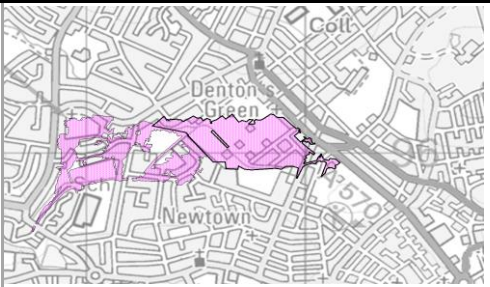
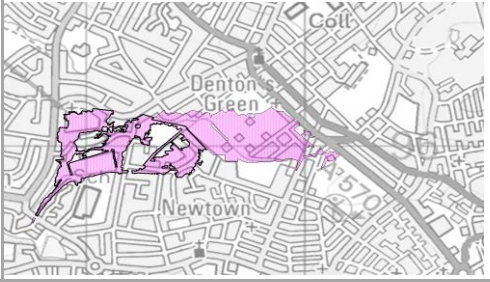
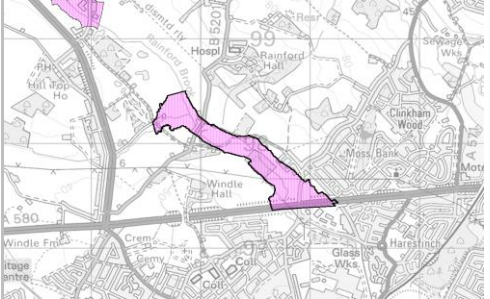
Appendix	Description	Location
A	Mapping	External
B	Environment Agency's Flood Warning Areas	Internal
C	Cheshire Mid Mersey FWMA Programme	Internal
D	Objectives, Measures and Schemes	Internal
E	Risk Management Options suitable to St.Helens Council	Internal
F	Abbreviations and Definitions	Internal
G	Useful Resources	Internal
H	Contact Details	Internal
I	References	External
J	Sand Bag Policy	External
K	Culverting Policy	External

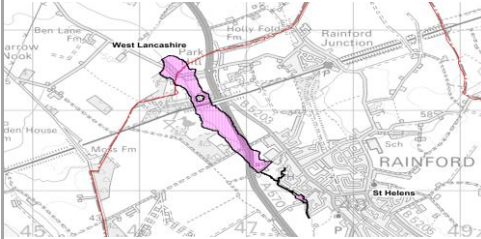
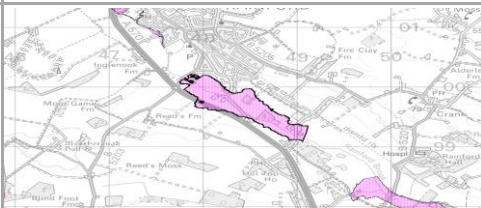
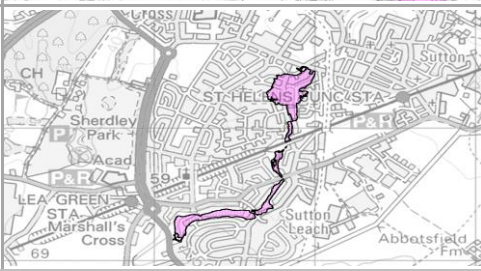
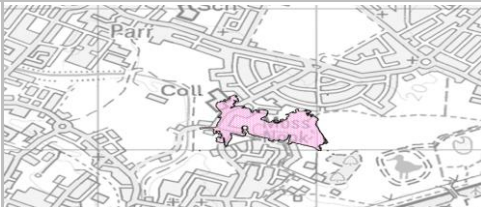
A. Mapping

Figure	Description	Location
1	Detailed River Network	External
2	Environment Agency Risk of Flooding from Surface Water	External
3	Environment Agency Areas Susceptible to Groundwater Flooding	External
4	Environment Agency Risk of Flooding from Rivers and Sea	External
5	Distribution of Historic Flood Records (Council)	External
6	Distribution of Historic Flood Records (United Utilities)	External

B. Environment Agency Flood Warning Areas

Table B1: Summary of Flood Warning Areas in St.Helens

Code	Name	Watercourse & Description	Properties		Critical Services	Location
			Residential	Non-residential		
013FWFM1	Windle Brook at Dentons Green	Windle Brook: Areas at risk include land and property adjacent to Windle Brook between the allotments and Dilloway Street. This includes Percival way, Ruskin Drive, Coleridge Way, and Rivington Road.	74	25	1	
013FWFM2	Mill Brook at Eccleston	Mill Brook: Areas at risk include properties on Washbrook Close and some properties on Millbrook Lane, Wokefield Way, Cranston Close and Kiln Lane. Also at risk are properties on Dodd avenue, Percival Way, and the recreation ground.	138	6	2	
013FWFM3	Rainford Brook at Moss Bank	Rainford Brook: Areas at risk include land and property at Berrington Road Cottage, between Grey House Farm and the river, Windle Park Wood, and some properties on Woodside and Birch Tree Avenues.	13	3	0	

Code	Name	Watercourse & Description	Properties		Critical Services	Location
			Residential	Non-residential		
013FWFM4	Rainford Brook at Rainford North	Rainford Brook: Areas at risk include land and properties at Siding lane, Lords Fold and Lower Shades. Also at risk, are some properties on Beech Gardens.	11	18	1	
013FWFM5	Rainford Brook at Rainford South	Rainford Brook: Areas at risk include land and properties at Pasture Lane Business Centre, Pasture lane Bridge (lesser), and Villbrook Business centre.	19	22	1	
013FWFM6	Sutton Mill Brook at Sutton Leach	Sutton Mill Brook: Areas at risk include land and property on landsdowne Court, parts of Waterdale Crescent, Boscow Crescent, Dawsons Avenue, and Gerrards Lane. Also at risk, land alongside Sutton Mill Brook from Waterdale Crescent to Damhouse Bridge, Sutton Mill Dam	104	4	0	
013FWFM7	Sutton Brook at Moss Nook	Sutton Brook: Areas at risk include land and properties at St Cuthberts school, Berrys Lane, Watery Lane, Portland Way and The Moss Nook	39	3	3	
Total			385	78	8	

C. Cheshire Mid-Mersey FWMA Programme 2019+

Table C1: Cheshire Mid-Mersey Flood & Coastal Erosion Risk Management Partnership 2019/20+ Work Programme

Category		Comment	
HIGH	Work that is to support the delivery of flood and coastal erosion risk management on a priority basis or to meet deadlines.		
MEDIUM	Work which can be scheduled routinely within the capability of the Partnership. This work is subject to the availability of resources, and may be consolidated to obtain efficiency of operation.		
LOW	Work that is either (1) Desired but not essential to protect, preserve, or deliver and is not tied to a specific milestone; or (2) Work which is integral to the functioning of the Partnership on a day-to-day basis but maybe postponed / rescheduled for completion because of higher priority work, funds shortage, or conditions outside the control of the organisation or Partnership.		
Work Stream	Task for Co-ordinator	Task for LLFAs	Progress / Delivery Measure
Local Flood Risk Management Strategies Statutory Duty – Section 9 FWMA 2010	<ul style="list-style-type: none"> Support LLFAs in delivering their Local Flood Risk Management Strategies and accompanying supporting documents, and then deliver their actions, where appropriate. HIGH Review individual action plans and ensure relevant actions are included in the Investment Programme. HIGH Research different Strategy approaches to keep up-to-date with new approaches HIGH Participate in the process of review and renewal of Strategies. HIGH 	<ul style="list-style-type: none"> LLFAs to produce a Local Strategy which should be a robust representation of local issues and vehicle for delivery of improved FRM, not only to address them but also to recognise their part within the CMM context. It will also support the development of a partnership funding, and delivery of a strategic investment programme. HIGH Monitor / review the delivery of the Strategy through an appropriate means e.g. annual monitoring report, quarterly updates on progress at Tactical / Strategic Meetings etc. HIGH When appropriate, begin the process of review and renewal of the Strategy. HIGH 	<ul style="list-style-type: none"> All Local FRM Strategies adopted by end 2017/18 financial year. HIGH Local FRM Strategy monitoring framework in place in all LLFAs. HIGH Timetable for Strategy review should be outlined and authorities building into their service plans for future years as appropriate. HIGH

Work Stream	Task for Co-ordinator	Task for LLFAs	Progress / Delivery Measure
<p>S19 Investigations</p> <p>Statutory Duties – Section 19 FWMA 2010</p>	<ul style="list-style-type: none"> • Work with LLFAs to identify opportunities a) Further improve response in flood aftermath, and identify any further improvements which can be made to their S19 policy and approach. HIGH b) Identify opportunities to share best practices following flood events through review, and report back findings to CMM. HIGH c) Provide standard method / template to S19 reporting. MEDIUM 	<ul style="list-style-type: none"> • Ensure that internal processes for capturing and recording data during a flood event are in place HIGH • Review existing S19 investigation policy and approach (i.e. triggers) based on past experiences Ensure that any new approach/policy is approved through the necessary means. HIGH 	<ul style="list-style-type: none"> • All LLFAs have a ‘refreshed’ S19 policy and/or approach in place which is fully approved and ‘adopted’ by the LLFA. HIGH / MEDIUM • Process/arrangements developed for reviewing and sharing best practice following a flood event which triggered a S19. HIGH / MEDIUM
<p>Spatially Targeted Investment Plan</p>	<ul style="list-style-type: none"> • Provide an evidence base to create a prioritised spatially targeted investment plan: a) Identification of existing schemes and 5 year forward programme. HIGH b) Bring together priorities identified by Local Flood Risk Strategies HIGH c) Design process and milestones. HIGH 	<ul style="list-style-type: none"> • Prioritise flood projects and strategic sites for future flood measures at strategic (cross boundary) and site / area specific scales HIGH • Step by step approach to identify strategic priorities - evidence from latest flood maps, key strategic areas that are at risk of flooding from any source and has the potential to impact on growth, employment and development. HIGH • Scope out metrics for identifying priorities e.g. number of properties, probability and consequence of impacts, economic outcomes, new homes delivered, relationship to other priorities. HIGH • Design process and milestones. HIGH • Agree and implement process HIGH 	<ul style="list-style-type: none"> • Delivery of current year projects and 5 year forward planning. HIGH • Adhere to new process and milestones assigned HIGH

Work Stream	Task for Co-ordinator	Task for LLFAs	Progress / Delivery Measure
<p>Duty to maintain an Flood Risk Asset Register</p> <p>Statutory Duties – Section 21 FWMA 2010</p>	<ul style="list-style-type: none"> • Ensure all Authorities have a register in place and investigate how this aligns with the Environment Agency Asset Information Management System (AIMS). HIGH • Review potential for a standardised approach across CMM. Encourage CMM authorities to have a standardised approach to data collection and recording. MEDIUM 	<ul style="list-style-type: none"> • All Authorities should use the information in the Asset Register to better prioritise their individual investment plans by aligning with known historic flooding data and new surface water data. HIGH • LLFA build knowledge and gather information in relation to flood risk assets; what assets we have, what is their current condition, how to ensure consistency etc. HIGH • Identify links to other FRM roles, for example it could be a source of intelligence when: <ol style="list-style-type: none"> a) Investigating incidents of flooding b) Responding to planning consultations c) Developing investment plans for Capital and Revenue d) Informing bids for funding in the Investment Programme, and also more reactively e.g. In-Year Funding HIGH 	<ul style="list-style-type: none"> • All CMM authorities commit to using the same asset system to share data openly and consistently, as far as reasonably practicable. HIGH • Utilise asset register as a 'tool' to add value to other sections of Flood Risk. E.g. Bridges and Highways HIGH / MEDIUM
<p>SuDS</p>	<ul style="list-style-type: none"> • Identify common approaches and resource gaps. HIGH • Explore the potential of a joint SuDS SPD / SuDS Specification. HIGH • Assist in the research and delivery of guidance notes HIGH 	<ul style="list-style-type: none"> • Update, or produce, guidance notes to secure betterment on brownfield sites and provide clarify on maintenance expectations for SuDS. HIGH 	<ul style="list-style-type: none"> • All LLFAs to produce a SuDS guidance document by June 2019 HIGH

Work Stream	Task for Co-ordinator	Task for LLFAs	Progress / Delivery Measure
Data Management	<ul style="list-style-type: none"> Identify existing and future data sources and create process for collating / sharing data for CMM. MEDIUM Support LLFAs in liaising with both internal and external teams to discuss / identify how flood risk data can be used to inform local flood risks in other areas of work. Create a briefing note for the Partnership to identify who to talk to and why. MEDIUM 	<ul style="list-style-type: none"> Manage data relating to flood and coastal erosion risks and the wider water environment. Ensure that data is used appropriately and to inform risks in all areas of work. MEDIUM Create 'Local Flood Zones' to identify areas at risk of 'local' flooding. Partnership to explore the potential to bid jointly for funding to undertake a study along these lines. MEDIUM / LOW Each LLFA to collate and maintain a 'flooding hotspot' register and tackle issues through their Operation Group meetings or other mechanisms as appropriate. MEDIUM Engage with teams internally to discuss and identify how this data can be used inform local flood risks in other areas of work. MEDIUM 	<ul style="list-style-type: none"> Collated list of all data sources and a data process and protocol for its use to be developed to support LLFAs. MEDIUM Production of briefing note for the Partnership to identify what other internal / external teams to engage with in regards to flood risk data and why. MEDIUM Exploration of the potential to develop 'Local Flood Zones' for CMM. MEDIUM / LOW
General duties and Governance for the overall catchment	<ul style="list-style-type: none"> Communications: <ol style="list-style-type: none"> Briefings for Members and / to agree and implement actions LOW Feed into papers to RFCC to ensure CMM priorities are reflected LOW Ensure Terms of Reference for Strategic and Tactical Group meetings are updated LOW Coordinate and develop the Partnership Performance Report LOW 	<ul style="list-style-type: none"> Programme an annual calendar of Group meetings for which are timed to align with other meetings LOW LLFAs to collate and maintain a flooding hotspot' register and tackle issues through their Operation Group meetings or other mechanisms as appropriate. LOW Encourage RMAs to share issues, experiences etc. LOW 	<ul style="list-style-type: none"> Calendar of meetings programmed on an annual basis. LOW Meetings are attended by Members and Officers from all LLFAs throughout CMM LOW Updated Terms of Reference produced and agreed. LOW Raise profile of the CMM Partnership at a regional level through engagement at the RFCC and by feeding into meeting papers. LOW

Work Stream	Task for Co-ordinator	Task for LLFAs	Progress / Delivery Measure
<p>General duties and Governance for the overall catchment</p>	<p>e) Develop and maintain links between the Strategic and Tactical groups LOW</p> <p>f) Attend Operational Group meetings and provide, where possible, technical assistance. LOW</p> <ul style="list-style-type: none"> • Work with Environment Agency and relevant Partnerships to align flood risk issues with actions to address issues outlined in River Basin Management Plans (RBMPs) LOW • Work with CMM Risk Management Authorities to proactively consider the issue of maintenance of assets and opportunities where we can develop joint innovative approaches. LOW • Work with partners to identify any opportunities for joint projects that could identify funding from multiple sources as well as delivering multiple benefits. LOW • Attend Catchment Partnership meetings for Lower Mersey catchments and engage with the Healthy Rivers Trust, and others, in delivering added benefits to projects in CMM where possible. LOW • Provide technical assistance / advice to members of the Partnership to enable project delivery for existing schemes. MEDIUM 	<ul style="list-style-type: none"> • Programme an annual calendar of Group meetings for which are timed to align with other meetings LOW • LLFAs to collate and maintain a flooding hotspot' register and tackle issues through their Operation Group meetings or other mechanisms as appropriate. LOW • Encourage RMAs to share issues, experiences etc. LOW 	<ul style="list-style-type: none"> • Calendar of meetings programmed on an annual basis. LOW • Meetings are attended by Members and Officers from all LLFAs throughout CMM LOW • Updated Terms of Reference produced and agreed. LOW

D. Objectives, Measures and Schemes

Strategic Objectives

- (1) To clearly set out the different types of flooding, who is responsible and Governance arrangements
- (2) To assess the total risk of flooding from all sources in St Helens.
- (3) To manage flood risk and where appropriate reduce the risk and consequences of flooding through a range of activities.
- (4) To develop actions and interventions to reduce flood risk
- (5) To undertake flood risk management in a sustainable manner

Actions to Achieve Strategic Objectives

Table D.1: Actions to Achieve Strategic Objectives

Objective Ref:	Potential Action	Description	Lead Body	Partners	Funding Options
3, 4	Asset Management Plan (Drainage)	An Asset Management Plan (AMP) is a tactical plan for managing an organisation's infrastructure and other assets to deliver an agreed standard of service.	St Helens Council		St Helens Council
2, 3	Asset Register	St Helens Council has a duty to maintain a register of structures or features, which are considered to have an effect on a flood risk. Including details on ownership and condition as a minimum.	St Helens Council	Environment Agency, United Utilities	St Helens Council
3, 4, 5	Best Practice Guidance	St Helens Council will follow published best practice guidance when undertaking actions/duties in relation to flood risk.	St Helens Council		
3, 5	Bye-laws	The Flood and Water Management Act 2010 amends Section 66 of the Land Drainage Act 1991 to allow local authorities to make byelaws for the following purposes: <ul style="list-style-type: none"> • To secure the efficient working of a drainage system in its area; • To regulate the effects of a drainage system on the environment; • To secure the effectiveness of flood risk management work (carried out under either the FWMA 2010 or the Land Drainage Act 1991) 	St Helens Council		St Helens Council

Objective Ref:	Potential Action	Description	Lead Body	Partners	Funding Options
3, 5	Checking and approval of new development drainage designs	St Helens Council will continue to check and pass comment in line with best practice guidance with regard to drainage on key planning applications.	St Helens Council		St Helens Council
5	Climate Local Strategy	Schemes and actions contained within the Local Flood Risk Management Strategy will have regard to the Climate Local Strategy.	St Helens Council		St Helens Council
1, 3	Communication Strategy (Newsletters, Council website, Social Media, Community Engagement)	The Communications' Strategy document states how St Helens Council will communicate with stakeholders in relation to its flood risk activities.	St Helens Council	Environment Agency, United Utilities	St Helens Council
3, 5	Consenting on Ordinary Watercourses	Under the Land Drainage Act 1991 certain types of work within a watercourse may not be permitted due to the potential increase in flood risk. In order to allow work to take place St Helens Council can issue consent for a proposed scheme by checking that it does not increase the risk of flooding and that it does not adversely affect the environment.	St Helens Council		St Helens Council
2, 3	Designation of Third Party Assets	The Council, as well other flood management authorities, have powers to designate structures and features that affect flooding or coastal erosion in order to safeguard assets that are relied upon for flood or coastal erosion risk management.	St Helens Council		St Helens Council
1, 2, 3, 4	Duty to Co-Operate	FWMA 2010 places a duty on Risk Management Authorities to co-operate with one another. Co-operation between flood and coastal erosion Risk Management Authorities is important because of the mutual benefits they can gain from working together and sharing information.	All Partners		
3, 4, 5	Enforcement on Ordinary Watercourses	The enactment of the FWMA 2010 transfers enforcement powers on ordinary watercourse from the Environment Agency to Local Authorities. The aims of enforcement in flood risk management are to ensure the proper flow of water in a watercourse and over the floodplain, the control of water levels and the security of existing assets.	St Helens Council		St Helens Council

Objective Ref:	Potential Action	Description	Lead Body	Partners	Funding Options
1, 3, 4	Engage with Partner Risk Management Authorities	The Council will seek to engage with partner Risk Management Authorities, and other significant stakeholders, in order to share knowledge and best practice in order to achieve the best possible results.	St Helens Council	Environment Agency, United Utilities	
3, 5	Consenting on Ordinary Watercourses	Under the Land Drainage Act 1991 certain types of work within a watercourse may not be permitted due to the potential increase in flood risk. In order to allow work to take place St Helens Council can issue consent for a proposed scheme by checking that it does not increase the risk of flooding and that it does not adversely affect the environment.	St Helens Council		St Helens Council
2, 3	Designation of Third Party Assets	The Council, as well other flood management authorities, have powers to designate structures and features that affect flooding or coastal erosion in order to safeguard assets that are relied upon for flood or coastal erosion risk management.	St Helens Council		St Helens Council
1, 2, 3, 4	Duty to Co-Operate	FWMA 2010 places a duty on Risk Management Authorities to co-operate with one another. Co-operation between flood and coastal erosion Risk Management Authorities is important because of the mutual benefits they can gain from working together and sharing information.	All Partners		
3, 4, 5	Enforcement on Ordinary Watercourses	The enactment of the FWMA 2010 transfers enforcement powers on ordinary watercourse from the Environment Agency to Local Authorities. The aims of enforcement in flood risk management are to ensure the proper flow of water in a watercourse and over the floodplain, the control of water levels and the security of existing assets.	St Helens Council		St Helens Council
1, 3, 4	Engage with Partner Risk Management Authorities	The Council will seek to engage with partner Risk Management Authorities, and other significant stakeholders, in order to share knowledge and best practice in order to achieve the best possible results.	St Helens Council	Environment Agency, United Utilities	
1, 3, 4, 5	Engage with Riparian Land Owners	St Helens Council will seek to engage with riparian land owners in order to inform them of their duties and responsibilities and to actively encourage them to undertake them with the aim of avoiding enforcement action.	St Helens Council	Environment Agency, United Utilities	All partner RMAs

Objective Ref:	Potential Action	Description	Lead Body	Partners	Funding Options
1, 3, 4	Engagement with communities at risk of flooding: Parish, Councils, Community Groups	Communities often lack the support and expertise to improve their own flood resilience. By working together, with local communities and emergency services, St Helens Council can make significant strides towards reducing the impact, disruption and trauma of a flood.	Dependent on source/type of flooding		St Helens Council
2, 3, 4	Flood Mapping/Modelling	Where necessary and appropriate, St Helens Council and partner organisations will undertake flood mapping/modelling in order to aid our understanding of the mechanisms which lead to an area flooding.	All Partners		All partner RMAs
1, 3	Flood Warning Service	The Environment Agency offers a free flood warning service for many areas at risk of flooding from rivers and the sea. The warnings can give advance notice of when flooding from rivers and the sea is likely to happen and allow time for residents to prepare. St Helens Council where appropriate will promote the Flood Warning Service to residents.	Environment Agency	St Helens Council, United Utilities	Environment Agency
2, 3, 4	Identification of Critical Assets	As part of the Councils duty to maintain a register of structures or features, which are considered to have an effect on flood risk. Council will also identify assets which play a significant role in flood risk management.	St Helens Council	Environment Agency, United Utilities	St Helens Council
1, 2, 3, 4	Investigations	The Council has a duty to co-ordinate the investigation and recording of significant flood events within their area. This duty includes identifying which authorities have flood risk management functions and what they have done or intend to do with respect to the incident, notifying Risk Management Authorities where necessary and publishing the results of any investigation carried out.	St Helens Council	Environment Agency, United Utilities	St Helens Council
1, 2, 3, 4	Joint Funded / Identified Schemes	All partner organisations will endeavour to work together where appropriate to achieve the best possible outcomes.	All Partners		All partner RMAs
1, 2, 3, 4, 5	Local Flood Risk Management Strategy	The Council is required to develop, maintain, apply and monitor a Local Strategy for flood risk management in its area. The Local Strategy will build upon information such as national risk assessment and will use consistent risk based approaches across different local authority areas and catchments.	St Helens Council	Environment Agency, United Utilities	St Helens Council

Objective Ref:	Potential Action	Description	Lead Body	Partners	Funding Options
2, 3	Power to Request Information	Under Section 14 of FWMA 2010, St Helens Council and Environment Agency have the power to request information relevant to flood risk management. Where considered appropriate St Helens Council will use this power.	All Partners		All partner RMAs
2	Recording and Reporting of Flood Incidents	The Council will record all flood incidents which are reported to the flood risk management team and where appropriate report on the incident.	All Partners		All partner RMAs
3	Site Specific Flood Response Plans	Flood response plans for known at risk locations within the borough enable a more targeted use of resources should a flood occur, they should state who will respond and how.	All Partners		All partner RMAs
3, 5	Spatial Planning Policy	Planning policy influences what can be built and where, planning policy is key to deciding where appropriate development should be sited.	St Helens Council		St Helens Council
2, 3	Strategic Flood Risk Assessments (SFRA)	There is a Level 2 SFRA in place which was undertaken in 2014 by Planning Policy. The SFRA allows for application of the sequential test as set out in the NPPF. St Helens Council will update the SFRA as necessary to ensure an up to date and best informed knowledge base to undertake assessment of planning applications.	St Helens Council		St Helens Council
2, 3, 4	Surface Water Management Plans (SWMP)	A Surface Water Management Plan (SWMP) is a plan which outlines the preferred surface water management strategy in a given location. Where appropriate/necessary St Helens Council will undertake SWMPs.	St Helens Council		St Helens Council
1	Website Flood Risk Content Update	As a key communication tool for information regarding flood risk it is important that the borough website is accurate. St Helens Council provides regular updates to the information contained on the website.	St Helens Council		St Helens Council

Table D.2: Borough Wide Draft Maintenance Programme

Asset	Action	Status	Solution Medium Term	Solution Long Term or Additional Works	Authority	Possible Funding
Gully/Highway Drains	Regular cleaning	In development	Programme continually reviewed and amended	Risk based system of maintenance	St Helens Council	St Helens Council
Ditch	Regular cleaning	In development	Programme continually reviewed and amended	Intelligence and risk based system of maintenance	St Helens Council	St Helens Council, Riparian Owner
Culvert Screens	Identify culvert screens to produce inspection and maintenance regime	In development	Programme continually refined as asset management registers develops	Intelligence and risk based system of maintenance. Replacement of identified deficient screens, etc.	St Helens Council	St Helens Council
Asset Inspection	Regular inspection of assets at high risk locations identified	High risk locations identified from initial desk top exercise	Programme frequency and locations continually reviewed and amended	Identifying and informing riparian land owners	St Helens Council	St Helens Council, Riparian Owner
Telemetry Systems	Regular inspection and maintenance of telemetry	In development	New telemetry systems will initially be in a maintenance period.	Ongoing maintenance regime by Council contractor	St Helens Council	St Helens Council
Surface Water Pumps	Regular inspection and maintenance	In development	Monitor pumping stations as part of inspection regime by Council contractor	Replacement/repair as required	St Helens Council	St Helens Council
Critical Flood Risk Management Assets	CCTV programme of critical flood risk management assets	Developing programme	Develop programme to CCTV critical flood risk management assets	Ongoing programme under continual review	St Helens Council	St Helens Council

Table D.3: Works Programme (Completed Works from 2014 Strategy)

Location	Action	Status	Solution Undertaken / Further Works	Authorities / Partners
Peasley Cross Lane Rail Bridge	Surface water flooding of carriageway	Surface water drains below flood flow level of Hardshaw Brook	Flooding issue is hydraulic and unable to pump area as the discharging watercourse and Utility services are already at capacity. Protective measures installed to protect the public of access to the flood area. Barriers not full width of carriageway to allow to emergency vehicle and maintenance access.	St Helens Council Environment Agency United Utilities
Island Brow	Flooding below low rail bridge	Topography limits discharge locations	St Helens Council have taken over the maintenance of the pumps adjacent to the railway bridge	St Helens Council
Beech Gardens	Rainford Brook overtopping	Service utilities pipes reduce capacity , allow for debris to become trapped.	Joint scheme was undertaken to replace and raise the footbridge across the watercourse above the household threshold level, utility pipes diverted within the bridge decking to increase the watercourse channel capacity. Bridge also extended to increase floodplain area.	St Helens Council Environment Agency Utility Services
College Street / Merton Bank Road	Rainford Brook overtopping	Siltation of Rainford Brook	Update: Works are currently being planned via the Liverpool City Region to reduce the flood risk and frequency at the locations. Works will form part of a cycleway improvement scheme. Works to include de silting of the watercourse.	St Helens Council Environment Agency United Utilities
DCLG Grants	2015 flood events	Government issued grants to households	Government issued grants to effected properties and businesses, over *** where issued in ST Helens Council	St Helens Council DCLG
Pasture Lane	Flooding eroded highway embankment	Road collapsed into Rainford Brook, resulting in closure.	Funding bids submitted to Highways England and Department for Transport to replace and repair collapsed highway. Utility services moved Utility Services to opposite side of highway to reduce risks.	St Helens Council DfT
Warrington Road / Mill Lane	Watercourse overtopping	Gradual siltation of watercourse	Unconsented downstream culvert works removed by the EA, causing the siltation and reduced discharge capacity of the watercourse.	St Helens Council Environment Agency
Bell Lane	Surface water flooding of land	Mange residual risk, restore PROW	Enhanced ditch work undertaken by farmers and restored the rights of way with bridge crossing, cleared ditches and instated new drainage underneath bell lane road.	St Helens Council Environment Agency
Sankey Valley	Flooding at west end road	All flood sources contributing to issues	Highway network investigated and minor works undertaken to damage drainage. NFM measures installed within the Valley	St Helens Council Environment Agency

Table D.4: 2019 Works Programme

Location	Action	Status	Solution Medium Term	Solution Long Term or Additional Works	Authority	Possible Funding
2014 Strategy Schemes Completed	Continue to monitor locations for any changes / defects		Continue to monitor locations for any changes / defects		St Helens Council	-
College Street	Rainford Brook overflows bridge	Gradual siltation of Rainford Brook from industrial waste	Manage residual risk. Continue to develop LCR desilting work	Regular de-siltation / dredging of watercourse to improve capacity	St. Helens Council Environment Agency	St. Helens Council / Environment Agency
Merton Bank Road	Rainford Brook overflows bridge	Gradual siltation of Rainford Brook	Manage residual risk. Continue to develop LCR desilting work	Regular de-siltation / dredging of watercourse to improve capacity	St. Helens Council / Environment Agency	St. Helens Council / Environment Agency
West End Road Blackbrook / Sankey Valley	Flooding of 10 houses and 2 businesses	Overtopping of Blackbrook Branch canal Black Brook and Clipsley Brook (main rivers) due to complex hydrology and topography of development	Continue to assess measures installed.	Further river and Surface water Management issues required, look at further NFM measures to be installed throughout the Sankey Valley.	St Helens Council Environment Agency Canal and Rivers Trust United Utilities Natural England.	St. Helens Council / Environment Agency
Telemetry Links			Investigate receiving live links to selected river level telemetry sites to aid preparation in response to flood events		St Helens Council Environment Agency	St Helens Council
Various Ordinary Watercourses	Culvert Grillages / asset management		Programme of replacement grillages and headwalls as required		St Helens Council Environment Agency	St Helens Council

E. Risk Management Options suitable to St.Helens Council

Options are not exhaustive and will be developed through early consultation with all interested stakeholders.

❖ **Table E.1: Options to Control the Source – Reducing Catchment Runoff**

Method	Stakeholders
<p>Land Use</p> <p>Surface water runoff can be reduced through the implementation of certain agricultural practices. Examples include: (1) Ploughing land across the slope of the land thereby, reducing the effect of channelling of water over the land when it rains; (2) Incorporating buffer strips on farm with tree planting to delay the flow of water through a catchment;(3) Construction of “leaky dams” to slow the flow of water within a channel.</p>	<p>Farmers Landowners Developers United Utilities Environment Agency St Helens Council</p>
<p>Sustainable Drainage Systems (SuDS)</p> <p>Implementation of sustainable drainage measures as part of any development is a necessity to ensure future flood risk is not increased due to an increase in impermeable area. There is also potential to reduce the existing flood risk. Examples include, but not exclusive to swales, attenuation basins and ponds. These methods will act as source control method to reduce the amount of run off entering the drainage network, and therefore reduce the risk of flooding downstream from a severe rainfall event. There are also environmental benefits with the installation of these systems such as a reduction in diffuse pollution entering the watercourses. Further information is contained within St Helens Council’s SuDS Guidance Manual.</p>	
<p>Storage</p> <p>Providing storage can take up a large land area, but with careful design can take different forms to incorporate them into the existing landscape. These aim to control the rate in which run off is discharged into the watercourse and if ground conditions are suitable allows water to infiltrate. Examples include ponds, ditches or low lying land or by creating new ponds and areas to store water.</p>	

❖ **Table E.2: Options to Control the Pathway**

Method	Stakeholders
<p>Storage</p> <p>Where land area allows it may be possible to construct offline and online storage areas, to attenuate the flood water and discharge it from the area at a manageable rate. A large area of land maybe required but can be multifunctional space. If the solution is designed to attenuate over 10,000m³ of water it may be designated as a reservoir (under the Reservoirs Act 1975, as amended by the Floods and Water Management Act 2010).</p>	<p>Farmers Landowners Developers United Utilities Environment Agency St Helens Council</p>
<p>Channel Design</p> <p>Reduce or increase the conveyance capacity of the watercourses (for example, by construction of bypass channels or multistage channels, by widening or deepening, or by changing the roughness of the existing channel). Removal of constrictions to the flow within the channel or floodplain.</p>	

❖ **Table E.2: Options to Control the Pathway (Continued)**

Method	Stakeholders
<p>Flood Farming</p> <p>Engaging with farmers or landowners to agree to permit their land to be designed to flood more frequently through the construction of measures around an area to contain the water as it flows in. Compensation to the farmer or landowner will need to be taken into consideration.</p>	<p>Farmers Landowners Developers United Utilities Environment Agency St Helens Council</p>

❖ **Table E.3: Options to Affect the Receptor – Asset Protection**

Method	Stakeholders				
<p>Walls and Embankments</p> <p>Hard engineering techniques may be the only viable option in some areas, these methods would involve the construction of embankments and flood walls; these can be costly and have higher environmental implication on the area when compared to other methods.</p>	<p>Farmers Landowners Developers United Utilities Environment Agency St Helens Council Local Residents</p>				
<p>Property Level</p> <p>A general approach to improving community resilience should be adopted throughout St Helens, including increasing the general awareness and preparedness for a flood event in areas that are at high risk areas. There are options for home and business owners to take action in relation to resistance and resilience measures.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="background-color: #e0e0e0; width: 30%;">Resilience Measures These are measures that allow buildings to recover quickly in the event of flooding.</td> <td>Existing developments in risk areas could retrofit flood resilience measures therefore allowing a property to be quickly habitable again if a property did flood.</td> </tr> <tr> <td style="background-color: #e0e0e0;">Resistance Measures These are described as those measures that prevent water from entering the property.</td> <td>In addition the properties could include property protection schemes, such as demountable flood defences and airbrick covers.</td> </tr> </table>		Resilience Measures These are measures that allow buildings to recover quickly in the event of flooding.	Existing developments in risk areas could retrofit flood resilience measures therefore allowing a property to be quickly habitable again if a property did flood.	Resistance Measures These are described as those measures that prevent water from entering the property.	In addition the properties could include property protection schemes, such as demountable flood defences and airbrick covers.
Resilience Measures These are measures that allow buildings to recover quickly in the event of flooding.		Existing developments in risk areas could retrofit flood resilience measures therefore allowing a property to be quickly habitable again if a property did flood.			
Resistance Measures These are described as those measures that prevent water from entering the property.		In addition the properties could include property protection schemes, such as demountable flood defences and airbrick covers.			
<p>Exceedance</p> <p>Overland flow routes or flows that exceed the drainage systems capacity can be controlled along the existing highways or other flow routes to areas designed to attenuate flood water. This can be achieved through:</p> <ul style="list-style-type: none"> • Increasing kerb heights and property thresholds to retain water on designated sections of highway. This could be combined with existing highways maintenance and improvement projects which would make it more cost effective. • Divert flood flows to less vulnerable areas, through bypass channels or a piped network, with a suitable capacity. This can be incorporated into new development as part of the planning and design phase. 					

F. Abbreviations and Definitions

❖ **Table F.1: Abbreviations**

Item	Description
AStSWF	Areas Susceptible to Surface Water Flooding
CIRIA	Construction Industry Research and Information Association
CFMP	Catchment Flood Management Plan
DCLG	Department for Communities and Local Government
DEFRA	Department for Environment, Food and Rural Affairs
DPD	Development Plan Document
EA	Environment Agency
EC	European Commission
FCERM	Flood and Coastal Erosion Risk Management
FWMA	Flood and Water Management Act 2010
FRA	Flood Risk Assessment
GEM	Groundwater Emergence Map
GIA	Grant in Aid
HFM	Historic Flood Map
IUD	Integrated Urban Drainage
IDB	Internal Drainage Board
LGA	Local Government Association
LDF	Local Development Framework
LoSA	Level of Service Agreements
LPA	Local Planning Authority
NRD	National Receptor Database
NPPF	National Planning Policy Framework
PFRA	Preliminary Flood Risk Assessment
RFCC	Regional Flood and Coastal Committee
RoFSW	Risk of Flooding from Surface Water
S19	Section 19 - Flood Investigation Report
SAB	SuDS Approving Body
SEA	Strategic Environmental Assessment
SFRA	Strategic Flood Risk Assessment
SPD	Supplementary Planning Document
SuDS	Sustainable Drainage Systems
SWMP	Surface Water Management Plan
UU	United Utilities

❖ **Table F.2: Definitions**

Item	Description
Assets	Structures or a system of structures used to manage flood risk.
Attenuation	Reduction of peak flows and increased duration of a flow event.
Building Regulations	The UK Building Regulations are rules of a statutory nature to set standards for the design and construction of buildings (safety, health, energy conservation, access).
Catchment	Area contributing to surface water flow to a point on a drainage or river system.
Catchment Flood Management Plans	Help the drainage authorities and partners plan the most effective way to manage flood risk in the future grouping areas by the river basin district. The plans consider all inland flooding except urban drainage along with shoreline management if required. The plans include the likely impact of climate change, land management and quality of the water environment and future development.
Climate Change	Any long-term significant change in the “average weather” in a given region. Average weather may include average temperature, precipitation and wind patterns.
Combined Sewer	A sewer designed to carry foul sewage and surface runoff in the same pipe.
Consequence	A condition or occurrence traceable to a cause e.g. the flood was an inevitable consequence of the prolonged, heavy rains.
Cultural Heritage	Buildings, structures and landscape features that have an historic value.
Culvert	A covered structure under a road, embankment etc., to direct the flow of water.
Defences	A structure that is used to reduce the probability of floodwater or coastal erosion affecting a particular area (for example a raised embankment or sea wall).
Defra	Department for Environment, Food and Rural Affairs.
Discharge	The discharge of a river is the volume of water, which flows through it in a given time. It is usually measured in cubic meters per second (m ³ /s).
Drainage Authorities	Organisations involved in water level management, including IDBs, the Environment Agency, and RFDCs.
Environment Agency	Is a UK non-departmental public body of Defra with the principle aim of protecting and enhancing the environment to make a contribution towards the objective of achieving sustainable development, principle responsibility for river (fluvial) flooding.
Flood	A flood is defined as when water covers land that is normally dry.
Flood frequency	The probability of a flow rate being equalled or exceeded in any year.
Flood Mitigation	Methods of reducing the effects of floods. These methods may be structural solutions (e.g. reservoirs) or non-structural (e.g. land- use planning, early warning systems).
Flood Risk Assessment	FRA is a report that outlines all flood risks to a development site and presents recommendations for mitigating measures to reduce the impact of flooding to the site and surrounding area.
Floodplain	Watercourse adjacent land that is subject to flooding under natural conditions.
Fluvial flooding	Flooding from a main watercourse (brooks, streams, rivers and lakes etc.) that occurs when the water features cannot cope with the amount of water draining into them, from the land. When rainfall is heavy and/or prolonged, a large amount of runoff reaches the rivers and eventually causes them to overtop their banks.
Green Network	Network of land and water that is made up of green spaces and natural elements.
Groundwater	Water that is below the surface of ground in the saturation zone.

❖ **Table F.2: Definitions (continued)**

Item	Description
Groundwater flooding	Occurs when water levels in the ground rise above the natural surface. Low-lying areas underlain by permeable strata are particularly susceptible.
Highway authority	A local authority with responsibility for the maintenance and drainage of highways maintainable at public expense.
Highways Agency	The government agency responsible for strategic highways, i.e. motorways and trunk roads.
Hydrological	The occurrence, circulation, distribution, and properties of the waters of the earth and its atmosphere.
Impermeable surface	An artificial non-porous surface that generates a surface water runoff after rainfall.
Infiltration	Passage of water through the ground towards the groundwater table or a sewer.
Operating Authorities	Anybody, including the EA, IDB, County Council and Local Authority, who have powers to make or maintain works for the drainage of land.
Ordinary Watercourses	Any watercourse that does not form part of a main river.
Permeability	Ease of which a fluid can flow through a porous medium. It depends on the physical properties of the medium, for example grain size, porosity and pore shape.
Permeable pavement	A paved surface that allows the passage of water through voids between the paving blocks/slabs.
Permeable surface	A surface formed of material that is itself impervious to water but, by virtue of voids formed through the surface, allows infiltration of water to the sub-base through the pattern of voids, e.g. concrete block paving.
Pervious surface	A surface that allows inflow of rainwater into the underlying construction or soil.
Piped system	Conduits located below ground to conduct water to a target location and treatment.
Pluvial Flooding (Surface Water)	Flooding that result from rainfall generated overland flow before the runoff enters any watercourse or sewer. It is usually associated with high intensity rainfall events.
Pollution	A change in the physical, chemical, radiological or biological quality of a resource (air, water or land) caused by man or man's activities that is injurious to existing, intended or potential uses of the resource.
Prevention	Site design and management to stop or reduce the occurrence of pollution and to reduce the volume of runoff by reducing impermeable areas.
Probability Event	The statistical probability of a flooding episode (event) occurring.
Protection	The flood event return period above which significant damage and possible failure of the flood defences could occur.
Public sewer	A sewer that is vested in and maintained by a sewerage undertaker.
Recovery	The process of rebuilding and rehabilitating the community following an emergency.
Reservoir	A natural or artificial lake where water is collected and stored until needed. Used for irrigation, recreation, water supply, hydroelectric power or controlling water flow.
Residual Risk	Risk that remains after management / mitigation measures have been implemented.
Resilience	The ability of the community, services, area or infrastructure to withstand the consequences of an incident.

❖ **Table F.2: Definitions (continued)**

Item	Description
Return Period	A return period also known as a recurrence interval is an estimate of the likelihood of an event, it is a statistical measurement typically based on historic data denoting the average recurrence interval over an extended period of time.
Risk	“Risk” as defined by the Flood and Water Management Act 2010 means a risk in respect of an occurrence assessed and expressed as a combination of the probability of the occurrence with its potential consequences.
Risk assessment	A structured and auditable process of identifying potentially significant events, assessing their likelihood and impacts, and then combining these to provide an overall assessment of risk, as a basis for further decisions and action.
Risk Management Authorities	Organisations that have a key role in flood and coastal erosion risk management as defined by the Flood and Water Management Act (2010). These are the Environment Agency, lead local flood authorities, district councils where there is no unitary authority, internal drainage boards, water companies, and highways authorities.
River flooding	Occurs when water levels in a channel overwhelms the capacity of the channel.
Run-off	Water flow over the ground surface to the drainage system. This occurs if the ground is impermeable, is saturated or if rainfall is particularly intense.
Separate sewer	A sewer for surface water or foul sewage, but not a combination of both.
Sequential Test	Sequential test (NPPF) advocates that planners use a sequential test when considering land allocations for development to avoid flood risk where possible.
Sewer	A pipe/channel taking domestic foul and/or surface water from buildings associated paths and hardstanding’s from two or more curtilages and having a proper outfall.
Sewerage undertaker	A collective term relating to the statutory undertaking of water companies that are responsible for sewerage and sewage disposal including surface water from roofs and yards of premises.
Sewers for Adoption	Agreed guide between sewerage undertakers and developers specifying the standards to which new sewers need to be constructed to facilitate adoption.
Significant	Defined threshold of flooding consequence.
Source control	The control of runoff or pollution at or near its source.
Storm water	Rainwater that runs off impervious surfaces into drains rather than infiltration.
Sub-catchment	A sub division of a catchment area.
Surface water flooding	Occurs when the level of rainfall overwhelms the capacity of the drainage system to cope.
Sustainable Drainage Systems	(SuDS) A sequence of management practices and control structures designed to drain surface water in a more sustainable fashion than some conventional techniques.
Treatment	Improving the quality of water by physical, chemical and/or biological means.
Wastewater	Used water from homes and businesses (sinks, toilets, bathtubs, washing machines and dishwashers) that has to be drained, including storm water.
Watercourse	A term including all rivers, streams ditches drains cuts culverts dykes sluices and passages through which water flows.
Wetland	A pond that has a high proportion of emergent vegetation in relation to open water.

G. Useful Resources

❖ **Table G.1: Master Planning and Concept Design**

Master Planning and Concept Design	
CIRIA (2010) Guidance on water cycle management for new developments (WaND) (C690)	https://www.ciria.org/ItemDetail?iProductCode=C690&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
CIRIA (2010) Planning for SuDS: Making it Happen (C687)	http://www.ciria.org/Resources/Free_publications/Planning_for_SuDS_ma.aspx
CIRIA (2013) Creating water sensitive places: scoping the potential for Water Sensitive Design in the UK (C724)	http://www.ciria.org/Resources/Free_publications/Creating_water_sens1.aspx
CIRIA (2013) Water sensitive urban design in the UK: Ideas for built environment practitioners.	http://www.ciria.org/Resources/Free_publications/Water_Sensitive_Urba.aspx

❖ **Table G.2: Outline Design**

Outline Design	
BSI Standards Publication (2013) Code of Practice for Surface Water Management for Development Sites (Section 5)	http://shop.bsigroup.com/en/ProductDetail/?pid=0000000030253266
CIRIA (1996) Infiltration drainage - manual of good practice (R156)	https://www.ciria.org/ItemDetail?iProductCode=R156&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
CIRIA (2004) Sustainable Drainage Systems. Hydraulic, structural and water quality advice (C609B)	https://www.ciria.org/ItemDetail?iProductCode=C609B&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
Defra (2015) Non-statutory Technical Standards for Sustainable Drainage Systems	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf
HR Wallingford (2004) The Operation and Maintenance of Sustainable Drainage Systems (and Associated Costs) (SR626)	http://eprints.hrwallingford.co.uk/982/1/SR626-Operation-maintenance-sustainable-drainage-systems.pdf
HR Wallingford (2004) Whole Life Costing for Sustainable Drainage (SR 627)	http://eprints.hrwallingford.co.uk/983/1/SR627-Whole-life-costing-sustainable-drainage.pdf
Hydro International (2011) A guide to SuDS in the urban landscape	http://www.engineeringnaturesway.co.uk/wp-content/uploads/Hydro_e-guide.pdf
Local Authority SuDS Officer Organisation (living document) Non-Statutory Technical Standards for Sustainable Drainage: Best Practice Guidance	http://www.susdrain.org/files/resources/other-guidance/lasoo_non_statutory_suds_technical_standards_guidance_2016_.pdf
National SuDS Working Group (2004) Interim Code of Practice for Sustainable Drainage Systems.	http://www.susdrain.org/files/resources/other-guidance/nswg_icop_for_suds_0704.pdf
Susdrain website	http://www.susdrain.org/
Addendum to Sewers for Adoption 7 th Edition Nov 2012	http://sfa.wrcplc.co.uk/sfa7-supporting-documents.aspx

❖ **Table G.3: Detailed Design**

Detailed Design	
British Water Code of Practice. Assessment of Manufactured Treatment Devices Designed to Treat Surface Water Runoff performance issues (C582)	http://www.britishwater.co.uk/Publications/manufactured-treatment-devices.aspx
CIRIA (2002) Source control using constructed pervious surfaces. Hydraulic, structural and water quality	https://www.ciria.org/ItemDetail?iProductCode=C582&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
CIRIA (2007) Building Greener: Guidance on the use of green roofs, green walls and complementary features on buildings (C644D)	https://www.ciria.org/ItemDetail?iProductCode=C644D&Category=DOWNLOAD&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
CIRIA (2008) Structural designs of modular geocellular drainage tanks (C680)	https://www.ciria.org/ItemDetail?iProductCode=C680&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
Department for Communities and Local Government (2009) Permeable surfacing of front gardens: guidance.	https://www.gov.uk/government/publications/permeable-surfacing-of-front-gardens-guidance
Interpave (2010) Permeable paving for adoption	http://www.paving.org.uk/commercial/permeable_paving_for_adoption.php
Interpave (2012) Planning with paving	http://www.paving.org.uk/commercial/planning_with_paving.php
Interpave (2012) Understanding permeable paving: Guidance for designers, developers, planners and local authorities. Edition 4	http://www.paving.org.uk/commercial/understanding_permeable_paving.php
Green Roof Organisation (2014) The GRO Green Roof Code: Green Roof Code of Best Practice for the UK 2014.	https://livingroofs.org/code-practice-green-roof-organisation/

❖ **Table G.4: Adoption / Retro-fitting / Operation and Maintenance**

Adoption / Retro-fitting / Operation and Maintenance	
CIRIA (2015) The SuDS Manual C753 Update: Appendix B: SuDS adoption handover checklist.	http://www.susdrain.org/resources/SuDS_Manual.html
CIRIA (2012) Retro-fitting to manage surface water (C713)	https://www.ciria.org/ItemDetail?iProductCode=C713&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
CIRIA (2004) Model agreements for sustainable water management systems, model agreements for SuDS (C625)	https://www.ciria.org/ItemDetail?iProductCode=C625&Category=PHOTOCOPY&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
CIRIA RP992 The SuDS Manual Update: Paper RP992/23 - Example of a SuDS Maintenance Plan	http://www.susdrain.org/files/resources/SuDS_manual_output/paper_rp992_23_example_suds_maintenance_plan.pdf
CIRIA RP992 The SuDS Manual Update: Paper RP992/23 - Guidance on the Maintenance Plan.	http://www.susdrain.org/files/resources/SuDS_manual_output/paper_rp992_21_maintenance_plan_checklist.pdf

❖ **Table G.5: Construction**

Construction	
CIRIA (2001) Control of water pollution from construction sites. Guidance for consultants and contractors (C532)	https://www.ciria.org/ItemDetail?iProductCode=C532&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
CIRIA (2006) Control of water pollution from linear construction projects. Technical Guidance (C648)	https://www.ciria.org/ItemDetail?iProductCode=C648&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
CIRIA (2006) Control of water pollution from linear construction projects. Site Guide (C649)	https://www.ciria.org/ItemDetail?iProductCode=C649&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
CIRIA (2007) Site handbook for the construction of SuDS (C698)	http://www.ciria.org/Resources/Free_publications/site_handbook_SuDS.aspx
CIRIA RP992 The SuDS Manual Update: Paper RP992/22 Guidance of Construction Method Statements.	http://www.susdrain.org/files/resources/SuDS_manual_output/paper_rp992_22_construction_method_statements_assessment_checklists.pdf

❖ **Table G.6: Water Quality and Contaminated Land**

Water Quality and Contaminated Land	
Environment Agency (2013) Water Stressed Areas - Final Classification	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/244333/water-stressed-classification-2013.pdf
Environment Agency (2017) The Environment Agency's approach to groundwater protection.	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/598778/LIT_7660.pdf
CIRIA (2005) Remedial treatment for contaminated land (SP164)	https://www.ciria.org/CIRIA/Topics/Regeneration_and_contaminated_land/Topic_overviews/Regeneration_and_contaminated_land.aspx?hkey=42ca2967-93bc-468c-8d24-616472007e1f

❖ **Table G.7: Biodiversity / Landscape / Amenity and Public Engagement**

Biodiversity / Landscape / Amenity and Public Engagement	
CIRIA (2011) Delivering biodiversity benefits through green infrastructure (C711)	https://www.thenbs.com/PublicationIndex/documents/details?Pub=CIRIA&DocID=299980
Forestry Commission (2013) Air temperature regulation by trees and green infrastructure.	http://www.forestry.gov.uk/PDF/FCRN012.pdf/\$FILE/FCRN012.pdf
Freshwater Habitats Trust (live) Pond Creation Toolkit website	http://freshwaterhabitats.org.uk/projects/million-ponds/pond-creation-toolkit/
CIRIA (2015) Communication and engagement in local flood risk management (C751) / (C752)	http://www.susdrain.org/resources/ciria-guidance.html
Forestry Commission (undated) The Urban Forest: How trees and woodlands can improve our lives in towns and cities.	http://www.forestry.gov.uk/pdf/FCURBANFOREST_A44PP.PDF/\$FILE/FCURBANFORESTA44PP.PDF
RSPB/WWT (2012) Sustainable Drainage Systems: Maximising the potential for people and wildlife. Guide for local authorities and developers.	http://www.rspb.org.uk/Images/SuDS_report_final_tcm9-338064.pdf

H. Contact Details

❖ **Table H.1: Contact Details**

Emergency Authorities	Contact Details	Web Address
Merseyside Fire and Rescue Service Headquarters	Bridle Rd, Bootle L30 4YD Tel: 0151 296 4000	www.merseyfire.gov.uk
St Helens Police Station	St Helens Police Station, College St, Saint Helens WA10 1TG Tel: 0151 709 6010 Dial 999 in an emergency or dial 101 in a non-emergency	https://www.merseyside.police.uk/
Environment Agency	Richard Fairclough House, Knutsford Road, Warrington, WA4 1HT General enquiries (Mon-Fri, 8am – 6pm) 03708 506 506 Incident hotline (24 hour service) 0800 80 70 60 Floodline (24 hour service) 0345 988 1188 General enquiries email enquiries@environment-agency.gov.uk	http://www.environment-agency.gov.uk/
North West Ambulance Service NHS Trust	Cheshire and Merseyside Area Office, Hurricane Drive, Speke, Liverpool, Merseyside, L24 8RL Tel: 0151 260 5220 - Office 09-1700hrs (999 Emergency Response) (111 urgent healthcare advice), general enquiries is 0345 112 0099.	http://www.nwas.nhs.uk/
Scottish Power Manweb (Electricity)	Emergency Contact Tel: 0845 272 2424	http://www.scottishpower.com/
Nation Grid (Gas)	Emergency Contact Tel: 0800 111 999 General Enquires Tel: 0845 835 1111	http://www.nationalgrid.com/uk/
United Utilities	Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey, Warrington, WA5 3LP Tel: 0345 672 3723	http://www.unitedutilities.com/
St Helens Council	Contact Centre, Wesley House, Corporation Street, St. Helens, WA10 1HF Enquires https://www.sthelens.gov.uk/contact-us/ Tel: 01925 44 33 22 Flood Risk Team flood@sthelens.gov.uk	https://www.sthelens.gov.uk/

I. References

❖ **Table I.1: Document References**

Document Links	
BRE Digest 365	https://www.brebookshop.com/details.jsp?id=327592
British Geological Survey (BGS) Infiltration SuDS Map	http://www.bgs.ac.uk/products/hydrogeology/infiltrationSuDS.html
CIRIA Drainage of development sites – a guide (X108)	http://www.ciria.org/Resources/Free_publications/drainage_of_development_sites.aspx
Cost Balancing - Final Surface Water Drainage Report DEFRA 2013	http://randd.defra.gov.uk/Document.aspx?Document=11852_FinalIssueSWDRReport_November2013.pdf
Defra Climate Change Guidance	https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances
Defra SuDS Non Statutory Technical Standards	https://www.gov.uk/government/publications/sustainable-drainage-systems-non-statutory-technical-standards
EC Green Infrastructure	http://ec.europa.eu/environment/nature/ecosystems/index_en.htm
Environment Agency – Catchment Data Explorer	http://environment.data.gov.uk/catchment-planning/
Environment Agency – Flood Map for Planning	https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications#when-you-need-an-assessment
Environment Agency – Flood Risk Maps	https://flood-warning-information.service.gov.uk/long-term-flood-risk/map
Environmental Permits for Waste or Emissions	https://www.gov.uk/guidance/check-if-you-need-an-environmental-permit
Flood Estimation for Small Catchments	http://nora.nerc.ac.uk/7367/1/IH_124.pdf
Flood Risk Activity Permits (Main River)	https://www.gov.uk/permission-work-on-river-flood-sea-defence
Historic England - Consent and Planning Permission Requirements	https://historicengland.org.uk/advice/hpg/consent/
Historic England - National Heritage List for England	https://historicengland.org.uk/listing/the-list/
Landscape Character Assessment 2006	http://www.sthelens.gov.uk/media/157589/sth_lca_final_report_rfs.pdf
Listed Building Consent	https://historicengland.org.uk/advice/hpg/hpr-definitions//536329/
Liverpool City Region Action Plan	http://ecosystemsknowledge.net/sites/default/files/wp-content/uploads/2014/2/LCR_GI_action_plan.pdf
Liverpool City Region Ecological Network	http://www.activenaturalist.org.uk/
Living on the Edge: A Guide to Your Rights and Responsibilities of Riverside Ownership	https://www.gov.uk/guidance/owning-a-watercourse

❖ **Table I.2: Document References (continued)**

Document Links	
National Character Area profiles: data for local decision making	https://www.gov.uk/government/publications/national-character-area-profiles-data-for-local-decision-making
National Flood and Coastal Risk Management Strategy for England 2011	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/293769/Mersey_Estuary_Catchment_Flood_Management_Plan.pdf
National Planning Policy Framework 2012	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/6077/2116950.pdf
National standards for SuDS:	https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/415773/sustainable-drainage-technical-standards.pdf
Part H of the Building Regulation – Drainage and Waste Disposal	https://www.gov.uk/government/publications/drainage-and-waste-disposal-approved-document-h
Planning Practice Guidance: Flood Risk and Coastal Change (2015)	http://planningguidance.planningportal.gov.uk/blog/guidance/flood-risk-and-coastal-change/reducing-the-causes-and-impacts-of-flooding/why-are-sustainable-drainage-systems-important/
Protected Species and Habitats	https://www.gov.uk/guidance/protected-species-how-to-review-planning-applications
Remedial treatment for contaminated land, Volumes I - XII (SP164)	http://www.ciria.org/ItemDetail?iProductCode=SP164&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
River Basin Management Plans	https://www.gov.uk/government/collections/river-basin-management-plans-2015
Scheduled Monument Consent	https://historicengland.org.uk/advice/planning/consents/smc/
St. Helens Council Local Plan Core Strategy October 2012	http://www.sthelens.gov.uk/media/354627/ldf43e.pdf
St. Helens Council Strategic Flood Risk Assessment Final Report September 2014	http://www.sthelens.gov.uk/media/703136/st_helens_council_strategic_flood_risk_assessment_september_2014.pdf
St.Helens Local Flood Risk Management Strategy (LFRMS) 2014	http://www.sthelens.gov.uk/media/563762/sthelens_lfrms_2014.pdf
St.Helens Supplementary Planning Documents	http://www.sthelens.gov.uk/media/112101/ldf27.pdf
The Construction (Design and Management) Regulations 2015	http://www.legislation.gov.uk/uksi/2015/51/contents/made
The Town and Country Planning (Development Management Procedure) Order (2015)	http://www.legislation.gov.uk/uksi/2015/595/article/23/made
The Water Environment (Water Framework Directive) (England and Wales) Regulations 2003	http://www.legislation.gov.uk/uksi/2003/3242/regulation/7/made
United Utilities	https://www.unitedutilities.com/

❖ **Table I.3: Master Planning and Concept Design**

Master Planning and Concept Design	
CIRIA (2010) Guidance on water cycle management for new developments (WaND) (C690)	https://www.ciria.org/ItemDetail?iProductCode=C690&Category=BOOK&WebsiteKey=3f18c87a-d62b-4eca-8ef4-9b09309c1c91
CIRIA (2010) Planning for SuDS: Making it Happen (C687)	http://www.ciria.org/Resources/Free_publications/Planning_for_SuDS_ma.aspx
CIRIA (2013) Creating water sensitive places: scoping the potential for Water Sensitive Design in the UK (C724)	http://www.ciria.org/Resources/Free_publications/Creating_water_sens1.aspx
CIRIA (2013) Water sensitive urban design in the UK: Ideas for built environment practitioners.	http://www.ciria.org/Resources/Free_publications/Water_Sensitive_Urba.aspx

J. Sand Bag Policy

This appendix policy is available separately.

K. Culverting Policy

This appendix policy is available separately.

End of Document



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