HALTON BOROUGH COUNCIL

Draft Local Flood Risk Management Strategy

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October 2013

Review

This document has been produced solely for the purpose of how we will manage flood risk in Halton. It is has an ongoing review process and will be fully revised at six year intervals in line with the Halton Borough Council Preliminary Flood Risk Assessment

Amendments

Reviewer		Date	Description

Foreword

Councillor's photograph

This is the first Strategy for Flood Risk Management in Halton and it is a key step in making sure that the risk of flooding in our borough is dealt with as a whole, joining up the work done by the Council, the Environment Agency and United Utilities with that of our community and individual households. It will consider how all sorts of activities can be deployed to help manage flood risk, from better planning which makes sure new developments decrease rather than increase flood risk, to ensuring that emergency responders have a good understanding of where flood risk is greatest.

However, the activities identified in this strategy can only help manage flood risk. It would not be possible, even if we were not in an era of austerity, to protect all households from any flood risk. Instead, efforts need to be made by all involved, organisations and householders alike to reduce flood risk in practical ways. Sometimes, this involves focussing not just on decreasing the probability of flooding but also its impact, making sure that properties and households can cope in the event of a serious flood.

We recognise that, in the past, the different organisations involved in risk management have not always worked together effectively enough in tackling the difficult problems that flood risk often creates. We have a strong and long tradition of partnership working in Halton and we intend to extend this to managing flood risk. It is vital that organisations work better not just with each other but crucially with the public. This is why this strategy details the roles and responsibilities of all major stakeholders, including households and community groups, so that there is better clarity and understanding about when different stakeholders should be involved.

This strategy focuses on 'local flood risk' that is flooding caused by surface runoff, groundwater and ordinary watercourses (streams, ditches etc.) However, it is not the source of flooding but the effects that matter and we are keen to make sure that all forms are managed together and tackled according to level of risk rather than by what caused it.

Assessing levels of risk from flooding is a difficult task. With more development and increasingly uncertain weather patterns, houses and businesses that have never been flooded in living memory may be at risk as Halton experienced in the Summer of 2012.

This strategy is our statement of intent as to what needs to be done to tackle flooding in Halton. We hope it will help you become better informed of everyone's responsibilities, how to find out your flood risk and what we can do to help you become safer.

Councillor/Portfolio Holder's name and signature

Executive Summary

The Halton Borough Council Local Flood Risk Management Strategy (Local Strategy) is an important new tool to help understand and manage flood risk within the borough. Flood risk management in Halton is beginning a new stage which will be marked by better knowledge of the risks in the borough, better co-operation between organisations involved in flood risk management and better communication with the public about those risks and what can be done. This strategy will highlight the steps that are to be taken to ensure this happens.

It should be noted that Halton Borough Council, as a Lead Local Flood Authority, is only responsible for management of Local Flood Risk. Local Flood Risk is defined as surface water flooding, ordinary watercourse flooding and groundwater flooding. This area of responsibility is defined by the Flood and Water Management Act 2010. Therefore, this Local Flood Risk Management Strategy only addresses Local Flood Risk and the interactions it might have with other forms of flood risk. More households are at risk from this form of flooding than any other but until now there has been little co-ordinated work to address these forms of risk. The strategy will look to address this.

The Local Strategy is a statutory document required by the Flood and Water Management Act 2010 and therefore must address specific requirements. The overall structure and content of the strategy is summarised below:

1. Introduction - Purpose of strategy, background information and related documents.

2. Local Flood Risk - Description of historic flood impacts and potential future flood risk in Halton.

3. Roles and Responsibilities - Summary of organisations responsible for managing flood risk and their respective roles.

4. Actions to Improve Flood Risk - Details of actions that Halton Borough Council and its partners are taking to reduce flood risk.

5. Implementation and Funding - Details of how actions can be implemented and available funding sources.

6. Environmental Assessment - Description of how the Local Strategy can be used to achieve wider environmental benefits.

7. Next Steps - Summary of actions to deliver the Local Strategy and planned review / update frequency.

The content under the following headings summarises the detail from each of the sections listed above.

Introduction

For those who suffer from flooding, it does not matter what type of flooding it is, and this strategy provides information about other sources of flooding and the organisations involved. It explains the powers and responsibilities of all the major organisations involved in flood risk and provides advice on what householders and businesses need to do. It highlights and summarises the information available on flooding in Halton so that this information is more easily accessible for those trying to understand more about flood risk in Halton.

The following are the guiding principles which flood risk management in Halton will be based on:

1. Flooding is a natural event that will occur despite all efforts to prevent it. Hence, it is important to focus as much on reducing the disruption that flooding causes as on measures to prevent it.

2. Flood damage from surface runoff, groundwater and ordinary watercourses creates both public and private financial costs. Effective flood risk management can reduce long-term flood damage costs to property and the impacts on human health and wellbeing.
3. Decisions on where local resources are focused should be evidence-based and made against clear criteria.

4. Improving the level of knowledge about flood risk across all stakeholders is a vital process that needs to be improved.

5. No organisation is able to ensure that all households and businesses are safe from flooding. Householders and businesses have responsibility for protecting their property and premises, but the relevant public organisation has a duty to inform households of their risk and advise what steps they can take to make their property more resilient.

6. No single organisation can effectively manage flood risk across the whole of Halton, so cooperation among relevant public agencies is essential for the success of long term comprehensive flood risk management.

7. New developments should look not only to ensure that there is no increase in flood risk but also reduces flood risk that was already there. In accordance with National Planning Policy and emerging local plans new development should be directed away from areas of flood risk areas wherever possible.

8. The cumulative impact of small developments on flood risk is as significant as the impact of major developments and so both must be managed in order to ensure the threat of flood risk does not grow.

9. Proposals/schemes likely to have a significant effect on a Ramsar site will only be approved if it can be ascertained, by means of an Appropriate Assessment, that the integrity of the Ramsar site will not be adversely affected.

Local Flood Risk

The nature of flood risk within Halton is extremely varied and widespread across the Borough. Halton straddles major estuary and has an extensive network of rivers and canals, combined with two major towns, which means it is at risk of flooding from a range of different sources. The recent Preliminary Flood Risk Assessment (PFRA) for Halton Borough Council highlighted records of approximately 1,300 local flood events that have occurred across the Borough over the past fifteen years but it is believed that there are considerably more for which there are no official records.

The Local Strategy addresses Local Flood Risk only, however, other sources of flood risk are considered by the Local Strategy but only where they interact or are influenced by Local Flood Risk. The main forms of local flooding are:

- Surface water flooding, also known as pluvial flooding or flash flooding, occurs when high intensity rainfall generates runoff which flows over the surface of the ground and ponds in low lying areas;

- Ordinary watercourse flooding concerns flooding from any watercourse, which is not designated by the Environment Agency as a main river. All other smaller watercourses, ditches and streams are classified as ordinary watercourses and there is an extensive and unmapped network of watercourses in Halton;

- Groundwater flooding occurs when water levels in the ground rise above the ground surface. Flooding of this type tends to occur after long periods of sustained heavy rainfall and can last for weeks or even months.

Roles and Responsibilities

This section provides information about the roles and responsibilities of all the stakeholders involved with managing flood risk in Halton, including householders and businesses. This is because flood risk management is not something that can be left solely in the hands of certain organisations and forgotten by everyone else. We all have our part to play. Even if this strategy was being devised at a time of substantial public sector budgets, the organisations would still not be able to prevent all floods or solve all concerns. It is crucial therefore that everyone is aware of what they can do, and are expected to do to help manage flood risk.

The key stakeholders in Halton Borough that have responsibilities for flooding are detailed below:

- Halton Borough Council (as Lead Local Flood Authority)

- Warrington Borough Council (as neighbouring Lead Local Flood Authority)

- Knowsley Borough Council (as neighbouring Lead Local Flood Authority)

- St. Helens Borough Council (as neighbouring Lead Local Flood Authority)

- Cheshire East Council (as neighbouring Lead Local Flood Authority)

- Cheshire West & Chester Council (as neighbouring Lead Local Flood Authority)

- Environment Agency

- United Utilities (The local Water Company)

- Highways Agency

All of these authorities are known as ‘Risk Management Authorities’ under the Flood and Water Management Act and have the following duties:

- Duty to be subject to scrutiny from Lead Local Flood Authorities' democratic processes.

- Duty to co-operate with other Risk Management Authorities in the exercise of their flood and coastal erosion risk management functions, including sharing flood risk management data.

- Power to take on flood and coastal erosion functions from another Risk Management Authority when agreed by both sides.

Actions to Improve Local Flood Risk Management

The Local Strategy defines nine objectives for the management of Local Flood Risk:

1. To provide a clear explanation of all stakeholder's responsibilities in flooding issues.

2. To develop a clearer understanding of the risks of flooding from surface runoff, groundwater and ordinary watercourses and to consider how best to communicate and share the information that becomes available.

3. To define and explain the criteria by which areas at risk of flooding from surface runoff, groundwater and ordinary watercourses are assessed and resources are prioritised.

4. To state how risk management authorities will share information and resources.

5. To set out clear and consistent plans for risk management so that communities and businesses can make informed decisions about the management of the residual risk.

6. To ensure that planning decisions are properly informed by flooding issues and the impact future planning decisions may have.

7. To encourage innovative management of flood and coastal erosion risks, taking account of the needs of communities and the natural and built environment.

8. To ensure that emergency plans and responses to flood incidents are effective and that communities are able to respond properly to flood warnings.

9. To highlight where information regarding other forms of flooding can be found.

The objectives detailed above will be delivered through a series of local measures and actions. Flood risk management actions included in the Local Flood Risk Management Strategy have been split into two categories:

- Borough Wide Strategic Actions with the aim of following the guiding principles and meeting the overall objectives of this strategy and of the Environment Agency's national strategy; and

- Site level Specific Management Actions that could be implemented within locally important flood risk areas in order to translate the aims of the overall strategic actions onto a local scale. These site level specific management actions will be decided through annual action plans which will be agreed at the Policy & Performance Board.

Implementation and Funding

It is important that the Local Strategy sets out how the proposed actions and measures will be funded and resourced within Halton. It is also important to identify what funding mechanisms are available to Halton Borough Council to pay for the flood risk management measures that are set out in the strategy.

Effective practical implementation of flood policy objectives requires adequate resources both for the management and response activities of lead local flood authorities as well as for capital projects.

This chapter looks at how the the skills gap within risk management authorities in Halton can be addressed. It is acknowledged that Lead Local Flood Authorities and other risk management authorities will need to expand their flood risk management skills and capacity in order to deliver their new responsibilities under the Flood and Water Management Act 2010. This local strategy will help to identify what skills will need to be developed to ensure that the plans set out in this strategy can be delivered and implemented successfully.

This section also provides a summary of the new partnership funding mechanism for available forms of funding that are being considered by Halton Borough Council and will also help to identify any further actions that will be needed to ensure that particular funding alternatives are feasible.

Strategic Environmental Assessment

The implementation of flood risk management measures and actions within Halton provide a significant opportunity to improve the natural, rural and built environment across the Borough. This includes helping to provide better environments for residents and businesses as well as improving biodiversity and local habitats for wildlife. The Flood and Water Management Act states that the Local Strategy must specify how it will contribute to the achievement of wider environmental objectives and sustainable development.

Halton Borough Council is committed to protection and enhancement of locally, nationally and internationally recognised environmental sites. Environmental impacts will be considered by any flood risk management work carried out by the Council. Appropriate assessment will be made at every stage and we will not pursue any activities which would have a negative impact on these sites.

Next Steps

As a result of this strategy, the annual action plans and other planned work by risk management authorities, there will be local plans and flood defence schemes to help manage flooding in parts of Halton. In all of these situations, Halton should create an engagement plan to ensure that the affected communities are engaged early with the issues and are able to discuss it and share their concerns, interests and priorities.

It is important to understand that final decisions will still be made by the responsible risk management authority but those decisions must be informed by proper engagement with the affected residents. This engagement requires both the organisations and the households involved to work together to ensure that engagement events are well attended and local issues are properly understood and discussed.

This is the beginning of a new stage in flood risk management for Halton. There are going to be substantial changes in the next few years with changes to the planning system, sustainable drainage requirements and the provision of flood insurance as well as innovations in the funding and design of flood prevention schemes and improvements in the knowledge of where the greatest flood risk is. Some strategy supplements may need to be produced before the next review to recognise these changes.

It is proposed that a review should take place in 2015, to coincide with the production of the flood risk management plans legislated for in the Flood Risk Regulations. The strategy should then continue to be reviewed in conjunction with the production of the flood risk management plans or when the Halton Policy & Performance Board deems it necessary.
To complement the Halton Strategy for Flood Risk Management, annual action plans will be put before the key partners responsible for Flood Management across Halton. These will state:

- The newest information available about local flood risk, indicating where flood risk has decreased due to work done or where new information has changed prioritisation.
- Actions required to meet the Flood Risk Regulations in the coming year.
- Projects which will be put forward to the Environment Agency for entry onto the medium term plan.
- Actions from Surface Water Management Plans which will be delivered in the current year.
- Other flood risk management activities which will be taken by Halton risk management authorities in the next year.

The meeting to agree the annual plan will occur in early autumn so as to be available for reference in budget discussions by risk management authorities. All annual plans will need to comply with the principles laid out in the both the Halton Local Strategy for Flood Risk Management and the National Strategy for Flood and Coastal Erosion Risk Management. These annual plans are to ensure operations are joined up across the different stakeholders in Halton and to ensure that decisions on resources are evidence based.

Contents

1. Local Strategy: Context, Aims and Objectives

Section 9 of the Flood and Water management Act 2010 requires lead local flood authorities to develop, maintain, apply and monitor a strategy for local flood risk management.

The strategy covers flood risk from surface runoff, groundwater and ordinary watercourses (i.e. non main river). It must be consistent with the National Strategy published by the Environment Agency in 2011, and Halton must consult all risk management authorities and the public on its Local Strategy.

1.1 Introduction

Under statutory responsibilities as a Lead Local Flood Authority (LLFA), Halton Borough Council has developed this Local Flood Risk Management Strategy (LFRMS) to help understand and manage flood risk within the borough. Halton Borough 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.

There is a well-developed network of partners by virtue of our historical operational and strategic practices. The strategy formalises and develops our partnerships in respect of flood risk and progresses the high level screening which was introduced in the Preliminary Flood Risk Assessment (PFRA), a requirement of the Flood Risk Regulations 2009. The PFRA showed that Halton Borough Council had no flooding issues that were nationally significant.

The country is facing a future of erratic, unseasonable and extreme weather with flooding now one of the highest risks facing the borough. One of the most prolonged dry periods since 1953 was experienced in the years 2010 and 2011. However, the following year, 2012, was the second wettest on record in the UK and the wettest year on record for England according to data released by the Met Office. This has resulted in repeated flood events within the borough at locations that have not experienced flooding before. The Met Office has undertaken an analysis of the UK's official climate records and this suggests an increase in frequency of extreme rainfall in the UK. Four out of the top five wettest years in the UK have occurred since 2000.

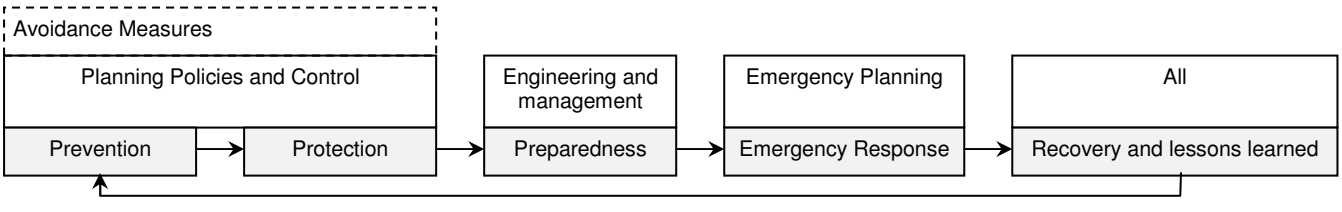
This document will clearly set out how Halton Borough Council's role as the LLFA links into those of the key risk management authorities that are responsible for managing aspects of flooding. It shows the Lead Local Flood Authority's role in managing risk locally and how it develops and maintains a holistic local flood risk strategy.

This local strategy will also inform:

- Our community that may be at risk of flooding;
- Category 1 responders such as Fire and Rescue and the Police;
- Utility and important infrastructure providers, the Highway Authority and Network Rail;
- Organisations responsible for managing land, property, cultural heritage and the natural environment such as landowners, farmers, the Canal and River Trust and the Forestry Commission;
- Nongovernmental organisations such as the Royal Society for the Protection of Birds, Country Land and Business Association, National Farmers Union, Wildlife Trusts, National Flood Forum, Association of British Insurers and economic development organisations

We will work with our communities to manage the likelihood and impact of flooding for the social, economic and environmental benefit of Halton. There will be support for local people and businesses to take part in managing the risks that affect them.

The diagram below shows our step-by-step measures:



1.2 Objectives

Aim		Objectives	Measures
Set out the roles and responsibilities of the various Risk Management Authorities (RMAs) in the area. Specify the objectives for managing local flood risk. Identify and describe the measures proposed to deliver the objectives.	1	To reduce the potential impact and costs of flooding in the borough.	Studies, assessments and plans - Developing a greater understanding of local flood risk in Halton will be critical to deploying the most effective measures for managing the risk and making the best use of limited resources.
	2	To develop greater personal involvement in flood risk management amongst residents of Halton.	Raising awareness - Individuals and communities should understand that there will always be a degree of flood risk and the role that they can play in the local management of that risk. Raising awareness will be a critical aspect of the Strategy.
	3	To secure improvements to the water environment of Halton through the undertaking of actions associated with flood risk management.	Enforcement and Consenting, Asset Management and Investigations, Bye-laws, Policies and Procedures, Halton planning policy documents, Strategic Flood Risk Assessments (SFRA). Liaising and development with planning department, addressing environmental issues Communications, Public and Partner Engagement, Emergency Response Plan and Resources
	4	Development of Maintenance regimes and Preliminary Works Schedules	Investment and funding - The Strategy will look at the development of priorities for investment and at the same time explore opportunities for funding. Formal maintenance regimes and outline preliminary works

1.3 Powers and Duties

The Flood and Water Management Act 2010 places a number of new duties on the Council through either amendments to existing Acts such as the Land Drainage Act 1991 or through the FWMA itself. The key powers and duties in the Act are summarised below:

Responsibility	Details
Preparation of an Asset Register (s.21)	LLFAs have 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.
Power to designate flood risk management structures (schedule 1)	LLFAs, 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.
Investigation of flood incidents (s.19)	LLFAs have 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 (s.9)	LLFAs are 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.
SuDS Approval Body** (schedule 3)	LLFAs are designated the SuDS Approval Body (SAB) for any new drainage system, and therefore must approve, adopt and maintain any new sustainable drainage systems (SuDS) within their area.
Works powers and enforcement? (amendment to Land Drainage Act 1991, s.14)	LLFAs have powers to undertake works to manage flood risk from surface runoff and groundwater, consistent with the local flood risk management strategy for that area.
Consenting changes to Ordinary Watercourses (s.21)	If riparian owners wish to culvert an ordinary watercourse or insert any obstructions, consent is required from an LLFA, except within Internal Drainage Board (IDB) areas.

Powers to create Byelaws (amendment to Land Drainage Act 1991 1991, s.66)	An LLFA may make such byelaws as they consider necessary for securing the efficient working of the drainage system in their district or area. Bye-laws are being progressed by the partners within the CMM group.

**At the time of writing, the SuDS aspects of the FWMA have not been fully implemented.
Section 7 sets out how the Council will develop these duties to manage flood risk.

1.4 Documents that Contribute to this Strategy

There are a number of existing documents relating to flood risk and planning policy that form the basis of this strategy:

- Halton BC Surface Water Management Plan
- Halton BC Preliminary Flood Risk Assessment
- Halton BC Flood Incident Response Plan
- Halton BC Level Two Strategic Flood Risk Assessment
- Halton BC Unitary Development Plan
- Halton BC Local Core Strategy
- Cheshire Multi Agency Flood Plan
- Mid Mersey Water Cycle Study
- Mersey Catchment Flood Management Plan
- Weaver Gowy Flood Management Plan

2. Risk Management Authorities and Responsibilities

Under Section 9(4) of the Flood and Water management Act 2010 Local Strategies must specify the risk management authorities operating in the Lead Local Flood Authorities' areas.

2.1 National Context

The Flood and Water Management Act 2010 identified certain organisations as 'Risk management authorities', which have responsibilities around flooding, both new ones from the Flood and Water Management Act 2010 and longstanding ones from previous legislation.

2.1.1 Background Legislation

The development and responsibility for flood risk management has evolved in recent years,. Prior to 1989, it was the responsibility of the Local River Authorities. In 1991 a new Water Act was passed in parliament, which privatised the Water and Sewerage functions across the country. The flood risk functions were then transferred to the National Rivers Authority in 1991 when a number of pieces of legislation where enacted. This legislation was aimed to consolidate existing powers under the Land Drainage Act 1991, Water Resources Act 1991, Statutory Water Companies Act 1991, Water Act 1989 and Water Consolidation (Consequential Provisions) Act 1991, which addressed the roles and responsibilities of the Authorities.

The Environment Agency (EA) was then established in 1995, which replaced the National Rivers Authority and took over the flood warning duties from the Police. Halton Borough Council is based within the EA's North West Region; with the head office based in Warrington. The release of the Planning Policy Guidance 25 (PPG25) in 2001 was in response to major flood events in 1998 and 2000, and designed to strengthen flood risk planning. This was superseded by the Planning Policy Statement 25 (PPS25) in 2006 for sustainable surface water management, which was in turn recently superseded again by the current National Planning Policy Framework, which intends to rationalise development legislation and processes.

2.1.2 Current Legislation

Following the 2007 Floods, the Pitt Review (2008) led to the overhaul of flood risk legislation within England and Wales. Greater responsibility particularly for surface water issues was assigned to upper tier Authorities such as Halton Borough Council. These responsibilities were formalised through the Flood and Water Management Act 2010. Summaries of these documents are as follows:

Legislation	Details
The Pitt Review (2008)	Sir Michael Pitt carried out a review of flood risk management practices after the widespread floods of 2007, in which over 50,000 households were affected and damages exceeded £4billion. The Pitt Review called for urgent and fundamental changes to the way flood risk was being managed. The report contained 92 recommendations for the Government, which were based around the concept of local authorities playing a major role in the management of local flood risk.
The Flood Risk Regulations (2009) (1) Preliminary Flood Risk Assessment (PFRA) (2) Flood Hazard and Flood Risk Maps (3) Flood Risk Management Plans	The Flood Risk Regulations transposes the EU Floods Directive into law for England and Wales. The Flood Risk Regulations require three main pieces of work: • The collecting of information on past and future floods from surface water, groundwater and small watercourses, assembling the information into a Preliminary Flood Risk Assessment (PFRA) report and identifying Indicative Flood Risk Areas. The PFRA for Halton Borough Council has been completed and is available on the Council website. • Following the identification of Flood Risk Areas, the Environment Agency was required to produce hazard and risk maps. As the Borough of Halton lies outside the Liverpool Flood Risk Area these maps were not required for Halton's 2011 PFRA. • The final stage is for Halton Borough Council to produce a Flood Risk Management Plan for the Indicative Flood Risk Areas. The Halton Borough Council Local Flood Response Plan 2012 and Merseyside Multi Agency Flood Plan (Merseyside Resilience Forum) will contribute significantly to the preparation of Flood Risk Management.
The Flood and Water Management Act 2010	The Flood and Water Management Act 2010 (FWMA) provides legislation for the management of risks associated with flooding and coastal erosion. Many of the recommendations contained in the Pitt Review have been enacted through the Flood and Water Management Act. The Act places a number of roles and responsibilities on councils such as Halton Borough Council, designating it a Lead Local Flood Authority, and on other risk management authorities with flood risk management functions. The preparation of this Local Flood Risk Management Strategy is brought about by this piece of legislation.

National Planning Policy Framework (2012)	The National Planning Policy Framework is a new document developed by the Department for Communities and Local Government (CLG). It is designed to streamline planning policy by substantially reducing the amount of planning guidance by bringing it all together in one coherent document.

2.1.3 National Flood and Coastal Erosion Risk Management Strategy

Section 11 of the Flood and Water management Act 2010 requires English risk management authorities to act in a manner that is consistent with the National Strategy and any published guidance.

The risk management authorities are to act in a manner which is consistent with the Local Strategy (except in the case of water companies, who must 'have regard' to the Local Strategy). Under Section 9 of the FWMA 2010, Halton must consult all risk management authorities that may be affected by the Local Strategy.

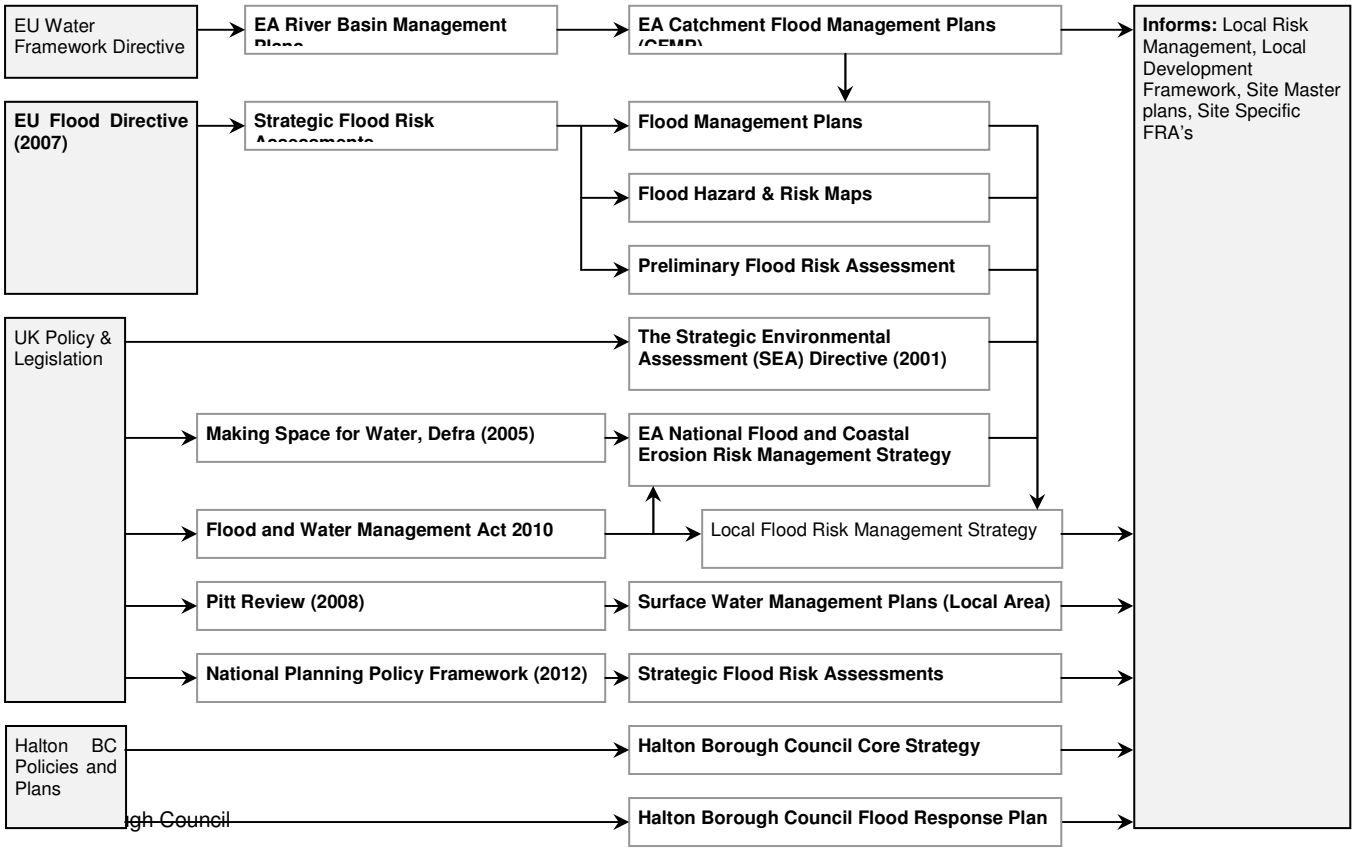
The Environment Agency and the Department for Environment, Food and Rural Affairs (Defra) have published a National Flood and Coastal Erosion Risk Management Strategy for England to ensure that the government, Environment Agency, local authorities, water companies, internal drainage boards and other organisations that have a role in Flood and Coastal Erosion Risk Management (FCERM) understand each other's roles and coordinate how they manage these risks. This fulfils a requirement of the Flood and Water Management Act 2010.

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.

The National Strategy sets out what needs to be done to manage these risks by improving our understanding of them, reducing the likelihood of incidents happening, as well as managing the potential consequences to people, businesses, infrastructure and services. The National Strategy addresses these aims and shares them with the local level to:

- Respond better to flood incidents and recovery;
- Encourage local innovations and solutions;
- Help households, businesses and communities better understand and manage the flood risks they face;
- Manage the risk of flooding to people and their property and where possible, to improve standards of protection;
- Invest in actions that benefit public who face the greatest risk, but who are least able to afford to help themselves.
- Put sustainability at the heart of the actions we take, work with nature to benefit the environment, people and the economy.
- Move the focus from national government funded activities towards an approach that gives more power to local people, at individual, community or local authority level.

F2.1. Figure 1 Overview of legislation contributing to current flood risk management



2.2 Types of Flooding and those Responsible:

Flood water is something that can affect all of us. This means that everyone has the responsibility to protect their properties from flooding. Whatever steps an individual takes to protect 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 properties.

This Strategy sets out a framework for managing flood risk in a holistic way and will help Halton Borough Council as the Lead Local Flood Authority decide what we and our partners need to do to manage local risks. Halton Borough Council, as part of the Cheshire and Mid Mersey group of authorities, has defined a flood of 'significant harmful consequences' as having one or more of the following characteristics:

- Resulted in major disruption to the flow of traffic for 12 hours or more;
- 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.

The table below shows which organisations are responsible for 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.

Table 2.1 – Risk Management Authority for each Type of Flooding

	Flooding Type	Details	Risk Management Authority
Natural	River flooding (Fluvial)	This occurs when a river or stream cannot cope with the water draining into it from the surrounding land – for example, when heavy rain falls on ground that is already water logged.	Main River – Environment Agency Ordinary Watercourse – Halton Borough Council
	Tidal flooding	This can occur at high spring tides. High water levels in the Mersey Estuary cause water to surcharge back up tributaries and flood surrounding land and highways.	Environment Agency
	Surface water flooding (Pluvial)	This occurs, for example, when rainwater does not drain away through the normal drainage system or soak into the ground, but lies on or flows over the ground instead rather than from a channel. This type of flooding can be difficult to predict and pinpoint, much more so than river or coastal flooding.	Halton Borough Council
	Groundwater 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 which become saturated following periods of persistent rainfall These are permeable rocks that water can soak into or pass through.	Halton Borough Council
Joined	Highway Flooding	Flooding is caused by heavy rainfall or by water overflowing from blocked drains and gullies causing water to pond within the highway network.	Halton Borough Council
Man made	Sewer Flooding	This can happen when sewers are overwhelmed by heavy rainfall or when they become blocked. The chance of flooding depends on the capacity of the local sewage system and amount of rain that falls. Land and property can be flooded with water contaminated with raw sewage as a result. Sewers that overflow can also pollute rivers.	United Utilities
	Water Supply Flooding	When flooding occurs from a manmade water supply, for example when a burst water main results in flooding in a residential area.	United Utilities
	Reservoir flooding	Reservoirs hold large volumes of water above ground level, contained by walls or dams. Although the safety record for reservoirs in England is excellent, it is still possible that a dam could fail.	Canal and River Trust, Environment Agency, United Utilities, Local Authorities
	Canal	Canals are rivers or manmade channels that have been developed for use in industry. Canal flooding occurs when the canal cannot cope with the water draining into it from the surrounding land.	Canal and River Trust Peel Holdings (not a Risk Management Authority)

2.1.4 Other Relevant Legislation

There is a wide range of other relevant legislation and guidance contributing to Flood Risk Management including:

- The Reservoirs Act 1975
- The Ancient Monuments & Archaeological Areas Act 1979
- The Highways Act 1980
- The Wildlife & Countryside Act 1981
- The Building Act 1984
- The Environmental Protection Act 1990
- The Town and County Planning Act 1990
- The Planning (Listed Buildings & Conservation Areas) Act 1990
- The Land Drainage Act 1991
- The Water Resources Act 1991
- The Water Industry Act 1991
- The Environment Act 1995
- The Countryside & Rights of Way Act 2000
- The Water Act 2003
- The Planning and Compulsory Purchase Act 2004
- The Civil Contingencies Act 2004
- The Climate Change Act 2008
- The Planning Act 2008
- The Local Democracy, Economic Development & Construction Act 2009
- The Localism Act 2011
- The EU Wild Birds Directive (1979/409/EEC & 2009/147/EC)
- The EU Environmental Impact Assessment Directive (1985/337/EEC & 1997/11/EC)
- The EU Habitats Directive (1992/43/EEC)
- The EU Strategic Environmental Assessment Directive (2001/42/EC)
- The EU Water Framework Directive (2000/60/EC)
- The EU Floods Directive (2007/60/EC)

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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	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). It is also responsible for regulating reservoir safety, and working in partnership with the Met Office to provide flood forecasts and warnings. • Main rivers • Reservoirs over 10,000m³	Developing long-term approaches to FCERM. This includes working with others to prepare and carry out sustainable Catchment Flood Management Plans (CFMPs) address flood risk in each river catchment. Shoreline Management Plans (SMPs) assess the risks of coastal flooding and erosion and propose ways to manage them. The Environment Agency also 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. This includes national flood risk information, data and tools to help other risk management authorities and inform government policy, and advice on planning and development issues. 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. This includes reporting on how the national FCERM strategy is having an impact across the country. The Environment Agency brings together local authorities and communities to share our combined knowledge, and develop a sustainable framework so that the right actions are decided for each community.
Halton Borough Council (LLFA)	As local coordinators, the Flood and Water Management Act directs responsibility for the following types of flooding to LLFAs to: • Surface Water • Highway Drainage • Groundwater • Ordinary Watercourses Providing and managing highway drainage and roadside ditches under the Highways Act 1980.	Prepare and maintain a strategy for local flood risk management in their areas, 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; Establish approval bodies for design, building and operation of SuDS. 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.
United Utilities	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 LLFAs on how water and sewage company assets impact on local flood risk. Work with developers, landowners and LLFAs to understand and manage risks.
Private Sewer Ownership	Since 1 October, 2011 property owners have no longer been responsible for certain sewer pipes that connect their homes to public sewers	New legislation will transfer responsibility for these pipes, called private sewers and lateral drains, to United Utilities. After the private sewer transfer there will be public sewers which will be owned and maintained by United Utilities, and private drains This will remove confusion for responsibility and aid flood management. Private pumping stations will not be transferred until October 2016.
Residents and Business	Riparian Land Owners are responsible for the maintenance and upkeep of the watercourse if it is part of their land. Householders and businesses are responsible for the protection of their own properties.	

3. LLFA Structure (including governance and local partnerships)

Section 13 of FWMA 2010 requires risk management authorities to co-operate with each other in exercising their flood risk management functions.

This also enables the sharing of information between them. Sub section 13(4) allows for functions to be delegated to other risk management authorities (except for those in connection with national and local strategies).

Much of the local knowledge and technical expertise necessary for Halton Borough Council to fulfil duties as a LLFA lies with the Council and other partner organisations. The Flood and Water Management Act 2010 pre-dated the Localism Act and NPPF of 2012 but includes the same principle of the need for relevant authorities to cooperate. They create a duty on local planning authorities and other bodies to cooperate with each other to address issues relevant to their areas. The duty requires ongoing constructive and active engagement on the preparation of development plan documents and other activities relating to the sustainable development and use of land, in particular in connection with strategic infrastructure.

It is therefore crucial that the Council works alongside these partners as they undertake their responsibilities to ensure effective and consistent management of local flood risk. These working arrangements have been formalised to ensure clear lines of communication. In assuming its new statutory responsibilities as the Lead Local Flood Authority, Halton Borough 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. The Council has a centralised network of partners by virtue of its historical operational and strategic innovative practices. This strategy formalises and develops our partnerships.

Halton Borough Council has taken a “whole catchment” view of flood risk management. By doing so it ensures we appreciate our actions over the whole area rather than simply within political boundaries. Halton Borough Council’s administrative area is situated within both the Mersey catchment and the Weaver Gowy catchment areas The Council has established a strong liaison link with Warrington Borough Council due to the general topography and drainage characteristics and the interplay between Halton and Warrington. Other influences are from watercourses in Knowsley BC, St. Helens BC and Warrington BC administrative areas of the catchment.

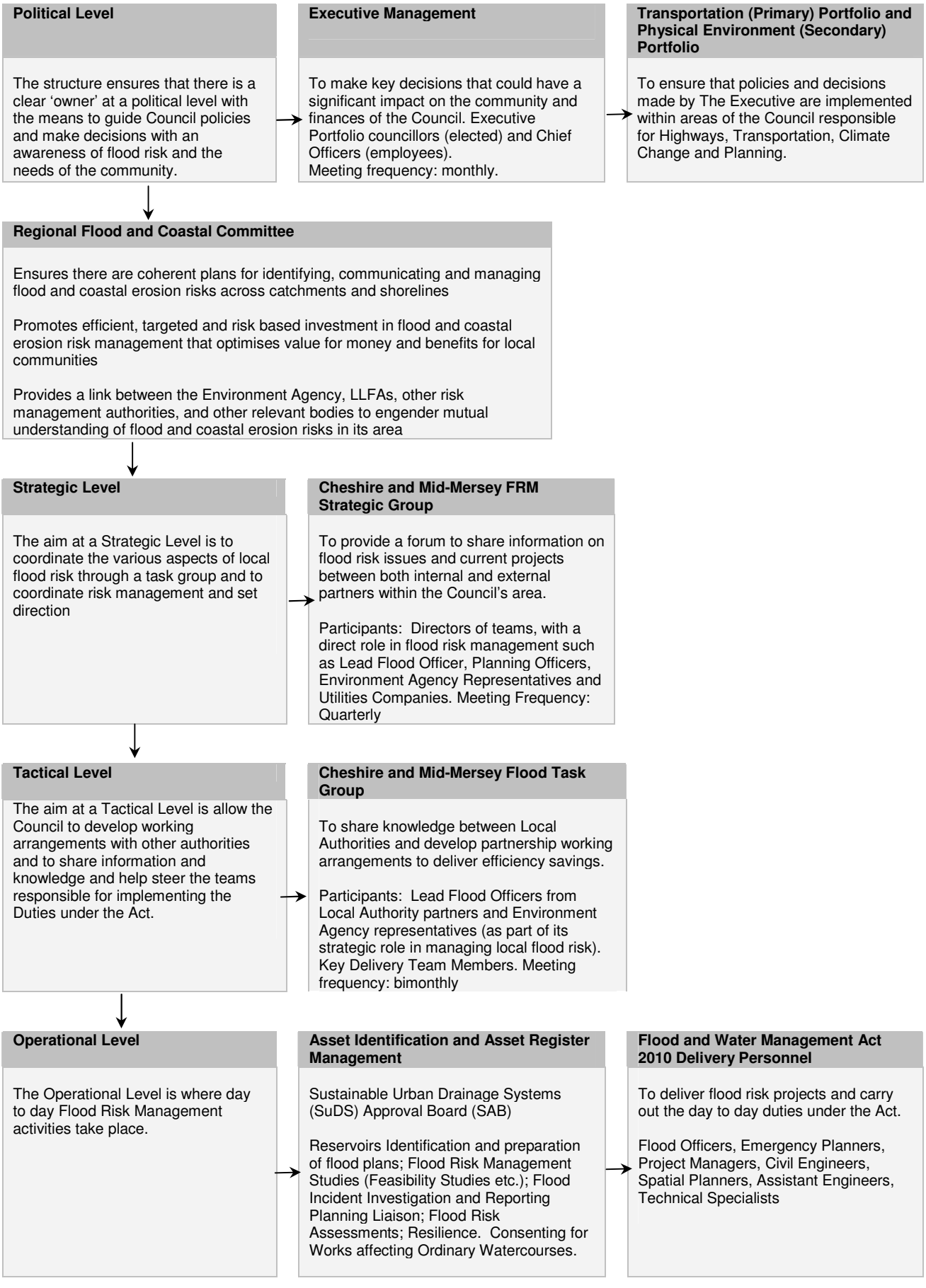
Halton Borough Council is part of the wider Cheshire and Mid-Mersey sub-regional LLFA working group, where best practice and lessons learned are shared in relation to the management of flood risk. There is liaison with the Merseyside Group of Drainage Authorities as a result of established transportation and economic partnership working, and ultimately to the whole Mersey Estuary Catchment through contacts at a regional level with Manchester Authorities (AGMA).

Authorities within the Cheshire Mid Mersey Flood Management Group group are:

Halton Borough Council, St. Helens, Cheshire East, Cheshire West and Chester, and Warrington

Additionally, the Merseyside Environmental Advisory Service (MEAS) is a sub-regional service that serves Halton, Knowsley, Liverpool, Sefton, St Helens and Wirral Councils. MEAS provide environmental advice and sustainable solutions. The service comprises professional technical staff and its role is to assist the Merseyside Districts by providing technical advice on a wide range of environmental matters. It assists the Merseyside Districts by providing a 'one-stop-shop' for a broad range of environmental, nature conservation and sustainable development and waste management issues.

Figure 3.1 – Structure Responsibilities



4. Assessment of Flood Risk in Halton

Section 9 (4) of the FWMA 2010 requires the Local Strategy to include an assessment of local flood risk in the LLFA's area.

4.1 The Area

The administrative area of Halton Borough lies within two catchments. These are the Mersey Estuary and the Weaver Gowy catchments, which form the southern part of the North West River Basin District.

Figure 4.1 – Mersey Estuary Catchment

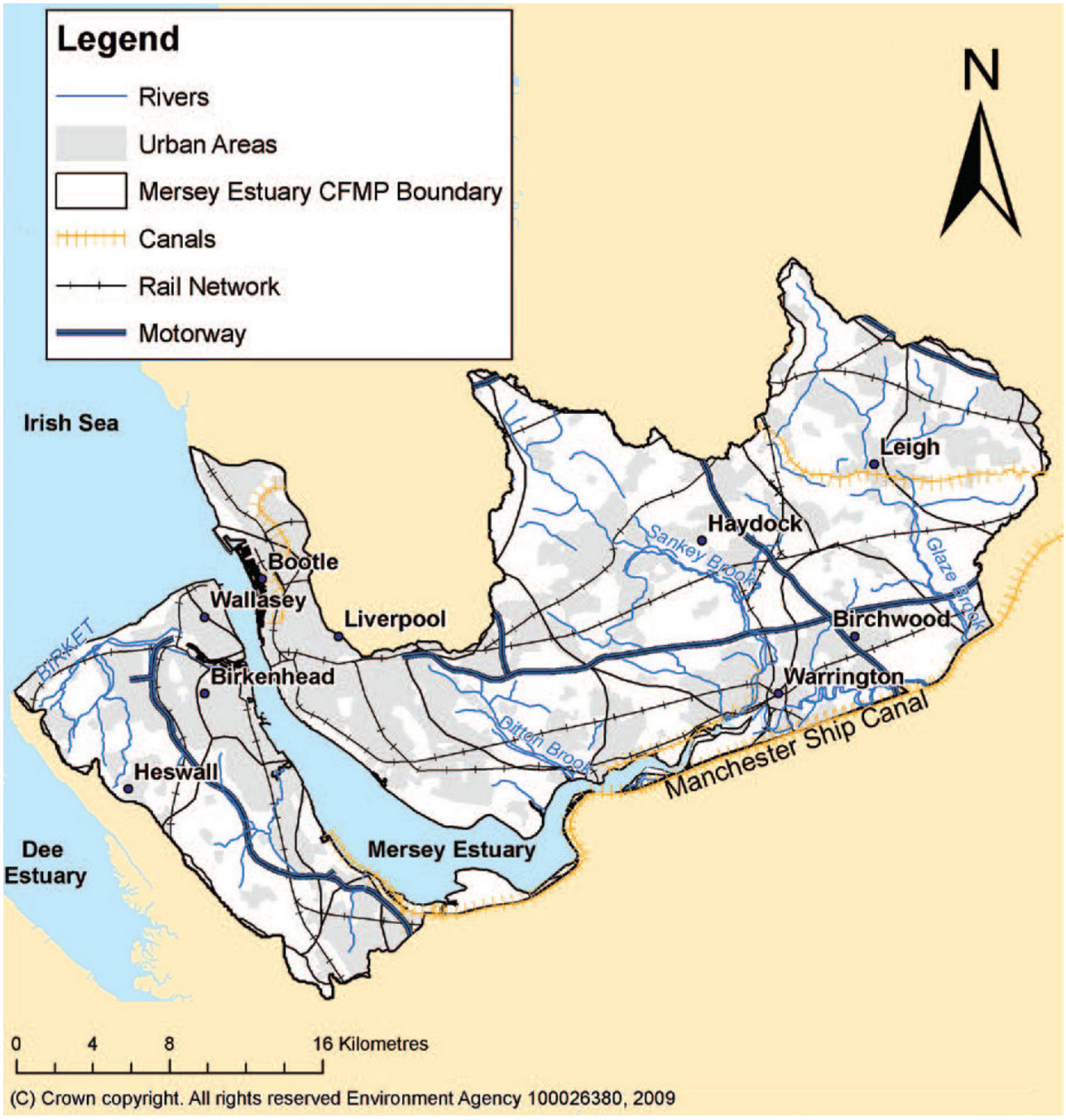


Figure 4.2 – Weaver Gowy Catchment

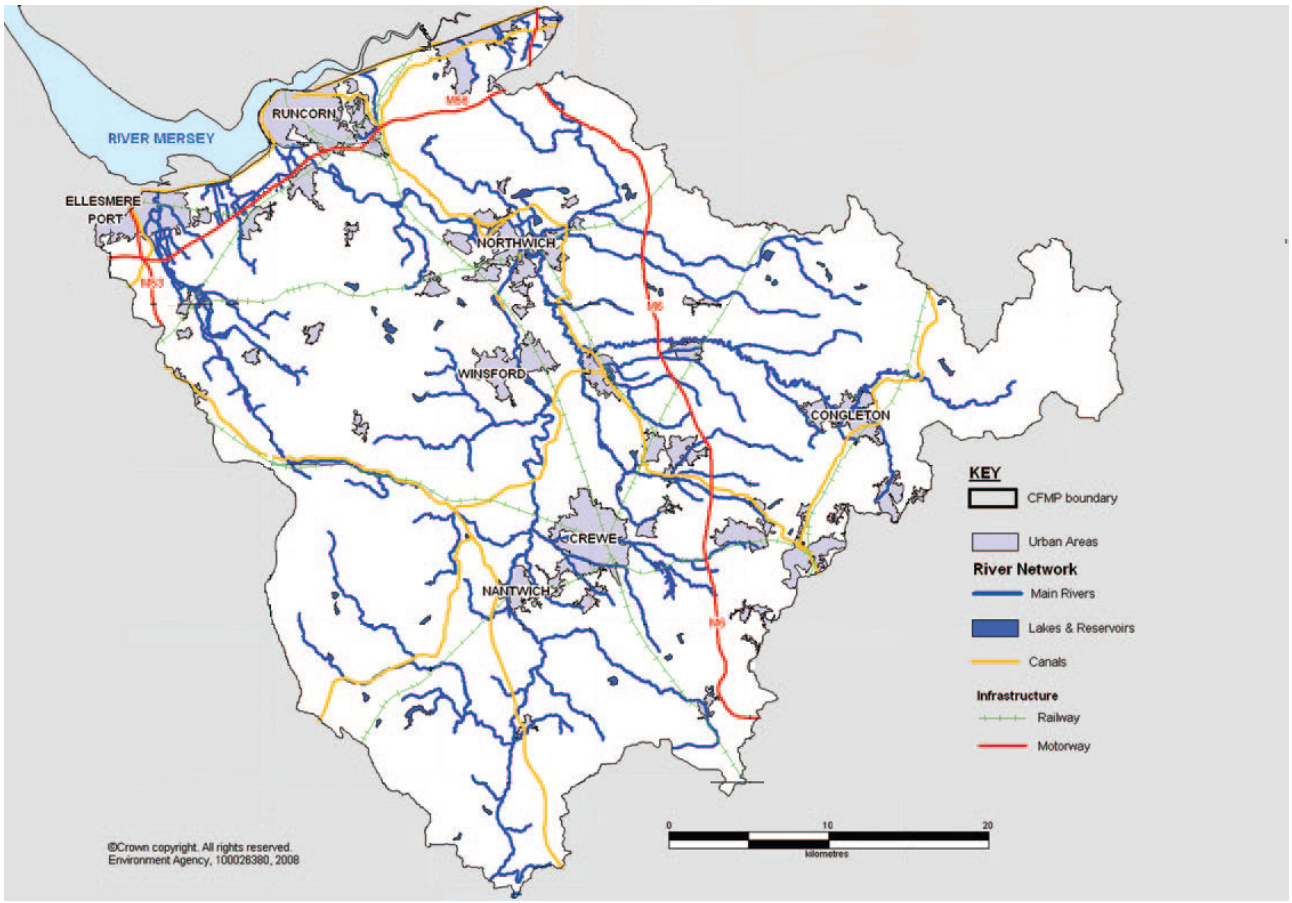


Figure 4.3 – Known Ordinary Watercourses in the Borough

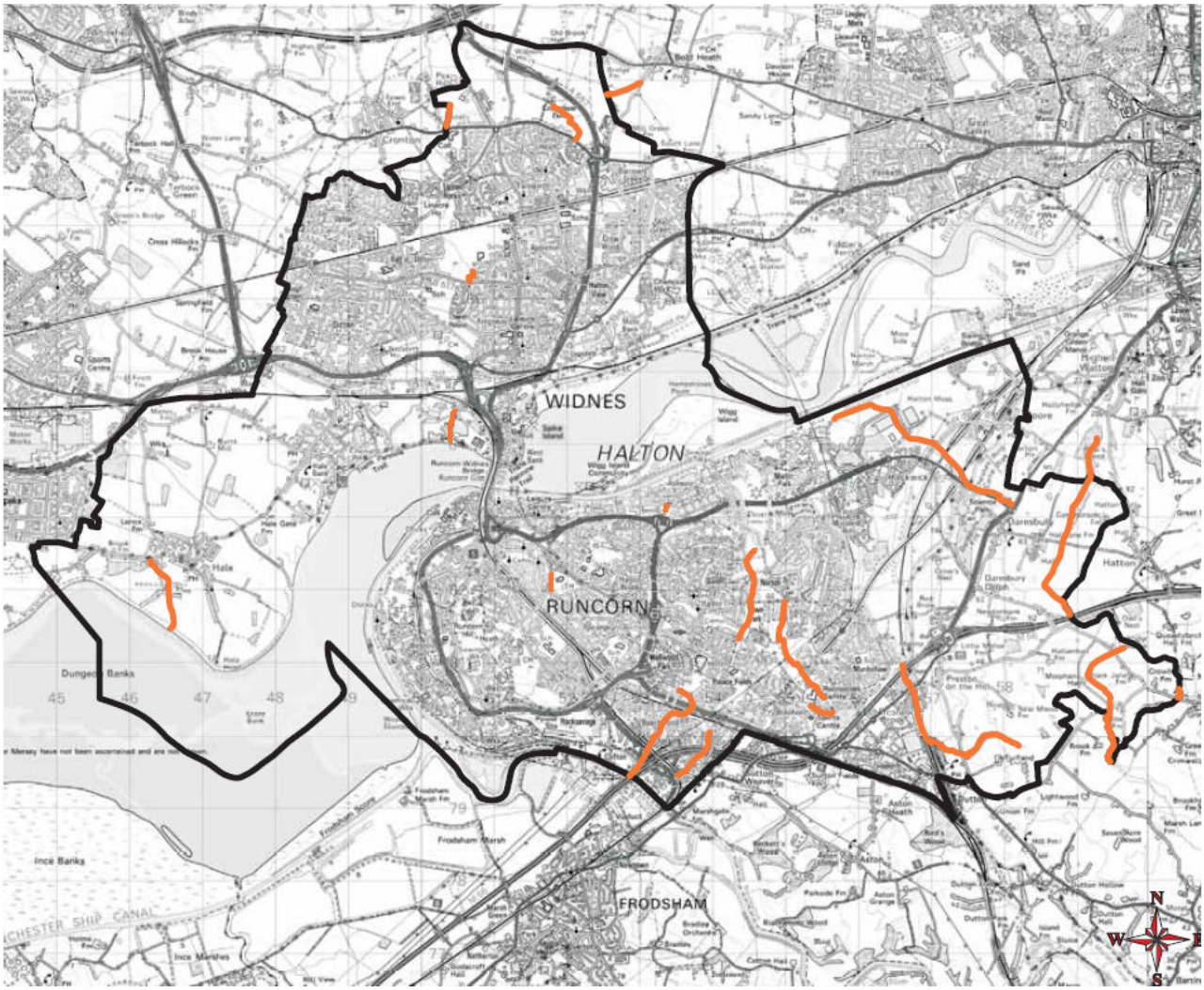
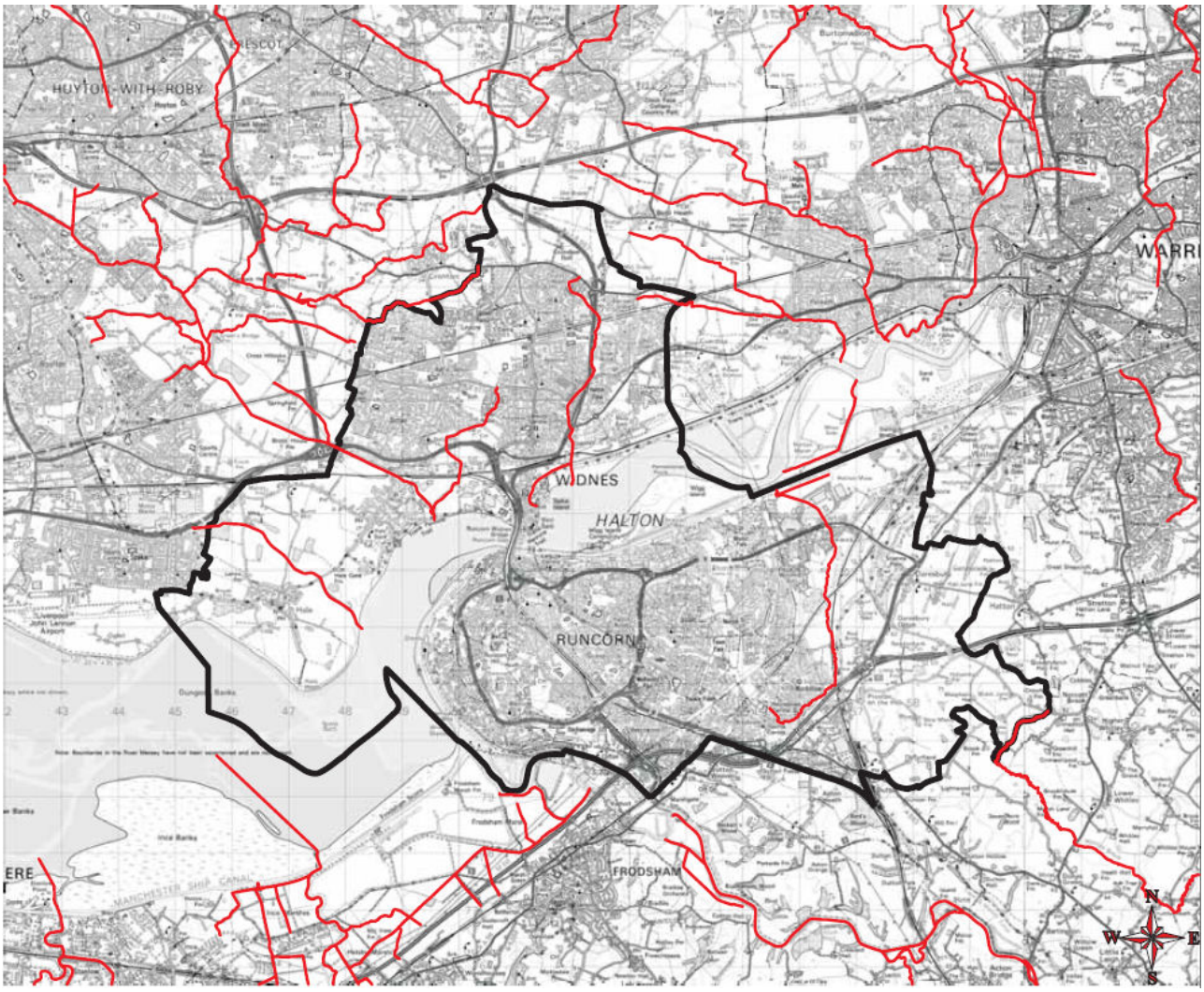


Figure 4.3 – Main Rivers in the Borough



4.2 Availability of Data

Authority	Dataset	Description
Environment Agency	Flood Map (Rivers and the Sea) Flood Map for Surface Water	Shows the extent of flooding from rivers with a catchment of more than 3km² and from the sea. Includes two flood events (with a 1 in 30 and a 1 in 200 chance of occurring) and two depth bandings (greater than 0.1m and greater than 0.3m). (Makes allowance for some drainage) A new flood map, the Flood Map for Surface Water, is due to supersede the existing map in December 2013.
	Areas Susceptible to Surface Water Flooding Areas Susceptible to Groundwater Flooding	The first generation national mapping, outlining areas of risk from surface water flooding across the country with three susceptibility bandings (less, intermediate and more). (Makes no allowance for drainage) Coarse scale national mapping showing which areas are susceptible to groundwater flooding.
	National Receptors Dataset (NRD)	A national dataset of social, economic, environment and cultural receptors including residential properties, schools, hospitals, transport infrastructure and electricity substations.
	Indicative Flood Risk Areas	Nationally identified Flood Risk Areas, based on the definition of 'significant' flood risk described by Defra
	Historic Flood Map	Attributed spatial flood extent data for flooding, from all sources.
	Flood Warning Areas	Residents in Ditton and Halebank areas of Widnes receive automated flood warning messages.
	Mersey Estuary Catchment Flood Management Plan (FMP) & Weaver Gowy Catchment FMP	CFMPs consider all types of inland flooding, from rivers, groundwater, and surface water and tidal flooding and are used to plan and agree the most effective way to manage flood risk in the future.
Halton Borough Council	Strategic Flood Risk Assessment (SFRA);	SFRA contain useful information on historic flooding, including local sources of flooding from surface water, groundwater and flooding from canals. SFRA applies a sequential analysis in respect of development
	Level 2 Strategic Flood Risk Assessment (JBA, 2011)	SFRA contain useful information on historic flooding, including local sources of flooding from surface water, groundwater and flooding from canals.
	Preliminary Flood Risk Assessment PFRA	Preliminary Flood Risk Assessment (PFRA), Details on historical past flooding records and possible future flooding areas. The document also contains the level of significant flooding
	Historical flooding records	Historical records of flooding from surface water, groundwater and Ordinary Watercourses.
	Anecdotal information relating to local flood history and risk; Basic Anecdotal information	Anecdotal information from authority members regarding areas known to be susceptible to flooding from excessive surface water, groundwater or flooding from Ordinary Watercourses. Anecdotal information: flood risk, flood history and local flood hotspots.
	Highways Flooding Reports	Highways Flooding Reports for a number of locations within Halton Borough Council, including analysis of the flood risk at each location.
	Asset register	Register of assets that are part of private and public flood defences in the borough.
	Surface Water Management Plan	Contains information on historical flooding and future flood risk in the borough.
	Mid-Mersey Water Cycle Study (Outline Phase) 2011	Strategy on the Water Cycle for the Mid-Mersey Catchment, in which Halton Borough Council is a part of.
	Desk Top Culvert Inundation Study	A desk top study to provide initial culvert locations and inundation flood model (JBA 2012)
	Surface Water Study	Study of surface water mapping (Jacobs 2012)
Cheshire Fire & Rescue Service	Fire & Rescue Anecdotal information	Anecdotal information regarding local flood risk hotspots are reported/logged to the Council on an ongoing basis.
United Utilities	Sewer flood data for United Utilities Area	Sewer flood logs and records of sewer flooding incidents due to hydraulic incapacity in each area.

4.3 Summary of Past Flooding

4.3.1 Flooding from Ordinary Watercourses (Fluvial)

Ordinary Watercourses are any watercourses that are not designated a 'Main River' by the Environment Agency and therefore come under the land drainage remit of Halton Borough Council. These watercourses can vary in size considerably and can range from drains and open ditches, to streams, brooks and small rivers. There are gaps due to currently unavailable information. Like many urban watercourse systems, the network through the Borough has many culverts particularly on Bowers Brook, which flows through Widnes Town Centre.

There are a number of Ordinary Watercourses in Halton. The majority of these have been identified in the Halton SFRA. Flooding of watercourses is associated with the exceedance of channel capacity during higher flows. The process of flooding on watercourses depends on a number of characteristics associated with the catchment including; geographical location and variation in rainfall, steepness of the channel and surrounding floodplain and infiltration and rate of runoff associated with urban and rural catchments.

4.3.2 Surface Water Flooding (Pluvial)

Surface water flooding in this context is surface water runoff as a result of high intensity rainfall when water is ponding or flowing over the ground surface before entering the underground drainage network or watercourse, or cannot enter it because the network is full or at capacity, thus causing flooding. This is known as pluvial flooding. Pluvial flooding also includes overland flows from the urban/rural fringe entering a built up area. Whilst pluvial flooding from heavy rainfall can occur anywhere in the Council's area, there are certain locations where these mechanisms are more prominent due to the urban nature of the catchment, complex hydraulic interactions between watercourses and surface water and combined sewer systems.

Significant surface water flooding is a result of interacting hydraulic mechanisms. The locally significant instances that are known are in the Kingsway Ward in Widnes.

4.3.3 Groundwater Flooding

Groundwater flooding is caused by the emergence of water from underground, either at point or diffuse locations. The occurrence of groundwater flooding is usually very local and unlike flooding from rivers and the sea, does not generally pose a significant risk to life due to the slow rate at which the water level rises. However, groundwater flooding can cause significant damage to property, especially in urban areas, and can pose further risks to the environment and ground stability. There are several mechanisms, which produce groundwater-flooding including: High in-bank river levels, artificial structures, prolonged rainfall and groundwater rebound (which occurs when abstraction, typically for drinking water, industrial or mine dewatering purposes, stops and water levels return to pre-abstraction levels).

A large proportion of the Mersey Estuary catchment lies upon a significant aquifer, which, in the past, was pumped extensively for mining, water supply and other industrial purposes. There is no known documented evidence of surface flooding from groundwater in the Mersey Estuary catchment. Groundwater flooding is a minor issue at catchment scale it is not considered in detail for the Weaver Gowy catchment. The known possible groundwater flooding areas in the Halton Brook area of Runcorn and Barrow's Green area of Widnes did not produce any recorded incidents in the September 2012 Flooding.

6.1.4 Highway Drainage Networks and Sewers

Flooding from artificial drainage systems occurs when flow entering a system, such as an urban storm water drainage system, exceeds its discharge capacity, the system becomes blocked or it cannot discharge due to a high water level in the receiving watercourse. A sewer flood is often caused by surface water discharging into the surface water or combined sewer systems, sewer capacity is exceeded in large rainfall events causing the backing up of floodwaters within properties or discharging through manholes. The management of flood risk from public sewers is the responsibility of the sewage undertaker; the undertaker for Halton Borough Council is United Utilities (UU).

Records show that flooding has occurred mainly in areas in the Kingsway ward of Widnes. Due to the potential link between different types of flooding and the need for understanding of past flood events, information on this source of flooding has been indicated in the Surface Water Management Plan.

6.1.5 Flooding from Canals

Canals are artificial navigable watercourses, many of which date back to the 18th century. In many places they are embanked and raised above the surrounding land. Locks on canals help pass boat traffic up and down slopes. Canals are fed from reservoirs and watercourses and have overflow structures that pass water out of the canal when levels are high to lower level watercourses. Many of the inflow and outflow structures on canals are over 200 years old when they were designed to a 'rule of thumb'. In the event that a canal does fail, the height that the canal is elevated above surrounding land will affect to some degree the amount of flood hazard that could be caused by deep or fast flowing debris laden water, alongside the cause of failure. The amount of water that can escape depends on the pound length,

which is the distance between two locks because the maximum volume of water that will outflow will be contained between the two locks or time taken for an operator to react to a failure to prevent further escape. The risk of flooding from canals is reduced by regular inspection by the Canal and River Trust or others to identify any problems with inflow and outflow structures, canal lining or embankments.

Canal flooding due to failure of the Manchester Ship Canal is considered to be unlikely. Although there is no information on the probability of this happening, the maintenance undertaken by owners Peel Holdings on this commercial asset makes failure unlikely. As a controlled water body, the Bridgewater Canal only poses a minor risk of flooding to adjacent people and property. There is a small risk associated with lower probability events such as overtopping and/or the breaching of embankments. There is anecdotal evidence of the Bridgewater Canal overtopping its banks and flooding the highway at Runcorn Road, Moore.

4.4 Future Flood Risk

This section aims to identify what the future flood risk is for Halton. This includes looking at current flood modelling data that has been created for Halton Borough Council by the Environment Agency and others, using both local and national datasets and considering the known historic events. In summary, flood modelling suggests the following potential risks:

Data Set	Flooding Type	People	Properties	Transport Network	Critical Infrastructure (see note *)	Community Facility
Mersey Estuary Catchment Flood Management Plan 2008	Main River	758	324	3.2km	13	-
Weaver Gowy Catchment Management Plan 2008	Main River	7	3	5km	3	-
Halton Preliminary Flood Risk Assessment 2011	Surface Water	2579	373	-	20	1
JBA Culvert Analysis 2012	Ordinary Watercourses	1010	332	-	-	-

*Critical infrastructure includes major roads, railways, power and water infrastructure.

4.4.1 Culvert Study

The JBA Culvert Study suggests the following

4.4.2 Flooding from Ordinary Watercourses (Fluvial)

There are a small number of identified flood risks from Ordinary Watercourses across Halton. Flooding from ordinary watercourses can occur during high tides, particularly in the Hale area, and at times of flash storm events. A study to locate culverts and to undertake flood model analysis of all culverts on ordinary watercourses to map inundation scenarios has been undertaken (JBA Consultants 2012). This mapping forms part of the Council's set of risk maps and asset management data. Flood risks are identified for Higher Runcorn and at Desoto Road, where there is the potential to affect a number of highways at West Bank Industrial Estate. Flooding from Ordinary Watercourses is known to affect property and highways at:

Watercourse	Location	Impact
Willow Brook	Pool Hollow	Property and highway
Marsh Brook	Desoto Road	Highway

4.4.3 Flooding from Main River

Halton Borough Council have reviewed and identified that there are flooding incidences from Main Rivers within the Borough. The main source of flood risk in Halton is associated with fluvial flooding from Ditton Brook and its tributaries and Keckwick Brook. The Mersey Estuary Catchment Flood Management Plan, produced by the Environment Agency, quantifies the following risk for a 1% annual exceedance flood event (for the whole of Halton):

- 765 people
- 327 properties
- 8.2km of Transport Network
- 16 items identified as critical infrastructure
- 0 community facilities

Flooding from Main River is known to affect property and highways at:

Watercourse	Location	Impact
Ditton Brook	Ditton Road, St. Michael's Road, Hale Road	Highway
Rams Brook	Hale Gate Road	Highway
Keckwick Brook	Glastonbury Close	Property and highway
Keckwick Brook	Eastgate Road	Property and highway

Although flooding from Main Rivers is the prime responsibility of the Environment Agency, the Council will liaise and act in partnership to solve or mitigate issues. The EA have 2 active Flood Warning Zones across Halton as follows:

Watercourse	Area	Number of Properties
Ditton Brook	Ditton	109
Ditton Brook	Hale Bank	278

Maps of these zones are provided at Appendix 2 Figure F.3

4.4.4 Surface Water Flooding (Overland Flow)

The Environment Agency (EA) has produced a national assessment of surface water flood risk in the form of two national mapping datasets. These comprise:

1) the first generation national mapping; Areas Susceptible to Surface Water Flooding (AStSWF) which produces three susceptibility bandings (less, intermediate and more); and
2) the Flood Map for Surface Water (FMfSW), which contains two flood events: 1 in 30 annual chance and 1 in 200 annual chance, for two depth bandings: greater than 0.1m and greater than 0.3m.

The EA suggest that LLFAs should review, discuss, agree and record the surface water flood data that best represents their local conditions. The FMfSW estimates a greater number of properties to be at risk of surface water flooding and consequently, under a precautionary approach that would provide a robust analysis, this was used in the preparation of Halton's PFRA.

The Pitt Review recommended that Surface Water Management Plans (SWMPs) should form the basis for future management of all local flood risks. Mott MacDonald was commissioned by Halton Borough Council to undertake a SWMP study of the Halton Borough area including the towns of Widnes and Runcorn, which are ranked 156 and 309 respectively in the National Rank Order of Settlements Susceptible to Surface Water Flooding (DEFRA, 2009). The study included an intermediate level risk assessment of flood risk of the whole Borough to identify priority areas and the first stage of a detailed assessment of those 'hot-spot' areas susceptible to flooding, which comprised an in-field review and summary recommendations.

The outputs of the study can be summarised as follows:

- a suite of interactive surface water flood risk maps comprising four series covering 1 in 30, 1 in 100 and 1 in 200 year events and based upon a 100m x 100m cellular grid:
  - **100 Series -** flood depth, hazard and velocity;
  - **200 Series –** Flood Impact Maps for Property including impact scores for flood depth and hazard;
  - **300 Series –** Flood Impact Maps for Essential Transport Infrastructure including impact scores for flood depth only;
  - **400 Series –** Flood Risk Maps for Property comprising flood risk scores for flood depth and
  - hazard
- A 'higher risk' cluster cell analysis based on the 100m x 100m grid and 'Hot-Spot' area mapping;
- Detailed risk assessment and Prioritised list of Actions for Hot-Spot areas.

The Halton Surface Water Flood Map that has been produced for the SWMP study shows very close correlation with the EA's second generation FMfSW and it has been agreed with the EA that the national FMfSW will be used as the definitive locally agreed surface water map.

Appendix 1 Figure F.3 shows the flood Map for Surface Water for Halton Borough Council area. Table 4.2 summarise the numbers of properties potentially affected by surface water.

Table 4.2 - Properties at risk from surface water flooding in Halton (0.1m)

Depth	Estimated number of **ALL** properties at risk of surface water flooding from a 1-in-200 event	Estimated number of residential properties at risk of surface water flooding from a 1-in-200 event
0.1m	12,690	9,747
0.3m	3,061	2,293

Halton Council has completed Strategic Flood Risk Assessments (levels 1 and 2), in which, anticipated development and associated flood risks have been Sequentially Tested. It is intended that this approach to development and flood risk ensures that planned development does not increase flood risk and also that appropriate development only, in terms of flood risk, is permitted. Appendix 1 F4 Figures 4a and 4b show future development sites in relation to the EA's Flood Risk Zones.

Evaluation of the modelling reports for the watercourses within this area indicates that many of the channels and culverts running through Halton have significant capacity, often exceeding the 1 in 100 (1%) year annual probability flood event. The surface water mapping however assumes deficient existing drainage capability and does not take account of potential additional capacity of watercourses. Consequently, it is likely that much of the flooding shown in these areas could in fact flow into the watercourses and be conveyed downstream, unless prevented by physical characteristics of

the area (e.g. built-up defences, culverts, topography, etc.). The extent of surface water flooding could, therefore, be significantly less than the model suggests. It is also likely that the areas that are affected by surface flood risk are relatively hydraulically independent of each other. This means that an action to reduce surface water flood risk in one area is unlikely to have significant positive or negative impacts in other areas.

Surface water runoff from adjacent ground to highways and private property is highly variable and often dependant on localised agricultural land management and degree of ground saturation, which proved a particular contributing factor during the second half of 2012. Flooding from surface water is known to affect property and highways at:

Location	Impact
Ramsbrook Lane, Hale	Tidal flooding
Ditton Road, Widnes	Tidal flooding
St. Michael's Road, Widnes	Tidal flooding

4.4.5 Groundwater Flooding

National Environment Agency datasets provide an assessment of groundwater risk in terms of percentage likelihood in a given 1km national grid squares. This is the Areas Susceptible to Groundwater Flooding (AStGwF); the future risk is shown in Figure F.2 in Appendix 1 shows the distribution of groundwater flooding.

The Council has recorded groundwater emergence in the Stenhills area of Runcorn, although this is not classed as a significant or harmful risk. However, the Council believes that there is a general risk of groundwater flooding in subsiding areas within north Widnes, potentially relating to groundwater rebound following cessation of dewatering after the closures of mines. The extent of any groundwater flooding are likely to be limited and occupy areas similar to the fluvial floodplain. It is therefore considered that the probability of groundwater floods with significant harmful consequences is low.

4.4.6 Canal Flooding

Note: This section will be completed following consultation with Peel Holdings Ltd (owners of the Manchester Ship and Bridgewater Canals) and the Environment Agency.

4.4.7 Reservoirs

The Flood and Water Management Act 2010 updates the Reservoirs Act 1975 and engenders a more risk based approach to reservoir regulation.

High risk reservoirs will be those reservoirs 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' will 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.

The Environment Agency has published a map which shows the largest area that might be flooded if a reservoir were to fail and release the water it holds. This is available to the public as part of the EA's 'what's in your back yard' suite of interactive environment maps. The reservoir flood map displays information for large reservoirs holding over 25,000 cubic metres of water. It does not display information for smaller reservoirs or for reservoirs commissioned after reservoir mapping began in spring 2009. The map displays a 'worst case' scenario and it is unlikely that any actual flood would be as large as depicted. Information is limited to the name of the relevant reservoir; its owner /undertaker; the Local Authority in which the reservoir is located; and the area of potential flooding.

The map does not display information about how likely any area is to be flooded or about the depth or speed of the flood waters. However, Defra, in partnership with the Environment Agency (EA) and the Civil Contingencies Secretariat (CCS), has produced reservoir inundation maps for all reservoirs under the Reservoirs Act and has made them available to Local Resilience Forums (LRFs) in order to assist them in the preparation of generic and specific off-site reservoir emergency plans.

Reservoir flooding is extremely unlikely to happen. There has been no loss of life in the UK from reservoir flooding since 1925. All large reservoirs must be inspected and supervised by reservoir panel engineers. The EA are the enforcement authority for the Reservoirs Act 1975 in England and ensure that reservoirs are inspected regularly and essential safety work is carried out.

In Halton, the main areas that are susceptible to reservoir flooding are Sandymoor and Manor Park in Runcorn, which include residential and commercial property and are at risk due to potential failure of the Wharford Farm balancing lake reservoir. This reservoir is owned by Halton Borough Council and provides floodwater storage for Keckwick Brook acting as flood defence for the developing Sandymoor residential area. The reservoir has a capacity of 25,000 cubic metres and is designed to only impound (contain) water during 1 in 50 year rainfall/flood events. The last recorded impounding was in October 2012.

The management of this reservoir is currently governed by the Reservoirs Act Legislation and it is therefore subject to the inspection and supervision regime as described above. However, the Flood and Water Management Act 2010 updates the Reservoirs Act 1975 and adopts a more risk based approach to reservoir regulation which (inter-alia) reduces the capacity at which a reservoir will be regulated from 25,000m³ to 10,000m³ and requires only those reservoirs assessed as a higher risk to be subject to regulation. High risk reservoirs will be those reservoirs 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' and all undertakers with reservoirs over 10,000m³ will still need to register these with the EA, 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.

4.5 The effects of Climate Change on Future Flood Risk

Over the last few years, the frequency of flooding incidents reflecting unseasonable erratic weather patterns has increased across the area of Halton. Our approach to flood risk management reflects the impact of climate change. There is clear scientific evidence that global climate change is happening. Greenhouse gas levels in the atmosphere are likely to cause higher rainfall in future. If emissions follow a medium future scenario, the UK climate prediction (UKCP09) projected changes by the 2050s relative to the recent past 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.

Climate changes can affect local flood risk in several ways. Impacts will depend on local conditions and vulnerability. Wetter winters and high intensity 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 has increased in recent years, so we need to be prepared for the unexpected. Halton Borough Council will prepare by developing an understanding of our current and future vulnerability to flooding, developing plans for increased resilience and building the capacity to adapt. Regular review and adherence to these plans is key to achieving long term, sustainable benefits. We will continue to monitor and correlate weather patterns to increase our understanding.

4.6 Improving Risk Understanding

We will continue to monitor flood events in tandem with the EA/Met Office forecasts, main river gauge records, rainfall data and actual flood extents compared to predictive mapping. This combination of analysis will over time allow us to:

- Refine risk models
- Monitor recorded flood incidents
- Implement residual risk management measures
- Improve community advice
- Seek to share EA telemetry data for analysis and improved warnings

5. Managing Local Flood Risk

Section 9 (4) of the FWMA 2010 requires the Local Strategy to specify the LLFA's objectives for managing local flood risk.

This includes details of the measures proposed to achieve the objectives and plans for implementation and funding.

Halton Borough Council as the Lead Local Flood Risk Authority will coordinate and manage flood risk through a range of activities, across internal departments and external partners.

	Measure	Contribution to Risk Management
1	Partnership Coordination	Community resilience. Localism Act 2011
2	Spatial Planning Policy	Setting policy and future land use through Halton's planning policy documents
3	Development control	Assessing planning applications in respect of flood risk
4	Sustainable Drainage Approval Board (SAB)	Assessing and approving applications (subject to final legislation)
5	Enforcement and Consenting	Enforcement and consenting in respect of ordinary watercourses. Development and enforcement of Halton's Bye Laws
6	Works Powers	Power to carry out works in respect of essential flood risk management
7	Asset Management	Identifying and managing drainage assets. Works and operations
8	Designation of Features	Identifying critical assets and designation to protect
9	Investigations and Flood Reporting	Undertaking investigations and resolution of flooding incidents. Maintaining log of flooding incidents
10	Communication and Community Engagement	Ensuring the community is aware of flood risk and is prepared.
11	Emergency Preparedness and Response	Preparing and responding to flood alerts, flood warnings and flood incidents.

5.1 Community Focus, Partnership Working and Encouraging Community Resilience

People who live and work in flood risk areas have a critical role in managing the risks they and their communities face. Halton Borough Council and other risk management authorities will support this role.

Responsibilities
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, and taking steps to protect their property and others (for example, where they own land adjoining ordinary watercourses and have maintenance responsibilities).
Partnering
Halton Borough Council will work with partners together to make communities and individuals more aware of flood risks. The aim of this work is to help communities to participate as far as possible in LFRM. To do this, we 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.
Communities
Communities, led by Halton Borough Council, will plan for the future and take appropriate steps to adapt to changing flood risks. Defra, the Environment Agency, the Council and others will support community adaptation by working with them to develop understanding of how they can adapt to change, the costs and benefits of different approaches, and by providing practical approaches and examples that can be shared. In particular, these will focus on community adaptation planning and engagement and implementing long term multiple benefit, innovative adaptive solutions such as land use management change.
Householders
Householders and businesses at risk of flooding should take the appropriate steps to better protect their properties through property-level resistance and resilience measures. Halton will support this work by raising awareness and understanding and, in some cases, supporting wider take up of flood resistance and resilience measures to reduce damage to buildings. When flooding does occur we will work with specialist groups such as the National Flood Forum to aid recovery.
Publicity

Halton Borough 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. Flood risk has long been included as standard in most building and contents insurance policies. The Government and insurance industry agreed to support the wide availability of insurance after the Statement of Principles expired in July 2013. The agreement recognises that the terms of government policy are likely to reflect local risk. The policy should take account of any actions carried out at a property or community level to reduce flood risk.

5.1.1 Localism Act 2011

The Localism Act 2011 will give communities and local government greater powers and freedom from Whitehall. The five key measures in the Localism Act intended to decentralise power are:

- Community Rights
- Neighbourhood Planning
- Housing
- General power of competence
- Empowering cities and other local areas

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. These planning areas could encompass land for or in connection with infrastructure that is strategic, sites of special scientific interest and Green Belt land. Linking with the Flood and Water Management Act 2010, it brings the possibility or discretion to share data and cooperate as stated by the Act to become a defined legal duty, thus strengthening the position of LLFAs in dealing with the upcoming SAB and SuDS duties.

5.2 Planning Policy

Planning policy is the fundamental starting point in reducing flood risk in Halton. Spatial planning is the responsibility of Halton Borough Council as the Local Planning Authority (LPA). It therefore allows close working arrangements with the Council's other statutory function as the Lead Local Flood Risk Authority.

Local Planning Authorities must prepare Local Plans which set out planning policies in a local authority area. Local Plans form the statutory development plan against which planning applications must be determined, unless material considerations indicate otherwise. The Council adopted the Halton Core Strategy Local Plan in April 2013 and work has commenced on the Delivery and Allocations Local Plan. Local Plans must be positively prepared, justified, effective and consistent with national policy in accordance with section 20 of the Planning and Compulsory Purchase Act 2004 (as amended) and the National Planning Policy Framework.

Through planning policy documents, a policy framework is created for development control within which all those engaged in the planning process can actively contribute to a more sustainable approach to managing flood risk. This will provide 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 local authority, developer and community-led initiatives to reduce flood risk / enhance the environment
- Ensure that both the direct / cumulative impacts of development on flood risk are acknowledged and mitigated
- Ensure that these 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

In respect of flood risk the following documents will inform the preparation of local planning documents:

- National Planning Policy Framework (CLG, 2012): This aims to ensure that inappropriate development in areas at risk of flooding is avoided.
- Halton Strategic Flood Risk Assessment (HBC, 2007): This provides a detailed and robust assessment of the extent and nature of the risk of flooding in the Borough and the implications for future development.
- Halton Level 2 Strategic Flood Risk Assessment (JBA, 2011): This builds on the technical information and methods used in Level 1 and focuses on three primary watercourses and development areas.
- Mid Mersey Water Cycle Study (Entec, 2011): This provides an overview of the water cycle and its constraints to development across the Mid Mersey
- Mersey Estuary Catchment Management Plan

5.2.1 Surface Water Mapping and Land Use Considerations

The Environment Agency advises that LPAs and developers should carry out assessments of surface water flooding in line with Government planning policy detailed within the National Planning Policy Framework. Halton Borough Council as the lead on local flood risk has reviewed, discussed, agreed and recorded, with the Environment Agency, United Utilities and other interested parties, what surface water flood data best represents local conditions.

The Flood Map for Surface Water has been reviewed against a local scoping study, local historic data and local knowledge. This knowledge base will continue to develop through the newly established arrangements that will capture and record surface water flood information to validate assumptions made.

Surface water data may be different for different purposes, even within one location. The locally agreed surface water flood risk information will be taken into account in the preparation of Local Development Plans and may be material to decisions on individual planning applications. In land use planning, locally agreed surface water flood risk information can be used to highlight where a more detailed study of surface water flooding may be necessary, for example, within a strategic flood risk/consequence assessment.

The Environment Agency surface water flood maps are not appropriate to use as the sole evidence for any specific planning decision, at any scale, without further supporting studies or evidence. Proving the model on the ground and other available data, such as locations of historic surface water flooding, should be used alongside the Environment Agency surface water flood maps.

The locally agreed surface water flood risk information is most appropriate for use at this level of the development planning system where it will provide the greatest benefit in terms of the identification, management and avoidance of surface water flooding. This surface water flood risk information will act as a starting point to highlight areas where the potential for surface water flooding needs particular assessment and review within Strategic flood risk/consequence assessments and in Surface Water Management Plans.

The output from these assessments can then be used to inform development allocations within Local Plans and outline the requirements for site level flood risk/consequence assessments to be carried out by developers. The Local Planning Authority is required to appraise risk, manage risk and reduce risk using a partnership approach. Risk appraisal is undertaken by:

- Identifying land at risk,
- the degree of risk of flooding from river, sea and other sources;
- Preparing Strategic Flood Risk Assessments (SFRAs) as freestanding assessments that contribute to the sustainability appraisals of Local Plans.

The Sequential Test advised by the National Planning Policy Framework Guidance Document is used by Halton Borough 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. Appropriate land uses for each flood zone are also listed to provide guidance for LPAs 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 (adoption subject to national legislation);
- Application of property and location-specific flood protection measures;
- Reference to the Local Flood Risk Authority developments affecting ordinary watercourses
- Planning enforcement in respect of unauthorised development undertaken in liaison with the Lead Local Flood Authority
- Identify river corridors and the natural flood plain to provide potential riverside storage and urban river corridors in built up areas.

5.3 Development Control

Details of the management of flood risk in planning and development control is contained in Halton's Core Strategy CS23 – Managing Pollution and Risk. Guidance on the requirement for site Flood Risk Assessments, based upon the size of development and / or the risk of flooding (from rivers and the sea) in that location, is provided on the EA website. When the FWMA SuDS legislation is enacted, the local planning and SuDS approval processes will enable those development sites not captured within the EA's flood risk zones to be assessed for other forms of flood risk.

Halton's Core Strategy also deals with sustainable development and climate change within policy CS19 which seeks to encourage the adoption of the Code for Sustainable Homes for new residential development and BREEM standards for new non-residential development. Both of these include the adoption of practices for surface water and flood risk management through a variety of sustainable drainage techniques to reduce the amount of surface water that runs off the site into storm drains such as:

- Provision of soakaways
- Provision of areas of porous paving;
- Supplying accessible water butts;
- Rainwater harvesting and
- Property resilience to mitigate residual flood risk

The application of the range of SuDS techniques for new and redeveloped sites will be adequately considered through the Development Control and SuDS Approval planning processes.

5.4 Sustainable Drainage Systems (SuDS)

Sustainable drainage is to be introduced under Section 32 and Schedule 3 of the FWMA 2010.

Halton, in carrying out its functions both as Lead Local Flood Authority and as Highway Authority, must aim to make a contribution towards the achievement of sustainable development. Furthermore, Schedule 3 of the FWMA 2010 contains details of the requirements for Sustainable Drainage Systems that are aimed at reducing damage from flooding; improving water quality; protecting and improving the environment; protecting health and safety and ensuring the stability and durability of drainage systems.

Note: It is anticipated that this part of the legislation will be enacted in April 2014.

SuDS is a technique that manages surface water and groundwater sustainably. The primary purpose of SUDS is to mimic the natural drainage of land prior to development. This is achieved by capturing rainfall, allowing as much as possible to evaporate or soak into the ground close to where it fell, then conveying the rest to the nearest watercourse to be released at the same rate and volumes as prior to development. The key objectives, are to manage the volume and rate of flow of surface runoff to reduce the risk of flooding and water pollution. SuDS can also reduce pressure on the sewerage network and can improve biodiversity and local amenity.

The use of SuDS techniques was seen as a key element of the Pitt Review and his recommendations on sustainable drainage are encompassed within the FWMA 2010 under Schedule 3. At the time of preparing this Local Strategy, this section of the Act has not been introduced. However, when it is enacted, (expected to be in April 2014), it will establish Halton Borough Council as a SuDS Approving Body (SAB), with duties to approve drainage systems in new developments and redevelopments, before construction can commence. It is envisaged that responsibilities of the SAB will be set up as follows:

Sustainable Drainage Approving Body (SAB)

Department	Key Responsibility	Elements
Planning	Lead	Lead administration aligned to Development Control system. Policy setting through the production of planning policy documents.
Building Control	Advice	Technical advice and site inspection
Open Spaces	Maintenance	Technical advice and maintenance for soft SuDS
Highway Development	Adoption and Maintenance	Technical advice; Agreements; Adoption and Asset Management

The Act amends Section 106 of Water Industry Act 1991, to make the right to connect surface water to public sewers **conditional** on the SAB approving the drainage system. It will also require that the proposed drainage system meets new National Standards for design, construction, operation and maintenance of SuDS.

Defra carried out a consultation on draft proposals for the implementation of SuDS legislation, the operation of SABs and a draft set of National Standards in 2012. However, as described above, proposals have yet to be finalised and this section of the Act has not been enacted. There will be further clarity in due course and the Local Strategy will be amended as necessary.

In the meantime, Halton BC is working with partners and neighbouring LLFAs on preparing for the new role and we want to ensure close links to the planning approval process. Until Schedule 3 of FWMA 2010 is enacted, the National Standards are adopted and funding arrangements in connection with SAB duties are confirmed, Halton BC will not be in a position to formally approve and adopt any SuDS proposals by developers.

Part VIII of Defra's consultation on the implementation of SuDS sought to deal with the issue of "Orphan" SuDS – those SuDS to which adoption does not apply because, for example, construction preceded the SAB approval requirement. If during the period prior to the enactment of the legislation, a developer does propose SUDS, then Halton BC will attempt to ensure that the SUDS design is acceptable. Until the SAB is constituted the following condition will be added to planning decisions: "All proposed SUDS features are to be designed in accordance with CIRIA document C697."

The following interim guidance will also be useful for developers:

CIRIA C365 Designing for Exceedance in Urban Drainage – Good Practice
Anglian Water Services Ltd. Sustainable Drainage Systems Adoptions Manual
SCOTS SUDS for Roads/CIRIA C697 SUDS Manual/CIRIA 168 Culvert Design
www.susdrain.com

It should be noted that initial assessments of the geology and soil types across Halton Borough have indicated a generally 'LOW' suitability for the use of infiltration SuDS. The map in appendix 8 shows SuDS suitability and further information is available for Developers in Halton's SFRA2 and the Mid-Mersey Water Cycle Study.

However, the SuDS approach is not wholly dependent on infiltration but also includes attenuation techniques such as ponds, wetlands, green roofs and water recycling schemes which hold back runoff volumes and rates and allow water reuse. If proposed SuDS are compliant in terms of design and construction, and following discussions with Halton's Open Spaces Division, they **may** be accepted as part of Public Open Space, together with agreement on the payment of commuted sums for their future maintenance. Alternatively, developers will be encouraged to transfer future responsibility to a Management Company set up for the purpose of maintenance and repair of features on their development.

5.5. Watercourse Regulation: Enforcement and Consenting

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.

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.

The following changes in legislation give administrative powers to the Lead Local Flood Authority:

Schedule 2, paragraph 30 of the Flood and Water Management Act 2010 repeals section 17 of the Land Drainage Act 1991 and 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 so that 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 the FWMA 2010 amends section 25 of the Land Drainage Act 1991 to give the powers of the Environment Agency to Lead Local Flood Authorities.

The Flood and Water Management Act changed the responsibility for the regulation of works on ordinary watercourses from the Environment Agency to Lead Local Flood Authorities. '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
- Enforcement actions to bring about the remediation of any unconsented or unacceptable work or the removal of obstructions.

These are very important powers, as 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.

Activities on ordinary watercourses that require consent, are generally those likely to cause an obstruction to flow or restrict storage and include culverting, bridge foundations, weirs etc. An illustration of a range of typical activities on watercourses, and requirements for consent is shown in Appendix 5. Halton Borough Council is required to ensure that all works on watercourses that it is responsible for, have the appropriate consent and that the consented works are constructed according to the agreed design. Generally, it is the more rural areas which tend to generate the most applications for consent. Historically, there have been a very low number of consent applications from within the Borough to the EA, when they were responsible for regulation on ordinary watercourses.

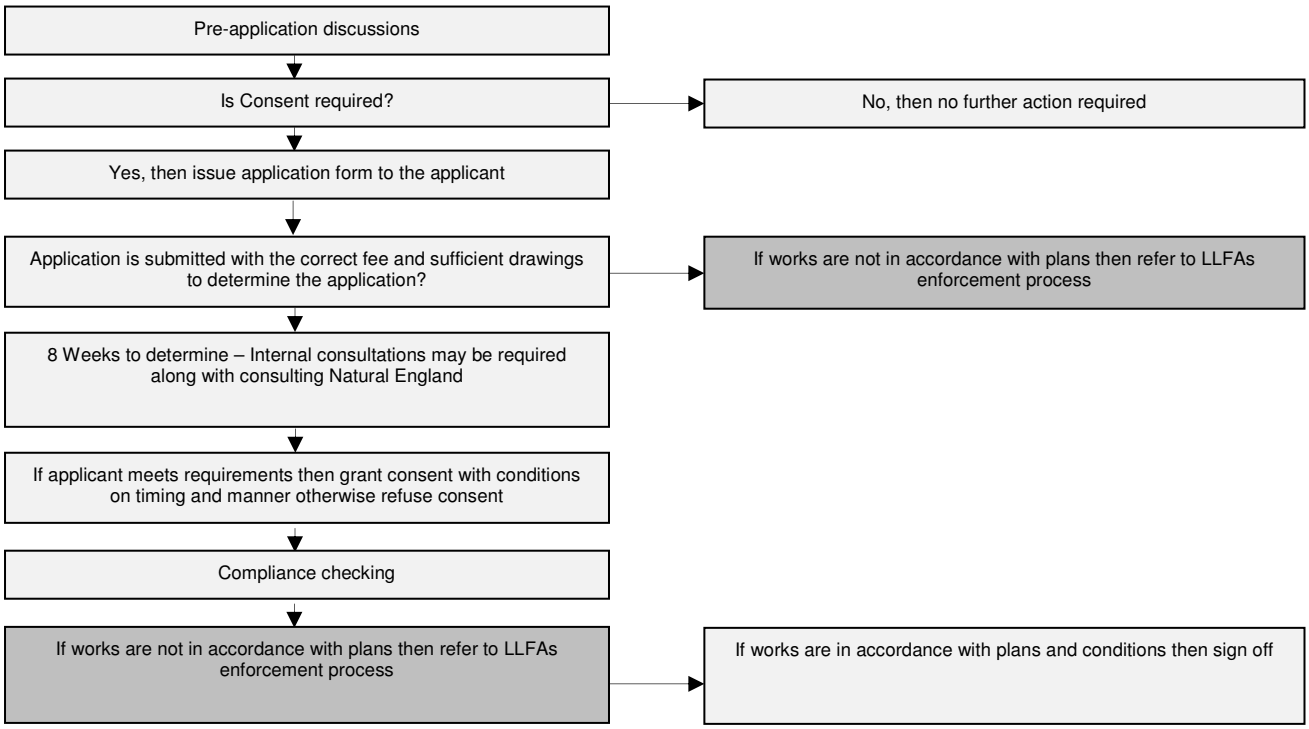
The same criteria would be used to assess works to ordinary watercourses that have been undertaken without consent, and whether the Council should consider enforcement action in those cases. Enforcement action may be taken where damaging (or potentially damaging) works have been carried out without consent, or the works are in contravention to a consent that has been issued. Some works may be sufficiently serious (or deficient) to require immediate action to mitigate the risk of flooding, others may require a more proportionate response. Where enforcement measures are deemed necessary the Environment Agency's Enforcement Concordat will be followed.

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.

Procedure

Historically, the EA has adopted a proportionate and risk based approach in relation to watercourse regulation and it is expected that they will continue to do so in relation to Main River regulation. To assist LLFAs in the transfer of regulatory powers, the EA produced a comprehensive advice note for consenting and enforcement of works on ordinary watercourses. The EA has applied its assessment criteria over a period of time, such that land owners and developers are familiar with the 'rules' applied by the EA. Halton Council has closely aligned its processes with the EA assessment criteria and advice and has adopted a suite of documents, comprising letter and notice templates, to be used in connection with ordinary watercourse regulation.

Figure 5.1 – Proposed Consenting Procedure



Formal consents will be approved and issued by the Operational Director using delegated authority. This process will work in a similar way to the established process for permitting works on a highway. Standard conditions will also be imposed to ensure that works are carried out in a satisfactory and acceptable manner. Works will be recorded onto the asset database system.

Local Byelaws

Halton Borough Council has approved and will formally introduce a set of Land Drainage Byelaws based on the DEFRA recommended template. 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.

When a LLFA intends to undertake works on an ordinary watercourse for which it has regulatory responsibility, it must consult the Environment Agency. However where an LLFA is doing work for FCRM purposes, they do not need to consult the Environment Agency, provided there is a local FRM strategy published for the area the work is within and the works are consistent with it. Until the local FRM strategy is published, LLFAs will need to consult the Environment Agency.

5.6 Power to Carry out Works

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. A list of capital works bids for flood risk management projects made by Halton is shown in Appendix 7.

Works powers are extended to ordinary watercourses by the Act as amended under schedule 2 paragraph 32 (6) to allow work to be undertaken to reduce flooding. 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. Sometimes 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.

5.6.1 Powers to acquire land and Compulsory Purchase

Powers to acquire and dispose of land, including compulsorily, are provided in section 62 of the Land Drainage Act 1991. These powers are not altered by FWMA and the powers in section 62 are available for use with the new 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 39, they are provided for within the Act. Section 39 (12) requires the Minister to apply compensation provisions, together with powers of entry and compulsory purchase provisions, to the incidental flooding or coastal erosion powers, section 39 of the Act. The Minister must use the Water Resources Act 1991 provisions but may amend them. The Water Resources Act provisions are slightly different from those found in the Land Drainage Act 1991.

5.7 Asset Management

Asset Register

The Lead Local Flood Authority has a duty to maintain a register and a record of information of structures or features that are likely to have a significant effect on a flood risk in its area under section 21 of the Flood and Water Management Act 2010.

The register is available for public inspection. The record will include information about ownership and state of repair.

Halton's asset register has been created but its development is expected to be achieved over an extended period. Halton BC will keep a record of "features" that are likely to have a significant effect on flood risk in its area. The record will include information about ownership, state of repair and where appropriate, maintenance regimes. These features will be either a structure, a natural or man-made feature of the environment, e.g. sluices, channels, culverts, walls, embankments, bridges, highway gullies, SuDS systems, grillages and screens. By collating information and mapping flood risk assets, the Council will eventually be 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

Collating all asset information for the register is an enormous undertaking that would require considerable resources. The initial data collection exercises to populate the register and record are risk based and related to the requirement to record structures, which have a significant effect on flood risk management and are not part of the main river system. Recording has commenced using the information contained in the Preliminary Flood Risk Assessment (PFRA), Surface Water Management Plan (SWMP) and the desk study already undertaken by JBA to identify culverts with high consequential flood risk from blocking. Halton BC will initially make the register available by appointment at any reasonable time but in the longer term the aspiration is to make this available on the Council's website.

The register is populated with those structures or features which are most significant first and related to ordinary watercourses and surface water flooding. It is intended that the information contained within the registers will build up over time as we respond to flood incidents, conduct investigations, carry out maintenance works and adopt third party developments. A substantial amount of information is readily available from a variety of sources such as:

- All the highway network road gullies, known highway drains and highway culverts
- Records of highway structures held by the Council's Bridges Section
- Contemporary records of landscape features held by the Council's Open Spaces Division
- Records relating to storm water storage at Oxmoor Wood and Wharford Farm reservoirs

The vast majority of this information is of good quality and fit for purpose. Therefore, collation and entering this information onto the register or digitising hand drawn maps will be a primary task. The detail in records will be proportionate and relate to how the register and record will be used to support the wider LLFA role. Where existing good practice approaches to recording state of repair or other information are available, these will be recorded, otherwise the record will be developed over time as resources allow and inspections or investigations are undertaken. The register will utilise templates supplied by DEFRA and substantial liaison will be made with Environment Agency Asset Database. Records will be held on GIS and on the Council's asset management system.

Unlike major assets associated with fluvial or tidal flooding, there has often been much confusion over the ownership and maintenance responsibility of local flood risk assets. This is likely to be due to local drainage infrastructure commonly being hidden underground or along land boundaries, where landowners either do not realise or acknowledge that they have any responsibility as riparian owners. The Asset Register is a way to address this problem and mean that residents are aware of assets in their area and can contact the assets' owners when there are problems.

There are no defined criteria for what defines an asset as significant but the most important consideration is its location. Future flood risk mapping and the flood history at a site will be used to analyse the 'significance' of each flood risk asset. The vulnerability of the asset's surroundings will also be used to determine the consequences of its failure. Proactive collection of information regarding existing assets is required and this requires Halton BC to work with Parish Councils as well as working with the Council's Highways Maintenance team and United Utilities.

Evaluation of the optimum software and hardware for asset recording in relation to flood management is in progress with investment in additional asset software licences, field data recording hardware and system training. Main River assets are recorded by the Environment Agency; however it is important that Halton's local system is compatible with the Environment Agency's National Flood and Coastal Defence Database (NFCDD) and its successor database. This contains details of Main River and Non-Main River and coastal flood risk assets, including current inspected condition. This data is continuously updated following review or inspection of assets. This information will be utilised in developing the Halton register, which will include main river assets (particularly where the Council is riparian land owner) for

completeness in the efficient management of investigations. The Environment Agency has started a project called Creating Asset Management Capacity (CAMC) to replace NFCDD with an upgraded and improved database.

5.8 Designation of Features

The Authority has the power to designate features under section 30 of the Flood and Water Management Act 2010.

The effect of designation is that a person may not alter, remove or replace a designated structure or feature without the consent of the responsible authority. Designation is classed as a local land charge.

The process of designation prohibits a person from altering, removing, or replacing a designated structure or feature without the permission of the LLFA. If a person contravenes this requirement, the LLFA may take enforcement action. Once a feature is designated, the owner must seek consent from the authority to alter, remove, or replace it. An individual may appeal against a designation notice, refusal of consent, conditions placed on consent or an enforcement notice. In addition to embankments and other structures, many sustainable drainage systems (SuDS) may be designated and will be issued with a Provisional Designation Notice Procedure. The provisional designation notice must provide important information about the provisional designation. As a minimum the notice will set out:

- 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.

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.

The structures and features chosen for designation may include a wide range of things from walls and other structures to raised areas of land and embankments. All will serve a flood and coastal erosion risk management purpose although they were not necessarily designed or constructed for that purpose. Once a structure or feature is designated, anyone wishing to alter, remove, or replace it must seek consent from the LLFA, acting as designating authority. At the present time it is envisaged that there will be very few features in the borough that will be designated with the possible exception of future Mersey Gateway drainage structures. The Borough does have a number of existing flood defence features along important watercourses but they are under the control of the Environment Agency.

The owner will be able to maintain the feature if they wish provided that they are maintaining it in the state it was when it was designated. However, there is no obligation on the riparian landowner to maintain a designated feature. For this reason Halton Borough Council will act with due diligence before designating any such features as ultimately the maintenance liability could fall to the Council. Consideration for designation of any critical features will follow as the Asset Register develops.

Asset Maintenance and Improvement

The Council will work with a wide range of partner organisations and communities in order to identify sustainable measures to manage, reduce or where possible, eliminate flooding. A catchment wide approach that addresses flooding issues within green infrastructure solutions will be 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 could range from better management of current infrastructure, such as regular blockage removal from river channels, to adoption of small areas of land along a river valley, to hold flood water.

Our approach therefore to developing maintenance and larger capital works programmes in respect of reducing flood risk will be undertaken as follows:

- Work closely with the Environment Agency to identify, fund and implement schemes in regard to fluvial flooding from main river
- 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 in parallel to Policy 4A and B of the Mersey Estuary and Weaver Gowy Catchment Flood Management Plans
- Develop risk based maintenance programmes to target reducing financial resources

Key Responsibilities

Asset	Main River	Ordinary Watercourses	Surface Water	Ground Water
Environment Agency	Overall management of main river network and flood warning service.	--	--	--
	Enforcement in respect of riparian owners where integrity of water course is compromised.			
Halton Borough 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 as deemed appropriate.	Advice or Enforcement of private land owners causing flood discharge.	Advice to riparian land owners
		Enforcement in respect of riparian owners where integrity of watercourse is compromised.	Permissive intervention for maintenance of riparian owned assets as deemed appropriate.	
United Utilities	--	--	Maintenance of adopted surface water, foul and combined sewers.	--
Riparian Land Owners	Maintenance of private assets to prevent flooding. Responsibility to accept flows including groundwater.	Maintenance of private assets to prevent flooding. Responsibility to accept flow.	Prevention of surface water discharge from private land.	Management of privately owned land

Refer to Appendix 7 for Maintenance Schedules and Preliminary Works Programmes

5.9 Investigations and Flood Reporting

Section 19 of the Flood and Water Management Act 2010 requires a lead local flood authority to investigate flooding incidents in its area which it becomes aware of.

This is in order to identify which risk management authority has flood risk management functions in respect of the flooding and establish whether that authority has responded or is proposing to respond to the flood. The lead local flood authority must publish the results of any investigation.

Halton's Investigation Policy is divided into three main sections:

- Phase A Incident Capture: Where the incident is reported by the public / business and logged
- Phase B Post Incident Review: Where the significance of the incident is assessed and the requirements for investigating the incident are determined
- Phase C Formal Investigation: Where an investigation is undertaken if considered necessary

Proposed LLFA Flood Incident Investigation and Reporting Policy

Halton will, on becoming aware of a flood in its area, carry out 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 flooding 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 for 12 hours or more
- 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.

Local Investigation Targets

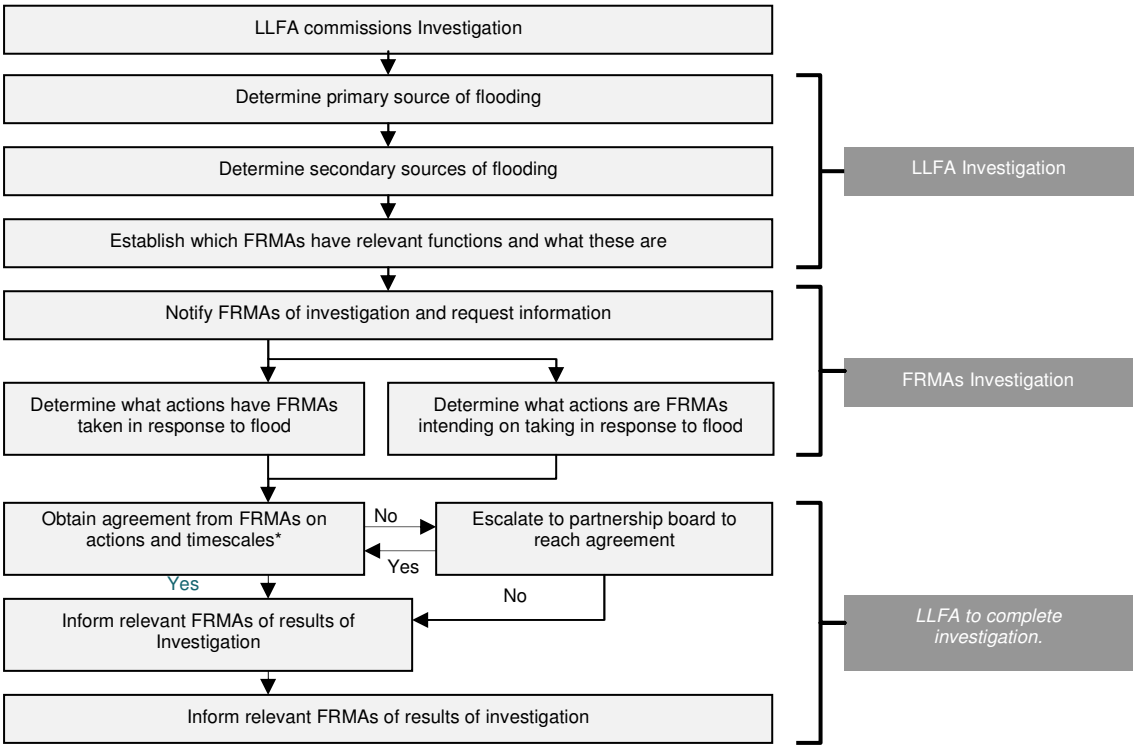
Ascertaining responsibility	1 week following event
Agree with responsible actions and timescales	One month
Final report	Two months

Timescales are subject to the scale of incidents being investigated

Reporting

Flooding incidences meeting the criteria will be investigated by the Council and recorded internally, a published Formal Investigation will be initiated for every flood event captured and reported to the Flood Officer, which meets the above criteria. 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. All events will be reviewed at the quarterly External Partner Group Meetings. Continuing mapping of flood incidents and the results of investigation will inform future work programmes and maintenance regimes.

Figure 5.2 – Proposed Formal Investigation Procedure



5.10 Communications and Public Engagement

Communications are based around internal partners, external partners and our community. The purpose of the communications and engagement for the LFRM strategy is to:

- Ensure understanding of the roles and responsibilities of the partner organisations (Halton Borough Council, Environment Agency, United Utilities)
- Manage expectations and be clear about what we 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.

The following objectives have been set to guide our communications with our community and stakeholders:

- Areas that may have been identified as potentially at risk of surface water flooding.
- Managing risks together - we can provide practical solutions but there are ways the community can help too.

The chart below shows the cross reference of flood management working groups and internal and external links.

Group	Internal																	
	Remit	Meeting Frequency	Lead Flood Officer	Asset Manager	GIS Coordinator	Operations Lead	Civic and Open Spaces Manager	Development Plan Manager	Development Control Manager	Building Control Manager	Environment Team Leader	Emergency Planning	United Utilities	Environment Agency	Warrington Council	St. Helens Borough Council	Cheshire East Council	Cheshire West & Cheshire
Internal Strategic Group	To provide a forum to share information on flood risk issues, planning liaison and development between internal partners	Quarterly	✓	✓	✓	✓	✓	✓	✓	✓	✓	✓						
External Partner Group	To provide a forum to share information on flood risk issues and current projects between external partners within the Council's area	Biennially	✓	✓	✓	✓					✓		✓	✓	✓			
Sub Regional Flood Task Group Cheshire	To share knowledge between Local Authorities and develop partnership working arrangements to deliver efficiency savings	Bimonthly	✓	✓	✓								✓	✓	✓	✓	✓	✓
Sub Regional Strategy Group	To share knowledge between Local Authorities	Quarterly	✓	✓	✓								✓	✓	✓	✓	✓	✓
Consents	To approve applications	Referral	✓	✓					✓									
Sustainable Drainage Approval SAB	To approve applications, monitor process adopt and maintain	TBA	✓	✓	✓		✓		✓	✓	✓		✓					

Communication and Consultation - Stakeholder identification

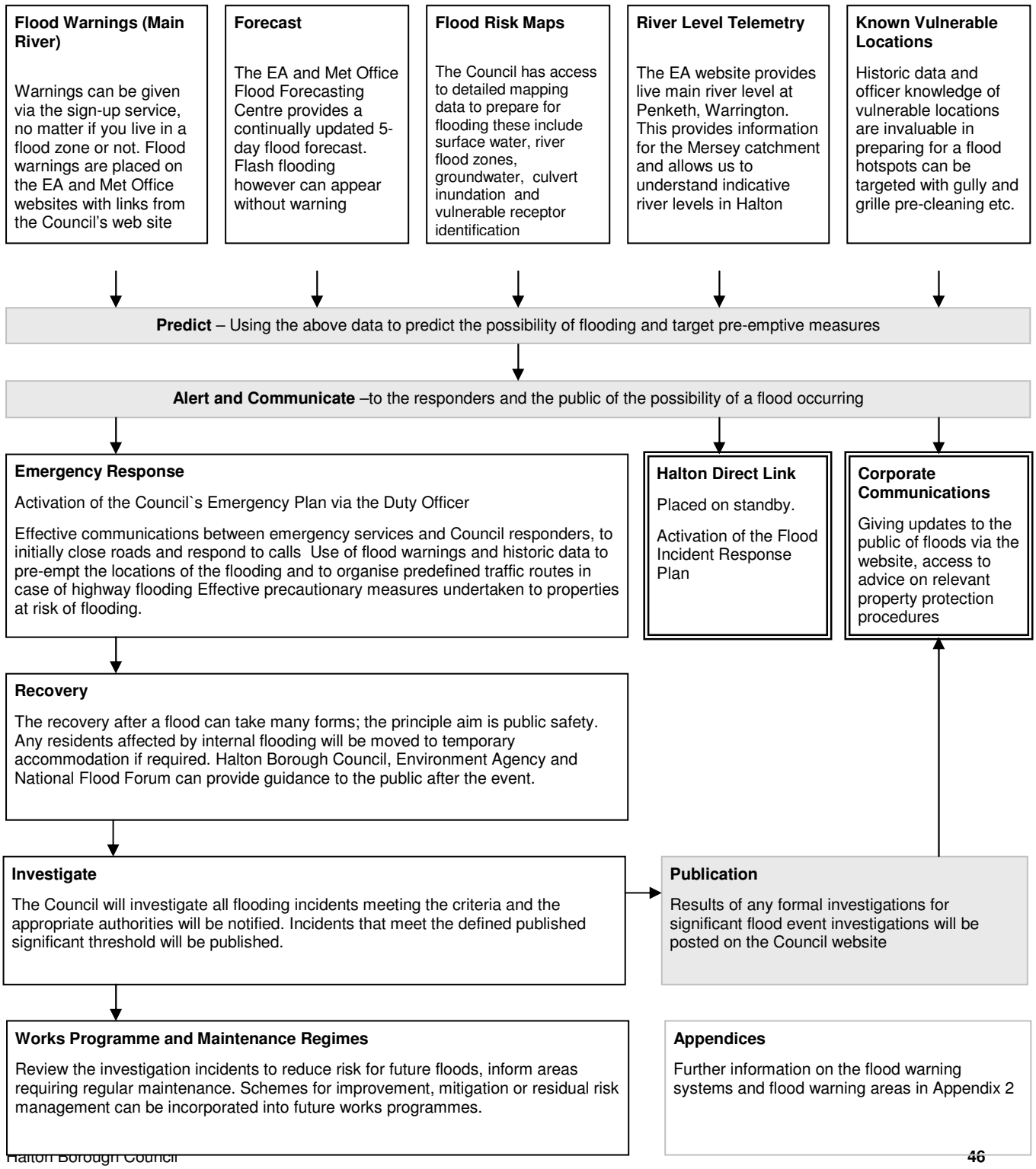
Local Authorities and Partners	Halton Borough Council, Warrington Borough Council, St. Helens Council, United Utilities, Environment Agency
Political stakeholders	MPs and MEPs, Portfolio heads, Ward members, Parish councillors, neighbouring authorities
Transport and infrastructure	Highways Agency, Planning, Other utility companies, Merseytravel/transport operators
Environmental stakeholders	MEAS, RSPB, NFU
Emergency services	Fire service, All other blue light services, Police Community Support Officers, Resilience forum
Business and industry	Halton Chamber, local businesses, Business forums, Employees, Landowners where known
Communities and individuals	Resident association groups, Faith centres, Doctors and community services, landlords and housing associations, Recreation groups – Friends of Parks, Cycling groups, Ramblers Association, Hospitals, Schools, Local press, CEN, CVS, Anglers, SCARS.

5.11 Preparedness and Emergency Response

Preparedness

Flooding is a natural occurrence. It is neither technically feasible nor economically affordable to prevent all properties from flooding. Halton Borough Council's aim is to reduce flood risk and minimise the harm caused by flooding. We take a risk based approach to achieve the best results possible using the budgets and resources available. We will continue working to reduce both the likelihood of flooding and the impacts of a flood when it happens. Informing people a flood is about to happen is vital, as it gives them time to prepare. We also encourage those in risk areas to make a flood plan, so that they are ready when the warning comes. The Council prepare for potential flood emergencies as follows:

Figure 7.3 – Preparedness and Predictions



The Civil Contingencies Act 2004 is the most relevant piece 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 are the Lead Responder for provision of flood warnings and information to the public, However, 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, e.g. Police (public safety announcements and information in the consequent management phase), the Council (recovery phase), etc.

The principal method of warning the public of flood risk in Cheshire is via the Environment Agency's Flood Line Warnings Direct system, and messages that the EA issue via local media. It is the property owners' responsibility under the law to protect their own property from flooding. However the EA, Halton Borough Council and the Emergency services, where possible, will offer assistance in the event of a flood.

Emergency Plans allow all responding parties to work together on an agreed coordinated response to flooding. 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. Halton Borough Council has an Emergency Plan that revolves around a single point contact number. It has been designed to enable the Council to:

- Receive notification of emergency incidents via a 24/7 contact facility;
- Respond to initial requests for assistance via the Duty Officer mechanism;
- Activate and facilitate the Local Authority Emergency Centre for direct incident response.

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;
- Coordinate emergency support from the voluntary sector;
- Liaise with Government departments and with essential service providers;
- Manage the local transport and traffic networks initially on safety grounds followed by signing and diversionary routes;
- Mobilise trained emergency social workers and emergency assistance;
- Deal with environmental health issues, such as contamination and pollution;
- Coordinate the recovery process.

If serious flooding involves people having to be evacuated, the Council may be able to offer temporary shelter and welfare support in the form of Rest Centres. 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 your home or other properties from flooding. The responsibility to do that, lies with the property holder.

Communications

During a pending, or ongoing emergency, communications are vital. This is an area we will continually refine as forecasting techniques and information technology develops particularly in the use of social media networks. As a source of information the Council`s web pages have proved the most effective and accessed media as a source of information at times of flooding. Information will therefore be published on a regular basis as well as through traditional news media channels. When appropriate the Councils network of highway variable message signs will be used to inform of road closures.

We 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.

Sandbag Policy

The Council recognises that the primary responsibility for protecting property from the risk of flooding rests with the property owner. It is also aware of the considerable efforts put in by the Environment Agency to notify property owners in flood risk areas of the risks they face and encourage them to plan their own arrangements to protect themselves and their properties.

The Council supports this approach and urges those living within areas identified as being at risk from flooding to follow the advice of the Environment Agency. The Council is concerned that, in the event of the threat of flooding to a large number of properties in the borough, it may not have the resources to protect every property and that priorities will have to be made. This could inevitably lead to some flooding to properties that, with some pre planned preventative measures by the occupant, could have been avoided or minimised.

However, as a responsible authority, the Council recognises that the level of individual preparedness will vary enormously and it is prudent to plan for some additional support to the local community. With this in mind the Council has developed the following policy:

In the event of deteriorating weather leading to the issuing of weather alerts that could potentially affect any part of the Halton administrative area then risk assessments will be undertaken and regularly updated. These assessments could be wide area or site specific. They could include information obtained from site visits by Council Officers or other professional partners. In the event of the Council's risk assessment for a defined area identifying the use of sandbags to be appropriate to minimise or mitigate the risk of flooding to residential, utility or commercial properties the Council may make available sandbags in accordance with its sandbag policy (see appendix 5).

The allocation of sandbags to individuals will depend upon a number of factors including the total number of sandbags available, an assessment of the viability of protecting the particular property with sandbags, demands from other emergency flood defence measures involving the use of sandbags that would protect a greater number of properties. The need to protect infrastructure assets e.g. roads, energy distribution sites, communication network sites, hospitals and the Council's own public buildings, etc. are also likely to make demands on the Council's limited resources.

Occupants of properties where protection from the risk of flooding using sandbags is assessed as viable but lack the physical ability to do so, e.g. elderly or infirm may, subject to availability of manpower and the assessed priorities at the time, be provided with assistance from the Council.

Road closures and disruption to the road network can impact on the Council`s ability to distribute sandbags. Flash flooding can occur in an overwhelming manner and recede quickly. In these circumstances it is impossible to respond in the time frame of the event.

Sandbags will not prevent floodwater encroaching completely into property and householders should remove articles to a safe location above the anticipated flood level. People building flood defences with sandbags should also be aware of the building methods to employ in order to make an effective seal and the health and safety implication of manual handling sandbags as they are exceptionally heavy.

It therefore must be emphasised that residents of Halton who live in identified flood risk areas should not rely upon the Council to respond to a threat of flooding to their property but should have in place their own flood protection plan.

The provision of sandbags and assistance by the Council under this policy will be without prejudice and free of charge.

6. Funding

Section 16 of the FWMA 2010 enables the Environment Agency to pay grants to any person in respect of expenditure incurred in connection with flood or coastal erosion risk management in England.

Under subsection (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. Under subsection (3) A grant may be subject to conditions (including conditions as to repayment and interest).

6.1 – Revenue Funding

Defra provides funding directly to Halton Borough as a Lead Local Flood Authority to help with the new duties under the Flood and Water management Act. The funds are intended to fully cover the costs for local authorities of putting into place and carrying out new responsibilities under the FWMA, such as flood mapping, producing risk management plans and supporting community flood awareness groups. The majority of the allocation is issued under the business rates retention system and part as Area Based Grant provided direct to the Authority. Funding commenced in 1011/12 and Halton currently receives a £135,600 annual allocation of which £20,000 is via Local Services Support Grant.

In 2013/14 Halton has allocated the following sums in its revenue budgets for flood risk management and land drainage:

Lead Local Flood Authority – Employee Related	£27000
Lead Local Flood Authority – Contracted Services	£48,610
Land Drainage & Flood Defence	£24,640
Land Drainage and Flood Defence – Environment Agency / NW RFCC Levy	£61,510

In addition, the following sums have been allocated within the highway maintenance revenue budget for highway drainage purposes. These funds can be prioritised to assist with the management of flood risk in those higher risk areas identified in the PFRA and 'hotspots' described in Halton's SWMP study:

Highway Drainage	£117,140
Highway Gully Cleansing	£174,960
Priority 1 (Emergency) Highway Flooding	£43,680

6.2 – Capital Funding

Flood Defence Grant in Aid (FDGiA)

In England, government funding is available for capital works to manage and reduce flood and coastal erosion risk. This funding is administered by the Environment Agency on behalf of Defra, through its Regional Flood and Coastal Committees (RFCCs). Flood Defence Grant in Aid (FDGiA) is allocated to Risk Management Authorities (RMAs - Environment Agency, Local Authorities, Internal Drainage Boards). Each year RMAs are invited to submit details of proposed flood and coastal erosion flood management works which require funding for the next five years. The proposals are captured in the Medium Term Plan (MTP). The MTP from each region is combined onto one programme schedule to give an indication of investment needs across England.

There are four categories under which projects can attract FDGiA. These are:

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

The maximum amount of funding on offer to each project will be based on the value of qualifying benefits under Outcome Measures 1, 2 and 3, plus the number of environmental outcomes achieved under Outcome Measure 4, each multiplied by the relevant payment rate. Dividing this amount by the whole life costs of the project determines the share of project costs justifiable to national budgets. This is expressed as a percentage score; the OM Score. All projects supported under the new approach will need to achieve an OM Score of 100% or above.

Halton makes an annual application for FDGiA funding for its proposed flood risk management works following the Environment Agency's grant allocation calendar which is illustrated at the following weblink: http://www.environment-agency.gov.uk/static/documents/Research/FCRM_GiA_allocation_diagram_v3.pdf. Briefly, the process is as follows:

- June – submission of proposed schemes / programmes to EA
- August – and prioritisation by EA
- October – Indicative programme considered by RFCCs (shared with RMAs)
- January – RFCCs consent programme
- February – EA funding Board approval to consented schemes.

The following schemes have been awarded FDGiA funding in the current (2013/14) MTP:

Halton Scheme		2013/14	2014/15	2015/16	2016/17	2017/18
Bridgeway and Lockgate, Runcorn Flood Alleviation Scheme	Estimated scheme cost in year (£k)	24	63	63	93	93
	Indicative FDGiA Allocation (£k)	**8**	**40**	**40**	**50**	**50**
Compass Close, Runcorn Flood Alleviation Scheme	Estimated scheme cost in year (£k)	15	33	13		
	Indicative FDGiA Allocation (£k)	**12**	**30**	**10**		
Pitville Terrace, Widnes Flood Alleviation Scheme	Estimated scheme cost in year (£k)	7	25	25		
	Indicative FDGiA Allocation (£k)	**6**	**7**	**7**		

6.2 – Partnership Funding Approach

A key principle of the FDGiA outcome based approach is that the beneficiary should contribute in some way towards the scheme. The 'beneficiary pays' principle therefore places part of the cost burden on those that are at risk of experiencing flooding. Under Defra's new partnership funding approach, relatively small amounts of locally found funding (or cost savings) could make the difference between locally important projects going ahead or not. Such contributions will supplement the amount of Government funding available at the national level. For example, a 10% local contribution towards a scheme could leverage large amounts of funding from Government, delivering typically an 80 to 1 return on the local investment, and benefits in terms of property, land values, insurance costs and business productivity to the community that dwarf the costs involved over the long term.

A practical resource relating to partnership funding and collaborative delivery of local flood risk management was produced in March 2012 to support Lead Local Flood Authorities. Titled: "Partnership funding and collaborative delivery of local flood risk management: a practical resource for LLFAs", this guidance provides useful information on potential partner organisations and on potential funding sources. It uses a range of case studies of successful partnership funding approaches and offers practical advice on motivating and engaging with partners to help maximise chances of identifying and realising partnership funding opportunities:
http://www.local.gov.uk/web/guest/paying-for-flood-and-coastal-erosion-risk/-/journal_content/56/10180/3600375/ARTICLE#sthash.DMFyZxMK.dpuf

Partnership

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. In its role as Highway Authority, Halton Borough Council also has responsibility due to the importance of the highway drainage network in managing flood risk. Where there is a shortfall of funding, Halton Borough Council as a scheme promoter will look more widely for alternative sources of funds for its local flood defence and protection schemes. It is anticipated that where the circumstances of flooding dictates, or where there are related implications for flood risk management, the following partner organisations will be approached as potential partners as appropriate:

- United Utilities (Water and Sewerage Company)
- The Highways Agency
- Network Rail
- Housing Associations and Registered Social Landlords
- Private Developers

Managing partnerships and potential partner contributions, is likely to need the early involvement of elected representatives in choices that may require political support. Although this is a new approach to flood management funding, the Council is very experienced in developing and delivering multi-source funded schemes.

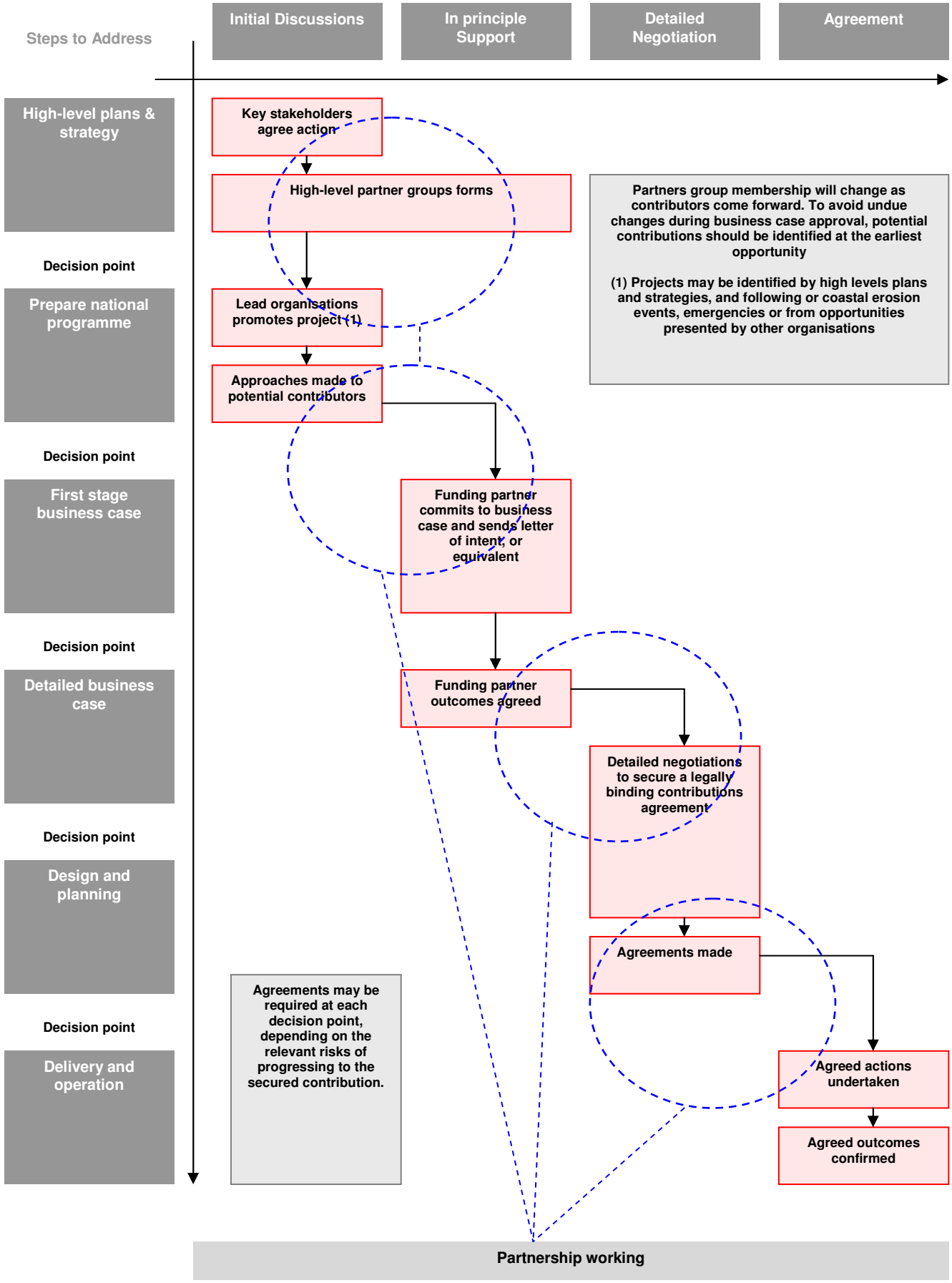
Water and sewerage companies play an important role in local flood risk management. Their sewer networks provide drainage for a significant proportion of rainfall, particularly that falling in urban areas. Section 94 of the Water Industry Act 1991 (WIA91) effectively sets out a flood risk management function for WASCs. 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 UU's sewer asset management programme (AMP6) and co-ordination with their planned capital schemes.

Local Levy

The Local Levy is an additional, locally-raised, source of income for the North West Regional Flood Defence Committee. 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 North West RFCC budget for 2013/14 is £3,638,000 of which Halton's contribution amounted to £61,510.

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 Flood Defence Grant in Aid. The local levy also allows locally important projects to go ahead to reduce the risk of flooding within the committee area. In 2013/14, the RFCC allocated £15,000 to Halton Borough Council for culvert survey and inspection works.

Funding Process

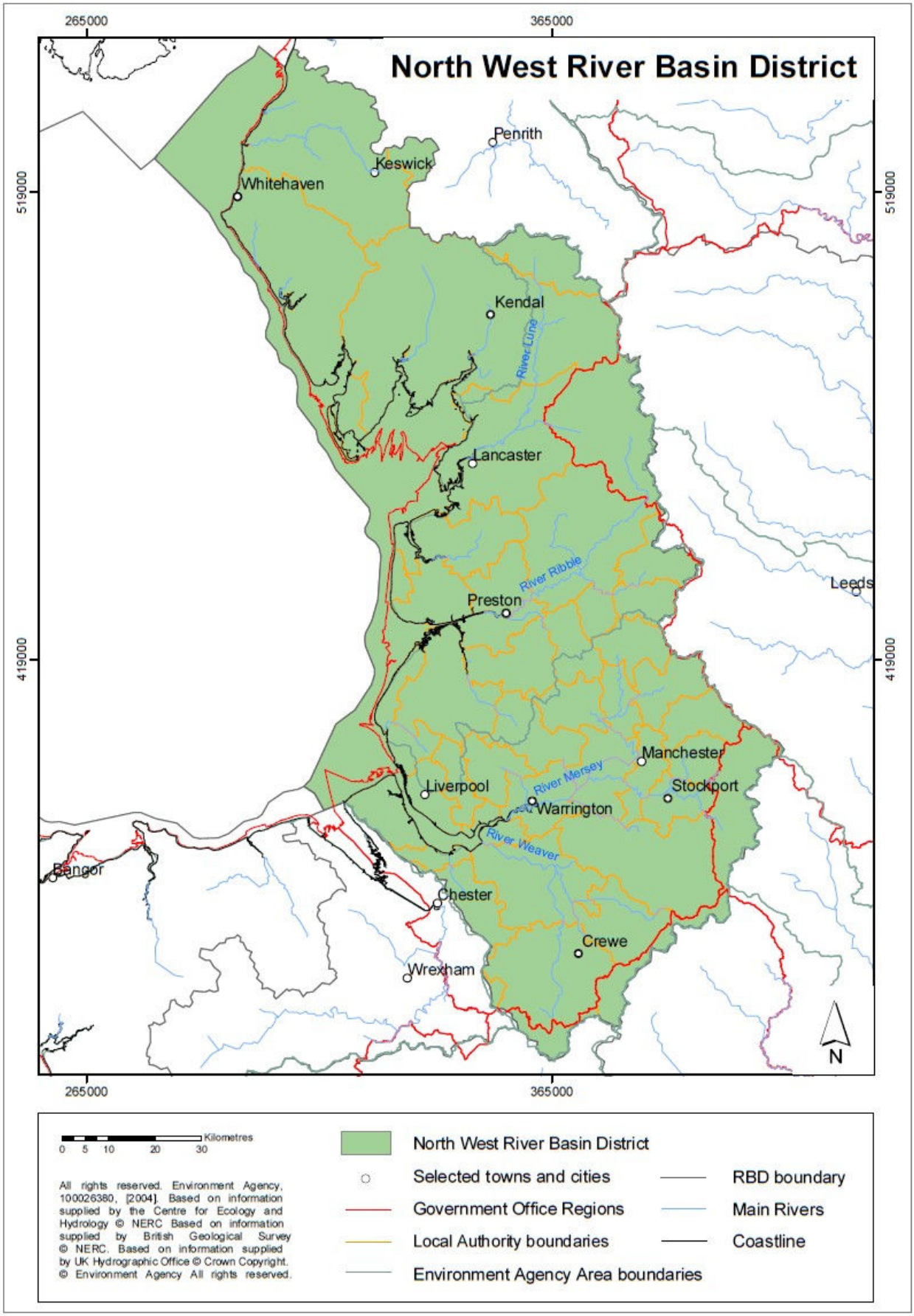


Appendices

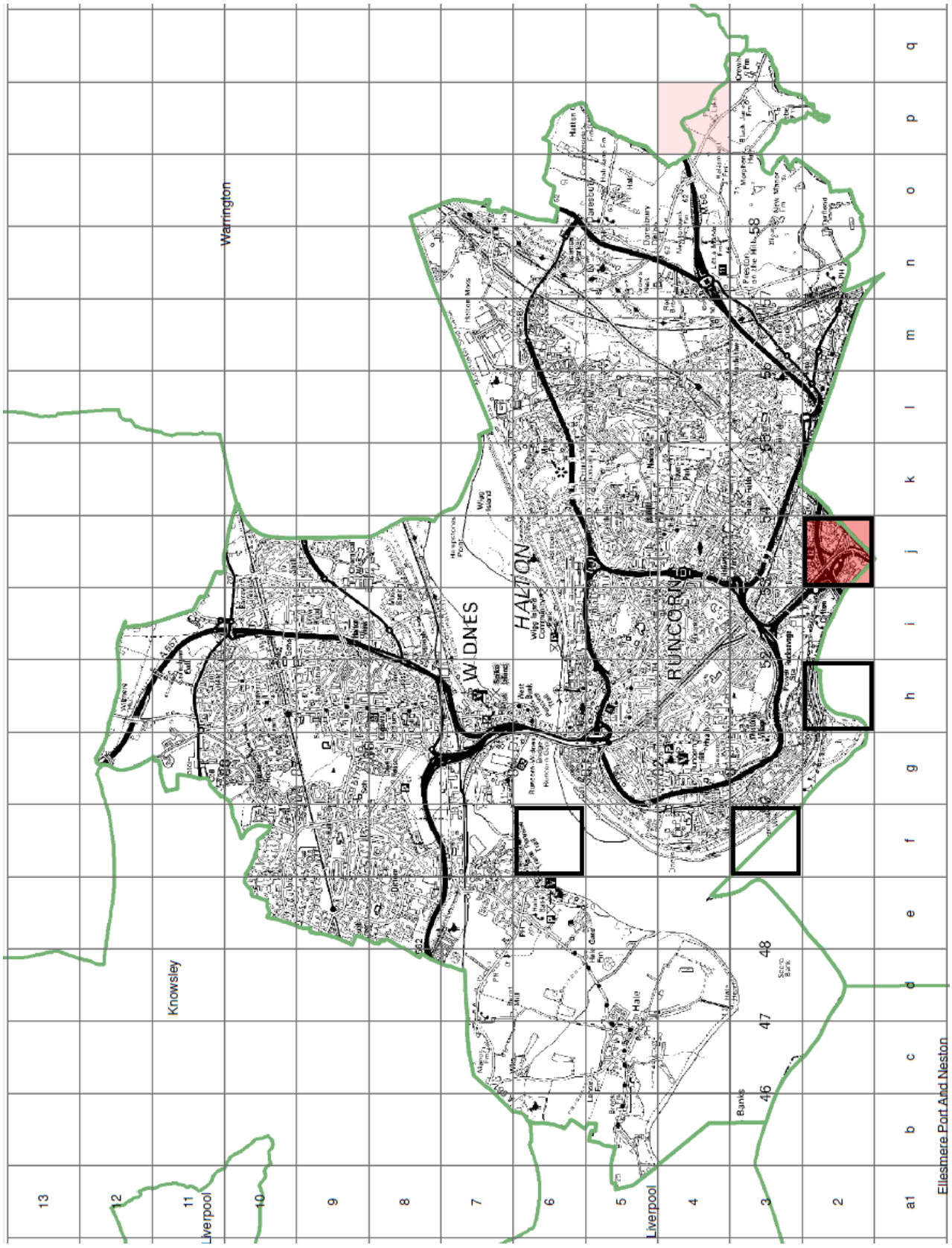
List of Appendices:

Appendix 1 – North West River System

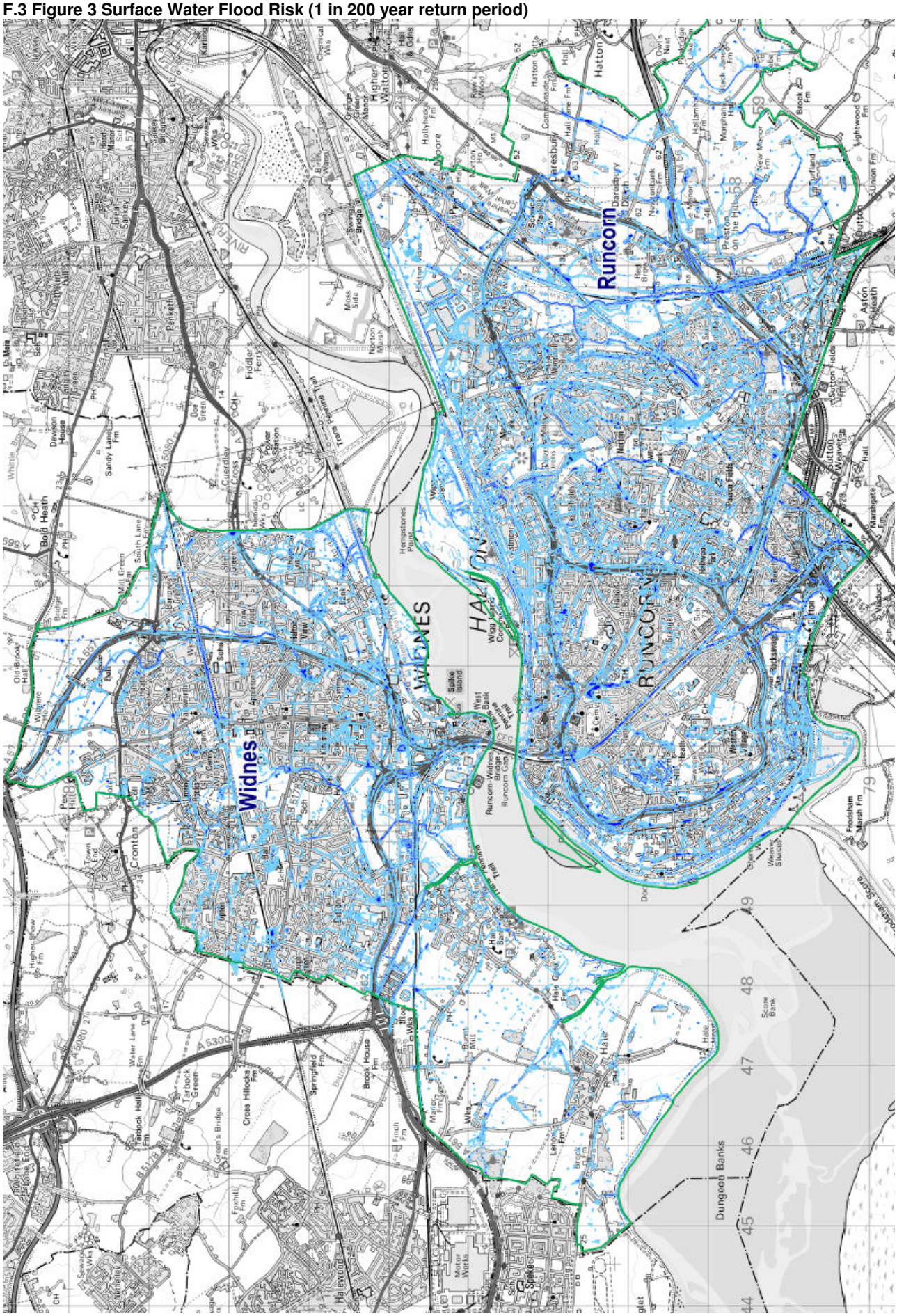
F.1 Figure 1 North West River Basin District



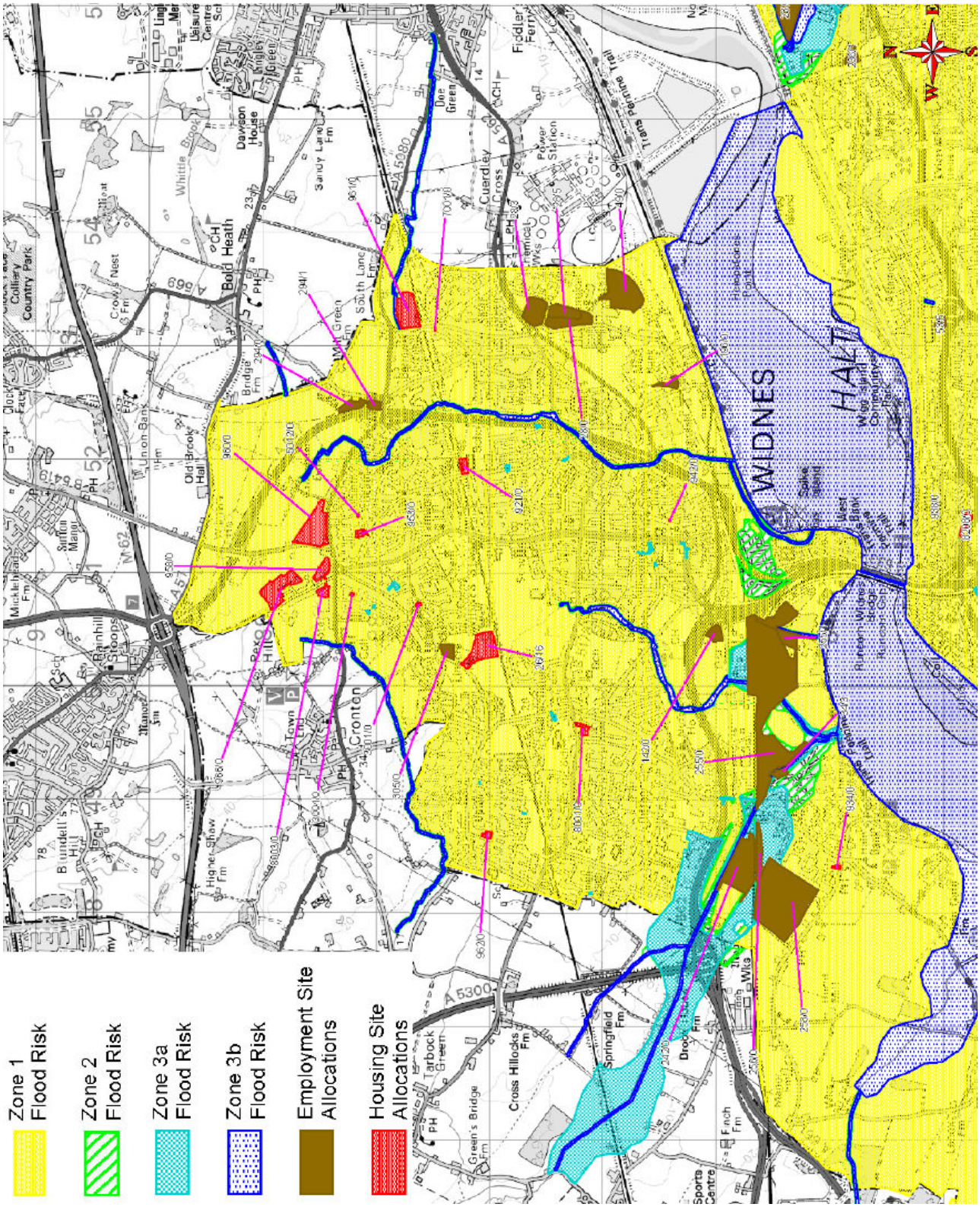
F.2 Figure 2 Areas Susceptible to Ground Water Flooding (Residential)



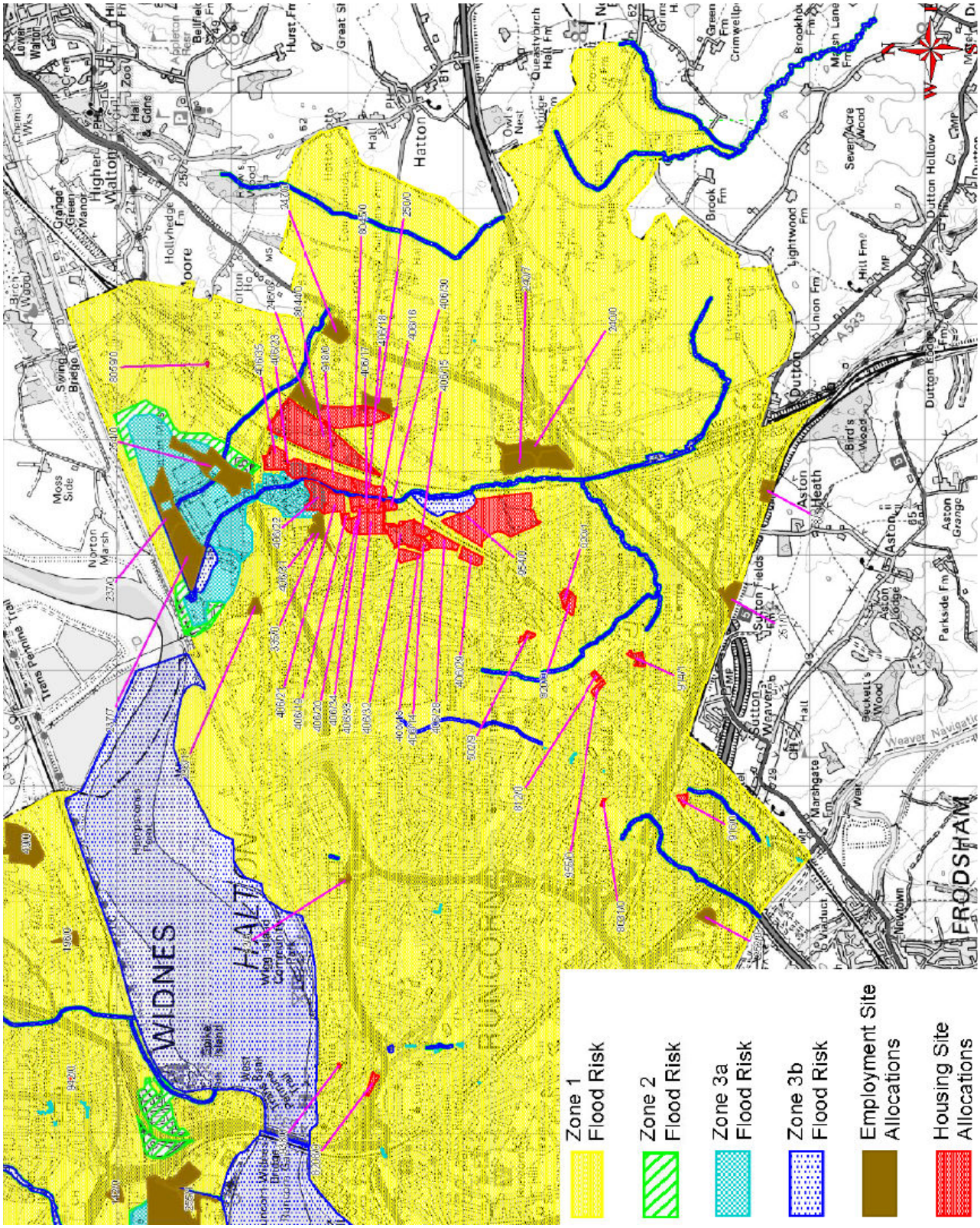
F.3 Figure 3 Surface Water Flood Risk (1 in 200 year return period)



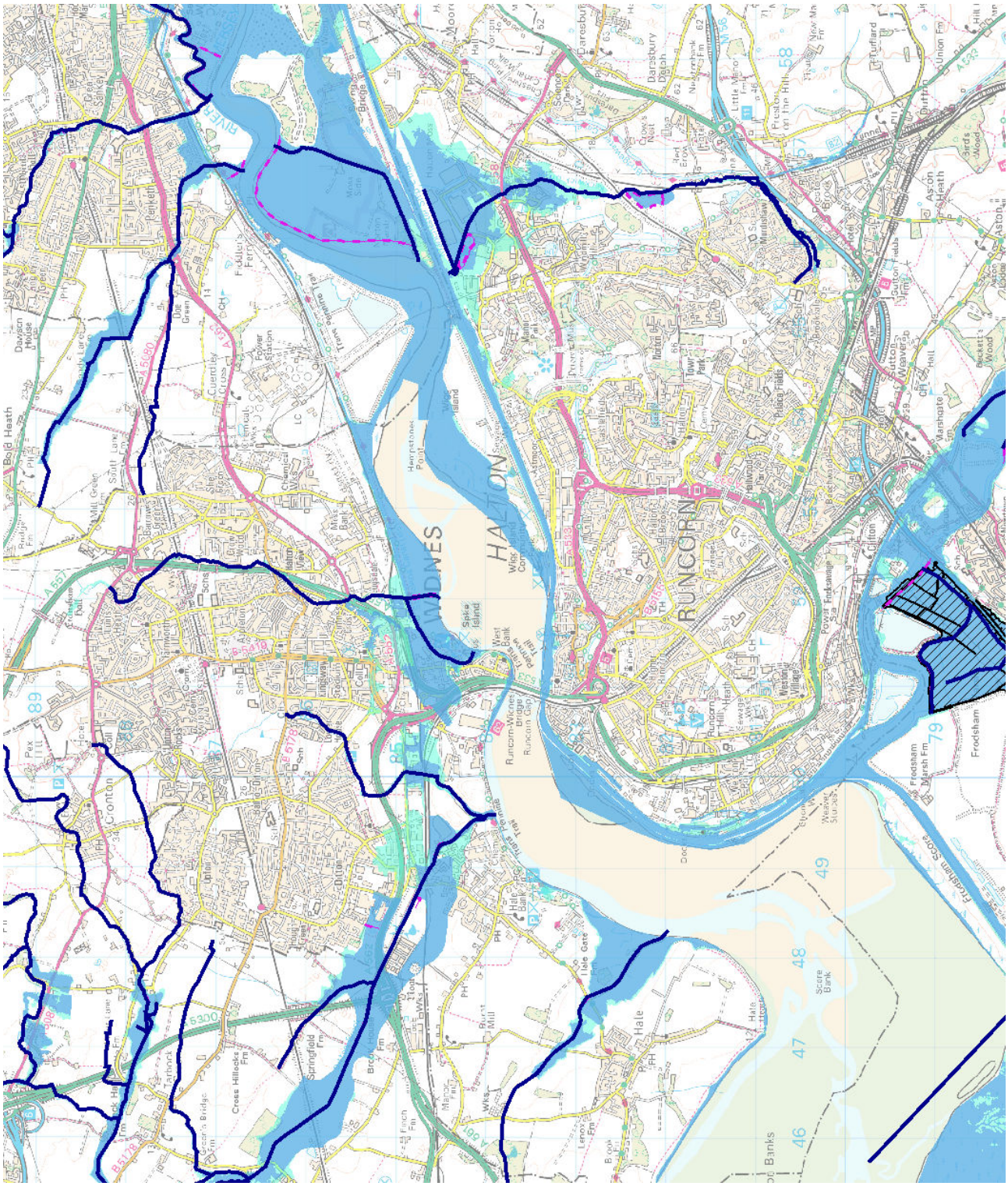
F.4 Figure 4 Places within Flood Risk Thresholds and Future Development Sites (Widnes)



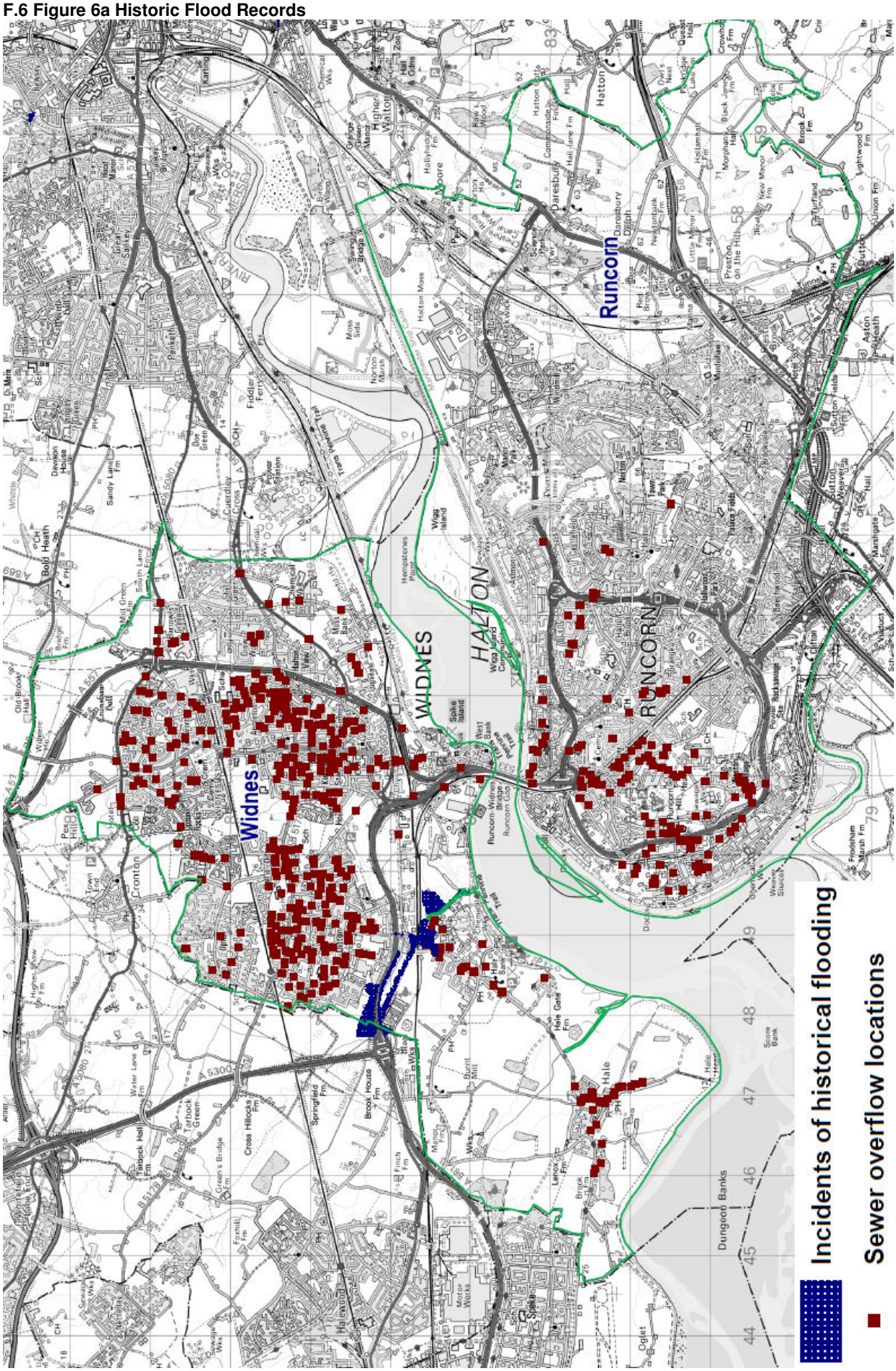
F.4 Figure 4a Places within Flood Risk Thresholds and Future Development Sites (Runcorn)



F.5 Figure 5 Watercourse Flood Risk (Main River)



F.6 Figure 6a Historic Flood Records

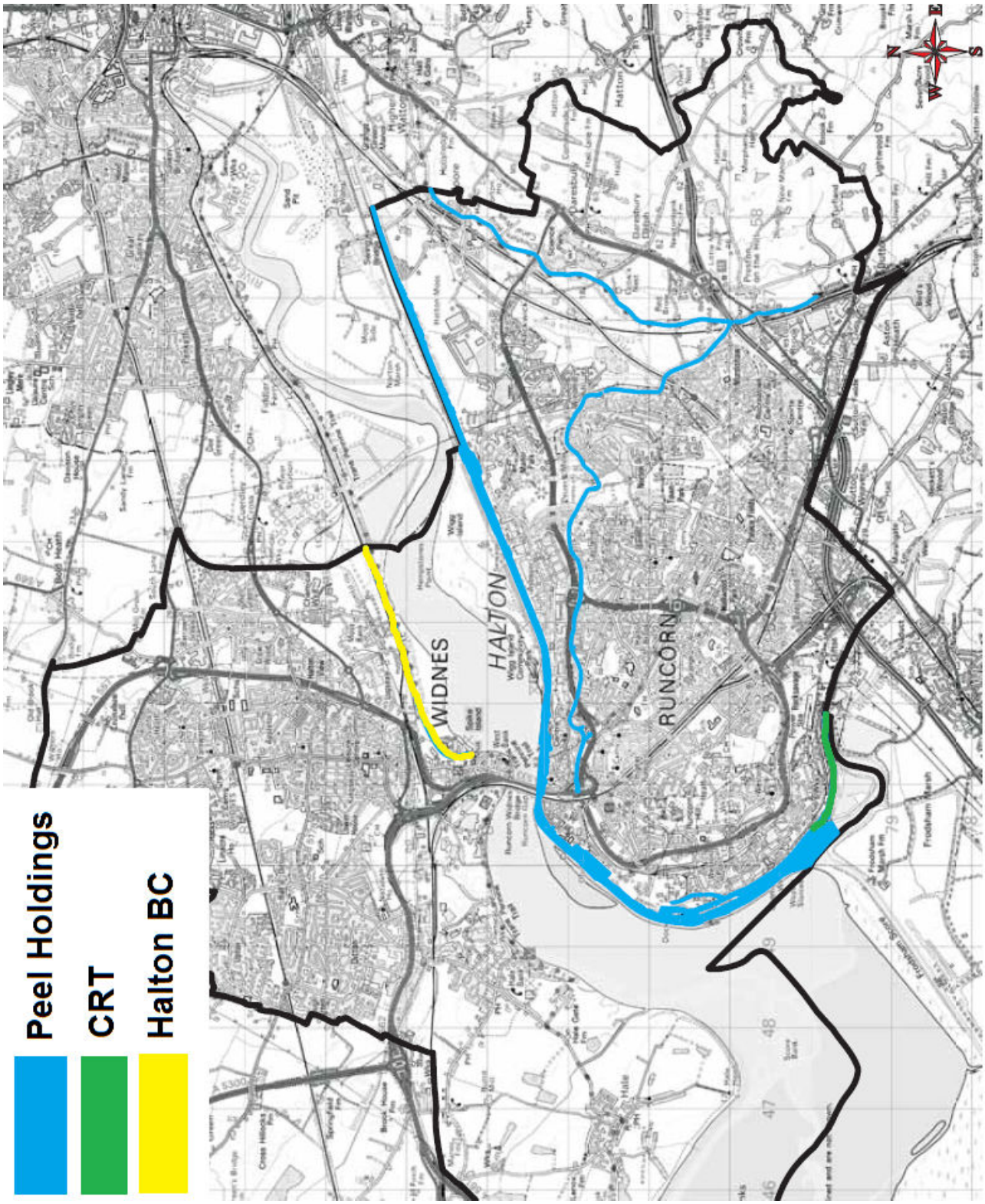


F.6 Figure 6b Flood Records Summary

Halton Borough Council have reviewed and identified that there are no nationally significant or historical local significant flooding incidences within the Borough. There are however instances of repeating flooding indicated in Table 6.1 that the Council are aware of but are not significant in national or local reporting terms but cause transport and economic inconvenience. The PFRA does not cover flooding from Main River watercourses or reservoirs over 10,000m³. However, it is important to realise that Main River flooding through complex interactions that can link and affect surface water, drainage systems, sewers and Ordinary Watercourses. The floods are listed Table 6.1.

Overview	Type	Consequence
Sandymoor including Selby Close, Furness Court, Glastonbury Close and Eastgate Road **10/08/04**	Property & Road	Flooded roads and gardens
Kingsway Estate, Widnes including Milton Street and Mottershead Road **10/08/04**	Property & road	Flooded houses and roads
Possible Groundwater Flooding		
Stenhills Crescent, Runcorn	Internal	Flooded subfloor area
Surface Water Flooding		
Refer to Appendix 1 Figure 3	--	--
Sewer and Drainage Flooding		
Refer to Appendix 1 Figure 6	--	--
Canal Flooding		
Runcorn Road, Moore	Highway	Traffic restriction

F.7 Figure 7 Canals



Appendix 2 – Environment Agency Warning Areas

F.1 Figure 1 – New Flood Alert Warning Signs

	Online flood risk forecast	 FLOOD ALERT	 FLOOD WARNING	 SEVERE FLOOD WARNING	Warning no longer in force
What it means	**Be aware. Keep an eye on the weather situation**	Flooding is possible. Be prepared	Flooding is expected. Immediate action required	Severe flooding. Danger to life	No further flooding is currently expected in your area
When it is used	Forecasts of flooding on our website are updated at least once a day	Two hours to two days in advance of flooding	Half an hour to one day in advance of flooding	When flooding poses a significant threat to life	When river or sea conditions begin to return to normal
What to do	Check weather conditions. Check for updated flood forecasts on our websites	Be pared to act on your flood plan. Prepare a flood kit of essential items. Monitor local water levels and the flood forecast on our website	Move family, pets and valuables to a safe place. Turn off gas, electricity and water supplies if safe to do so. Put flood protection equipment in place	Stay in safe place with a means of escape. Be ready should you need to evacuate from your home. Co-operate with the emergency services. Call 999 if you are in immediate danger	Be careful. Floodwater may still be around for several days. If you've been flooded, ring your insurance company as soon as possible

When they are issued		
Before	**During**	**After**
SFWs should only be issued from a forecast when there won't be time to wait until flooding has begun	Most SFWs should be issued after flooding has already begun	In exceptional circumstances, as flood waters recede, secondary effects such as damaged infrastructure, may justify issuing a SFW

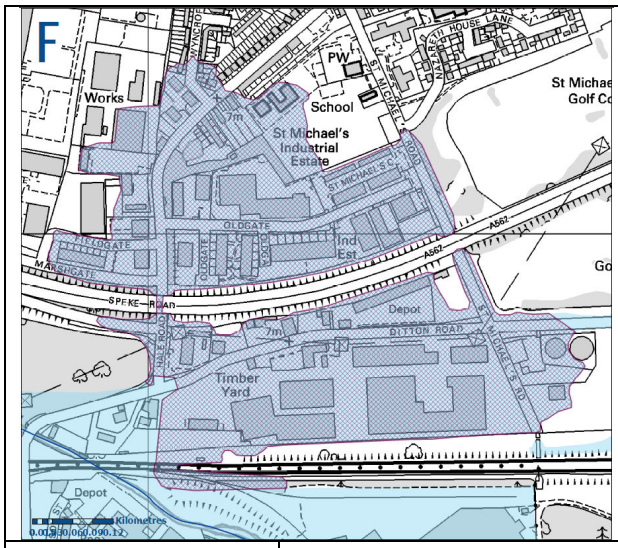
F.2 Figure 2 Flooding Criteria

Criteria 1 - Risk to Life	**Criteria 2: widespread flooding**
• Significant risk to life caused by: • deep and fast flowing water (e.g. caused by significant overtopping of defences or sudden onset flooding from dam/defence failure); • rapid onset of flooding; • presence of debris in the water that could cause death or injury; • potential/observed collapse of buildings/structures; • the vulnerability of the population or their surroundings (e.g. deep/fast flowing water through a caravan park).	• Significant disruption to communities: • likely to affect whole community; • community isolated by floodwaters with no obvious means of escape; • critical resources/infrastructure for communities disabled (e.g. no access to food, water, electricity); • emergency services and authorities unable to cope with large volumes of evacuees and rest centres at full capacity; • mutual aid/military support necessary or called upon.

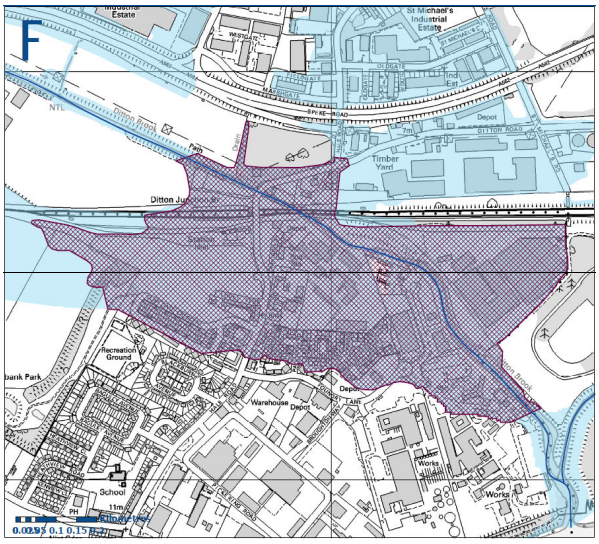
F.3 Figure 3 Existing and Proposed Flood Warning Areas

Overview
Warnings cover 109 properties at risk of flooding from Ditton Brook at Ditton and 278 properties at risk of flooding from Ditton Brook at Halebank. This covers less than 1% of the properties in the Halton Borough Council area. There is potential for more FWAs on Bowers Brook and Keckwick Brook.

Flood Warning Areas



Area	Ditton Brook at Ditton Hale Road, Oldgate, St Michaels Close and Ditton Road, Widnes
Properties Affected	109
Status	In Force



Area	Hale Road, Harrison Street, Lovel Terrace and Clapgate Crescent, Widnes
Properties Affected	278
Status	In Force

Appendix 3 - Consultation

The current list indicates the consultation between partners and Halton Borough Council

Partner	Consultation
Halton Borough Council	The planning department has been consulted to identify areas under pressure from development and the sites, which have been allocated for potential development.
Cheshire Fire and Rescue Service	Consultation was undertaken with the Fire and Rescue Service to identify locations at which they have been involved in flood incident management, records for the last 5 years were provided. Although records are kept beyond the most recent years, records older than 5 years are not readily available due to the method by which this information has been recorded and archived. Future updates to this strategy should consult with the Cheshire Fire and Rescue Service to obtain these records should they become available in the interim period.
Environment Agency	The Borough of Halton lies within the Environment Agency's North West Region and is served by the South Area office which is based within Richard Fairclough House, Warrington. The Development Control and Flood Risk Mapping and Data management teams have been consulted to obtain information on sources of flood risk, hydraulic modelling, flood defences and flood warning as well as to discuss future sustainable flood risk management and mitigation measures.
United Utilities	The sewage infrastructure in Halton is largely based on Victorian sewers and there is a risk of localised flooding associated with the existing drainage and sewer system. The drainage system may be under capacity and/or subject to blockages resulting in localised flooding of roads and property. United Utilities is responsible for the management of the urban drainage system throughout Halton including surface water and foul sewage. United Utilities take the issue of surface and foul water flooding very seriously and have invested £52 million over recent years to reduce flooding from these sources in the North West.
Canal and River Trust	The Canal and River Trust has been consulted to obtain information on their assets located on the Weaver Navigation Canal. . The map in figure F7 shows the Canal and River Trust Land Ownership (shown in green) on the Weaver Navigation Canal. The extent of the St Helens Council canal that is owned and maintained by British Waterways is limited. The length that runs through the borough is owned by Halton Borough Council. This is because many areas of the canal have been filled in. These unnavigable stretches are maintained by the Council and are shown in yellow on the map.
Peel Holdings	Peel Holdings owns the Bridgewater canal and the Manchester Ship Canal. Peel Holdings has consulted Halton Borough Council regarding the ownership of surface water outfalls that discharge into the Bridgewater Canal.
Neighbouring Planning Authorities	Neighbouring planning authorities have been consulted to identify potential upstream developments and watercourses that are likely to cause increased flood risk to the borough. The Borough of Halton has boundaries with five other Local Planning Authorities (LPSs) the impact of developments within two of these LPA areas on flood risk through Halton Borough Council is significant. Watercourses from the boroughs of St Helens, Knowsley and Warrington discharge through Halton into the River Mersey.

Partner	Consultation
Upstream Authorities	The LPAs of Knowsley, St Helens and Warrington are all located on the upstream boundaries with Halton Borough Council, The impact of upstream developments in these authority boundaries is considered significant. There is some watercourse interaction between the Boroughs of Halton Borough Council and Knowsley from Alder Brook.
Downstream Authorities	The remaining LPAs that shares its common boundary with Halton Borough Council is Liverpool.. Within Halton Borough Council, There are no areas identified for potential development and the impact to Halton is considered minimal. With appropriate development control and management of surface water discharge from new developments any impacts should be negligible Although there are potential impacts to flood risk associated with upstream development, appropriate development control and planning process should ensure that there is not an increase in flood risk elsewhere as a result of development to a specific site. The Environment Agency should be consulted during this process.
Summary	Halton Borough Council have reviewed and identified that there are no nationally significant or historical local significant flooding incidences within the borough. There are however instances of flooding that are not significant, which the Council are aware of. It has been found that the main source of flood risk through the Borough of Halton is associated with fluvial flooding from Keckwick Brook and Ditton Brook including its tributaries. The areas most affected by fluvial flooding in Halton are: • Hale Gate Road, Widnes • Glastonbury Close, Runcorn Surface water flooding is the secondary source of flood risk which is supported by information collected from Halton Borough Council, United Utilities and Cheshire Fire and Rescue Service. The Council has identified that significant surface water flooding occurs in the areas of Kingsway, Widnes. United Utilities identified that the locations of flooding events to property, external and internal, concentrated mainly in the older properties located in north Widnes and Higher Runcorn. The numbers of properties that are listed in the United Utilities data, internal and external flooding, are not significant. The largest potential flood risk across the Borough is that of Wharford Farm reservoir from a failure of the structure during impounding. Should a failure occur there is low potential for loss of life but significant potential for economic damage to downstream assets and property. The likelihood of this event is minimal however due to the appropriate inspections and maintenance undertaken by Halton Borough Council under the Reservoirs Act 1975.

Appendix 4 – Halton Borough Council Sandbag Policy

Flood Defence Resources (Sandbag) Policy

Halton Borough Council Highways Department will be responsible for maintaining adequate stocks for flood defence at the historically agreed levels, and will monitor the adequacy and levels of stock as required by flood incidents.

Resources for Deployment:

The Highways Term Maintenance Contractor will deploy flood defence equipment/stocks under instruction by designated Council officers/staff.

Sandbags:

Highways hold stocks of sandbags for immediate deployment at the following locations;

- Picow Farm Road Depot, Runcorn – in one of two containers within a part of the Bridges store.
- Lower House Lane, Widnes – within the grit storage compound is a steel container filled with sandbags.

Highways sandbag stocks will be maintained at the agreed level of 1,500 and will be split between Runcorn and Widnes.

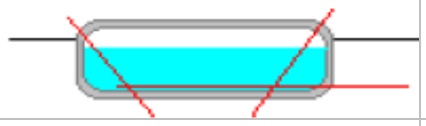
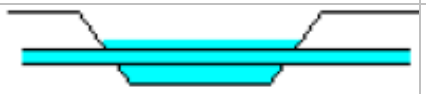
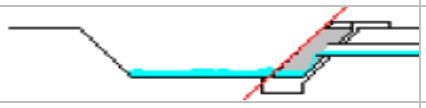
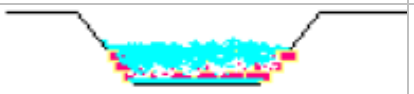
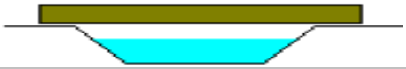
Previous policy regarding sandbag provision was to the effect that up to ten sandbags would be provided free of charge to Halton residents or businesses, on a request from them during a Flood Alert. It is proposed to continue with this historical policy. Once sandbags were deployed to premises, the property owners would be responsible for their removal. HBC would not return used sandbags to store (due to potential contamination concerns), or dispose of them unless there was a specific valid request e.g. disability of homeowner.

Floodgates:

A stock of “Floodgates” is held by Highways and at present they are located at Picow Farm Road depot.
Highways staff will instruct residents how to fix the Floodgates when residents request them. Equipment remains the property of HBC and will be on loan to residents requesting them. Residents will be asked to keep the Floodgates in a safe and proper location to maintain their condition, and to sign for receipt of them. Items returned damaged by residents may incur repair costs.

Before Floodgates are issued to properties at risk, Highways staff are to visit the premises to ascertain the suitability of the premises for Floodgate protection. (Some properties are not suitable for Floodgate protection without modification.)

Appendix 5 – Consents Samples & Enforcement Procedure

Pipe Culvert (including extension and removal of) Consent Required		Under Section 23 1(b)
Oversized Box Culvert (including extension and removal of)- Consent Required		Under Section 23 1(b).
Trash Screens as it is an alteration to a culvert and has the potential to obstruct flow. Consent Required		---
Bank Protection Works (Temporary works may require consent). Not Consentable		Under LDA 91
Pipe Crossing (in channel) Consent Required		Under Section 23 1(a)
Pipe Crossing (above bank) as it does not interfere with flow. Not Consentable		Under LDA 91
Pipe Crossing (below bed) as it does not interfere with flow – Potential temporary works consent. Not Consentable		Under LDA 91
Protruding Pipe Outfall as it will not act like a dam/weir or like obstruction. Not Consentable		Under LDA 91
Outfall within Bank profile – as it does not interfere with flow – Potential temporary works consent. Not Consentable		Under LDA 91
Weir/Dam or impoundment or temporary works that obstruct flow Consent Required		Under Section23 1(a)
Bridge (where soffit level is below bank top level) if it has the potential to affect flow. Consent Required		Under Section 23 1(a)
Bridge (abutments protruding but not reducing flow area/width) Not Consentable as does not interfere with flow.		Under LDA 91
Bridge (Abutments restricting flow) or Flume Consent Required		Under Section 23 1(b)
Clear span bridge as it does not interfere with flow Not Consentable		---
Bridge with support in channel as it will not act like a dam/weir or like obstruction Need to consider size of pier against size of watercourse, but would want to discourage the use of a pier in the watercourse. Not Consentable		Under LDA 91

Appendix 6 – Risk Management Implementation Timeframe

	Action	FWMA 2010 Enactment	Short	Target	Medium	Target	Long	Target
1	Local Strategy Identify roles and functions of flood risk management authorities. Measures to be implemented to manage risk. Cost and benefits of the measures impacts of climate change.	Effective	Draft with onwards development gaps	Dec 2012	Draft Complete	Oct 2013	Publication	Mar 2014
2	Asset Register Create and publish a register of assets with a flood risk management function. Determine ownership and state of repair of identified assets.	Effective	Set up database for initial asset	Dec 2012	Populate Significant Assets, Collect Known Assets	Dec 2013	Develop register following investigations /incidents	Ongoing
3	Consenting / Enforcing Approval of works affecting Ordinary Watercourses. Enforcement actions against unapproved works.	April 2012	Develop skill knowledge	Dec 2011	Introduce Consenting Procedure	April 2012		April 2013
4	SuDS Assess, consult and approve drainage plans for new developments. Adopt and maintain SuDS approved by the SAB to national standards.	April 2014 (anticipated)	Develop skill knowledge	Dec 2013	Develop procedure, establish SAB	Dec 2013	Introduce/ approve plan for new develop-ments	Mar 2014
5	Reporting Procedure	Effective	Introduce procedure report format to contact centre	Nov 2011		Nov 2011		Nov 2011
6	Investigations Investigation of flood incidents from local sources to determine whenever management authorities have performed their relevant function. Publication of findings Set-up partnership working arrangements. Provide information to EA if requested. Issued enforcement notices and pursue civil sanctions if request for information are ignored.	Effective	Introduce Investigation procedure	Nov 2011		Nov 2011		Nov 2011
7	Designation (3rd party asset) Designation of assets with a flood management function to prevent alteration or removal by the owners or others.	April 2012						
8	Reservoirs Designate high risk reservoirs. Preparation of a flood plan by the owner to give information on the area.	Subject to enactment			Commence identifying assets	June 2012	Evaluate risk Designate High Risk Reservoirs Owner requested to produce flood plan	Nov 2012 Nov 2013 Nov 2013

Appendix 7 – Preliminary Maintenance and Works Programme

Draft Works Programme

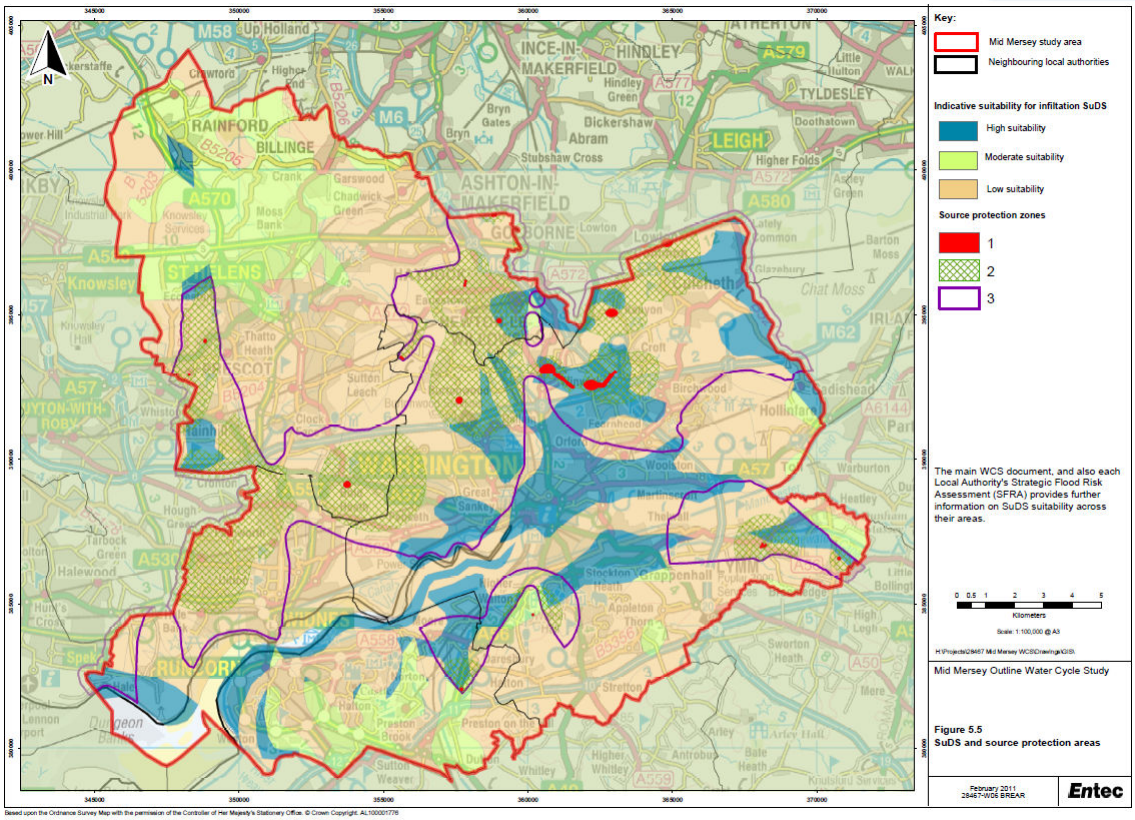
Location	Problem	Potential Cause	Potential Solution (Medium Term)	Long Term or Additional Works	Responsible Authority	Possible Funding
Peel House Lane & St. Anne's Road, Widnes	Flash flooding to properties SW runoff	Overflows from surface water drainage system	Improve property flood resilience Confirm capacity and condition of installed attenuation tank	Local drainage system Improvements Remodel ground levels	Halton Borough Council	Halton Borough Council FDGiA grant
Compass Close, Runcorn	Flooding in low point in Compass Close will inundate surrounding houses	Threshold levels below surrounding ground levels in some cases	Prioritise gully cleaning Improve property flood resilience FDGiA funding granted in 2012/13 MTP	Remodel existing ground levels	Halton Borough Council	Halton Borough Council FDGiA grant
Kingsway & Milton Road, Widnes	Flash flooding to properties	Police Station and Leisure Centre (Loading Bay) have minimal thresholds and will be affected by highway flooding	Improve property flood resilience	Remodel existing ground levels to divert flow away from buildings	Halton Borough Council	Halton Borough Council FDGiA grant Halton Housing Trust
Brynn Street & Quinn Street, Widnes	Flooding in low point at junction between Brynn Street and Quinn Street	Topography of development	Prioritise gully cleaning Improve property flood resilience	Remodel existing ground levels	Halton Borough Council	Halton Borough Council FDGiA grant Halton Housing Trust
Fairhaven Road, Widnes	Flash flooding to properties	Overflows from surface water drainage system and manhole at bottom of dip in road overflows	Local drainage system improvements Improve property flood resilience	Remodel ground levels	Halton Borough Council	Halton Borough Council RFCC
Cradley & Radnor Drive, Widnes	Potential SW flooding of school and neighbouring properties	Topography of development	Develop hydraulic model to map SW flooding of school and neighbouring properties	Full detail study required	Halton Borough Council	Halton Borough Council RFCC
Castlefields Avenue South, Runcorn	Flash flooding to properties from adjacent highway	Houses adjacent to steep embankment with thresholds <50mm	Improve property flood resilience	Remodel existing ground levels	Halton Borough Council	Halton Borough Council Environment Agency

Location	Problem	Potential Cause	Potential Solution (Medium Term)	Long Term or Additional Works	Responsible Authority	Possible Funding
Bridgeway & Lockgate, Runcorn	Flash flooding to properties from highway SW runoff	Houses adjacent to embankment with 180mm thresholds Topography of development	Improve property flood resilience FDGiA allocation in 2013/14 for investigation/study	Local drainage system Improvements Remodel ground levels	Halton Borough Council	Halton Borough Council FDGiA grant
Mottershead Road & Milton Road, Widnes	Flash flooding to properties	Flow paths around buildings channel water into properties	Improve property flood resilience FDGiA funding granted in 2012/13 MTP – 4 properties protected	Remodel existing ground levels	Halton Borough Council	Halton Borough Council Environment Agency
Bradley Way, Widnes	Flash flooding to properties	Deep flooding likely to affect buildings with thresholds up to 500mm	Improve property flood resilience	Remodel existing ground levels	Halton Borough Council	Halton Borough Council Environment Agency
Halton Lea, Runcorn	Flash flooding to properties	Threshold levels of plant room facilities of commercial properties likely to be affected by flooding	Inform property owners	Remodel existing ground levels	Halton Borough Council	Halton Borough Council Environment Agency
Cow Hey Lane, Runcorn	Flash flooding to properties	Low building threshold levels	Confirm building threshold levels	Improve property flood resilience Remodel ground levels	Halton Borough Council	Halton Borough Council Environment Agency

Draft Maintenance Programme

Asset	Acton	Status	Solution Medium Term	Solution Long Term or Additional Works	Authority	Possible Funding
Gully Cleansing	Regular gully cleansing aligned to SW Risk Maps and S38 adoptions	Actioned	Programme continually reviewed and amended	Risk based system of maintenance	Halton Borough Council	Halton Borough Council
Culvert Screens	Regular inspection of culvert screens at high risk locations identified from previous flood incidents	Programme developed from historical knowledge and results from culvert blockage sensitivity testing	Programme continually refined as asset management registers develop	Intelligence and risk based system of maintenance Replacement of screens identified as deficient	Halton Borough Council	Halton Borough Council
Asset Inspection	Regular inspection of assets at high risk locations identified from SWMP	High risk locations identified from SWMP	Programme frequency and locations refined as asset management registers develop	Riparian land owners will require identifying	Halton Borough Council	Halton Borough Council

Appendix 8 – Areas in Halton Suitable for SuDS



Appendix 9 – Abbreviations and Definitions

Abbreviations

Item	Description
ABI	Association of British Insurers
ADA	Association of Drainage Authorities
AStSWF	Areas Susceptible to Surface Water Flooding
BAP	Biodiversity Action Plan
CIRIA	Construction Industry Research and Information Association
CLA	Country Land and Business Association
CLG	Department of Communities and Local Government
CFMP	Catchment Flood Management Plan
COMAH	Control of Major Accident Hazards
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
FMfSW	Flood Map for Surface Water
FWMA	Flood and Water Management Act 2010
FRA	Flood Risk Assessment
GHG	Greenhouse Gases
IUD	Integrated Urban Drainage
IDB	Internal Drainage Board
LGA	Local Government Association
LDF	Local Development Framework
LLFA	Lead Local Flood Authority
LoSA	Level of Service Agreements
LPA	Local Planning Authority
LRF	Local Resilience Forum
MoU	Memorandums of Understanding
NRD	National Receptor Database
NFU	National Farmers Union
RFCC	Regional flood and coastal committee
PPS25	Planning and Policy Statement 25: Development and Flood Risk
PFRA	Preliminary Flood Risk Assessment
PPC	Pollution Prevention Control
PPS	Planning Policy Statement
RBD	River Basin District
RFDC	Regional Flood Defence Committee
RSPB	Royal Society of the Protection of Birds
SA	Sustainability Appraisal
SAB	SuDS Approving Body
SAC	Special Areas of Conservation
SCI	Statement of Community Involvement
SEA	Strategic Environmental Assessment
SMP	Shoreline Management Plan
SFRA	Strategic Flood Risk Assessment
SSSI	Site of Specific Scientific Interest
SPA	Special Protocol Area
SPD	Supplementary Planning Document
SuDS	Sustainable Urban Drainage Systems
SWMP	Surface Water Management Plan
WMS	Water Management Statement
UU	United Utilities

Definitions

Item	Description
Assets	Structures or a system of structures used to manage flood risk.
Attenuation	Reduction of peak flow and increased duration of a flow event.
Balancing pond	A pond designed to attenuate flows by storing runoff during the peak flow and releasing it at a controlled rate during and after the peak flow has passed. The pond always contains water. Also known as wet detention pond.
Basin	Flow control or water treatment structure that is normally dry.
Bioretention area	A depressed landscaping area that is allowed to collect runoff so it percolates through the soil below the area into an under drain, thereby promoting pollutant removal.
Building Regulations	The UK Building Regulations are rules of a statutory nature to set standards for the design and construction of buildings, primarily to ensure the safety and health for people in or around those buildings, but also for purposes of energy conservation and access to and about other buildings
Catchment	The area contributing surface water flow to a point on a drainage or river system. Can be divided into sub-catchments.
Climate Change	Any long-term significant change in the “average weather” that a given region experiences. 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
Deposition	The process whereby sediment is placed on the sea bed, shoreline, river bed or floodplain.
Detention basin	A vegetated depression, normally dry except after storm events constructed to store water temporarily to attenuate flows. May allow infiltration of water to the ground.
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	It 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. The Agency has principle responsibility for river (fluvial) flooding.
Evapotranspiration	The process by which the Earth's surface or soil loses moisture by evaporation of water and by uptake and then transpiration from plants.
Filter drain	A linear drain consisting of a trench filled with a permeable material, often with a perforated pipe in the base of the trench to assist drainage, to store and conduct water, but may also be designed to permit infiltration.
Filter strip	A vegetated area of gently sloping ground designed to drain water evenly off impermeable areas and filter out silt and other particulates.
Flood	A temporary rise of the water level, as in a river or lake or along a seacoast, resulting in its spilling over and out of its natural or artificial confines onto land that is normally dry. Floods are usually caused by excessive runoff from precipitation or snowmelt, or by coastal storm surges or other tidal phenomena,
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 nonstructural (e.g. land use planning, early warning systems).
Floodplain	Land adjacent to a watercourse that would be subject to repeated 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 Infrastructure	The network of land and water that is made up of green spaces and natural elements.
Green roof	A roof with plants growing on its surface, which contributes to local biodiversity. The vegetated surface provides a degree of retention, attenuation and treatment of rainwater, and promotes evapotranspiration.
Grey water	Wastewater from sinks, baths, showers and domestic appliances. A Grey water system captures this water before it reaches the sewer (or septic tank system).
Groundwater	Water that is below the surface of ground in the saturation zone.
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	The passage of surface water though the surface of the ground or the entry of groundwater to a sewer.
Infiltration device	A device specifically designed to aid infiltration of surface water into the ground.
Infiltration trench	A trench, usually filled with stone, designed to promote infiltration of surface water to the ground.
Material Consideration	A legal term describing a matter or subject which is relevant (material) for a local authority to consider when using its powers under planning law in dealing with a planning application.
Model agreement	A legal document that can be completed to form the basis of an agreement between two or more parties regarding the maintenance and operation of sustainable water management systems.

Operating Authorities	Anybody, including the Environment Agency, Internal Drainage Boards, County Councils and Local Authorities, who have powers to make or maintain works for the drainage of land.

Item	Description
Ordinary Watercourses	Any watercourse that does not form part of a Main River.
Permeability	A measure of the ease with 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 generally located below ground to conduct water to a suitable location for treatment and/or disposal.
Pluvial Flooding	Flooding that results from rainfall generated overland flow before the runoff enters any watercourse or sewer. It is usually associated with high intensity rainfall events. Also referred to as surface water flooding.
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.
Pond	Permanently wet basin designed to retain stormwater and permit settlement of suspended solids and biological removal of pollutants.
Porous paving	A permeable surface allowing the passage of water through voids within, rather than between, the paving blocks / slabs.
Porous surface	A surface that infiltrates water to the sub-base across the entire surface of the material forming the surface, for example grass and gravel surfaces, porous concrete and porous asphalt.
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. Reservoirs can be used for irrigation, recreation, providing water supply for municipal needs, hydroelectric power or controlling water flow.
Residual Risk	The Risk that remains after risk management and mitigation measures have been implemented.
Resilience	The ability of the community, services, area or infrastructure to withstand the consequences of an incident.
Return Period	Also known as a recurrence interval is an estimate of the interval of time between events, in the instance of a 1 in 200 year storm the probability is 0.005%, however it does not mean that it will occur once, multiple instances of the same event can occur in each year.
Risk	Measures the significance of a potential event in terms of likelihood and impact. In the context of the Civil Contingencies Act 2004, the events in question are emergencies
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.
Runoff	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	The Sequential test (Annex D of PPS25) advocates that planners use a sequential test when considering land allocations for development to avoid flood risk where possible.
Sewer	A pipe or channel taking domestic foul and/or surface water from buildings and associated paths and hardstandings 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	A guide agreed between sewerage undertakers and developers (through the House Builders Federation) specifying the standards to which private sewers need to be constructed to facilitate adoption.
Significant	Defined threshold of flooding consequence.
Soakaway	A subsurface structure into which surface water is conveyed to allow infiltration into the ground.
Source control	The control of runoff or pollution at or near its source.
Stormwater	Rainwater that runs off impervious surfaces and into storm drains rather than being absorbed into the soil.
Sub-catchment	A division of a catchment, allowing runoff management as near to the source as is reasonable.
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.
Swale	A shallow vegetated channel designed to conduct and retain water, but may also permit infiltration; the vegetation filters particulate matter.
Treatment	Improving the quality of water by physical, chemical and/or biological means.
Wastewater	This is 'used' water arising from homes and businesses and includes water from sinks, toilets, bathtubs, washing

	machines and dishwashers – any water 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.

Appendix 10 – Principle Contact Numbers

Emergency Authorities	Address	Web Address
Cheshire Police	Oakmere Road, Winsford Tel: 01244 350 000	www.cheshire.police.uk
Cheshire Fire and Rescue Service	Headquarters, Winsford Tel: 01606 868700	www.cheshirefire.gov.uk
Cheshire and Merseyside Ambulance Service	Elm House, Belmont Grove, Anfield, Liverpool, Tel: 0151 260 5220	www.nwas.nhs.uk
Scottish Power Manweb	Tel: 0845 272 2424	http://www.scottishpower.com
Transco	Tel: 0800 111 999	http://www.nationalgrid.com/uk
United Utilities	Leaks: 0800 330033, Water Supply: 0845 746 2200	http://www.unitedutilities.com
Environment Agency	Emergencies (24-hour) Tel: 0800 807 060	http://www.environment-agency.gov.uk
Flood line	(24-hour) Tel: 0845 988 1188	http://www.environment-agency.gov.uk

References

- Civil Contingencies Act 2004: www.legislation.gov.uk/ukpga/2004/36/contents
- Environment Act 1995: www.legislation.gov.uk/ukpga/1995/25/contents
- Flood and Water Management Act 2010: www.legislation.gov.uk/ukpga/2010/29/contents
- Flood Risk Regulations 2009: www.legislation.gov.uk/uksi/2009/3042/contents/
- Land Drainage Act 1991 1991: http://www.legislation.gov.uk/ukpga/1991/59/contents
- Water Resources Act 1991: http://www.legislation.gov.uk/ukpga/1991/57/contents
- Catchment Flood Management Plans: www.environment-agency.gov.uk/research/planning/33586.aspx
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