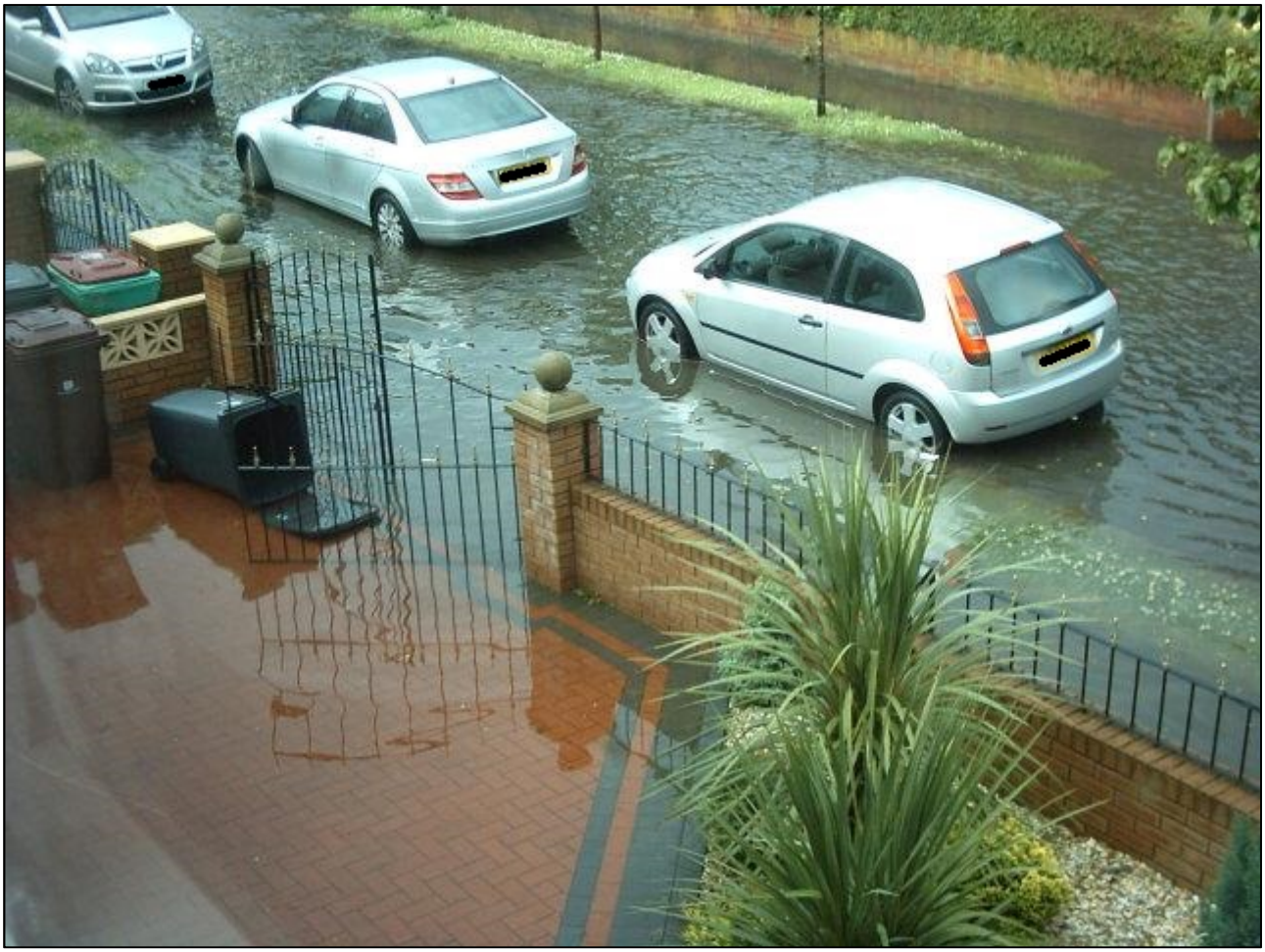
Knowsley Council

Knowsley Metropolitan Borough Council

Local Flood Risk Management Strategy

October 2017



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Foreword

The Flood and Water Management Act 2010 introduced a range of new powers, duties and responsibilities. It made Knowsley Council a Lead Local Flood Authority with responsibility for managing 'local flood risk', which is the risk of flooding from surface water, groundwater or from ordinary watercourses in Knowsley. One of the new duties placed upon Knowsley is to 'develop, maintain, apply and monitor' a Local Flood Risk Management Strategy.

It therefore gives me pleasure to introduce this Strategy, which provides an overview and assessment of local flood risk in Knowsley, setting out objectives and measures for how Knowsley Council will manage and reduce local flood risk. To ensure that the Strategy remains relevant and fit for purpose it will be regularly reviewed and updated as necessary

This Strategy will help people to understand and manage flood risk, and it is therefore relevant for anyone who lives, works, visits, invests or does business in Knowsley. It is also of relevance to all authorities with flood risk management responsibilities by ensuring that there is a common understanding of roles and responsibilities.

I hope that everyone with an interest in this important subject matter will work with us to manage and reduce local flood risk in Knowsley.

Councillor Brian O'Hare
Cabinet Lead Member
Regeneration and Economic Development

Councillor Terry Byron
Cabinet Lead Member
Resources

1. Introduction to Knowsley

The Metropolitan Borough of Knowsley is situated between Liverpool to the west and St.Helens to the east. To the northwest lies Sefton, to the north east lies West Lancashire and to the south lays Halton.

Knowsley covers an area of 8,620 hectares of which 49% is designated as Greenbelt and it contains the urban centres of Kirkby, Prescot and Huyton along with the smaller urban areas of Whiston, Halewood, Cronton, Knowsley Village and Stockbridge Village.

The current population stands at around 147,915; over the last 20 years the population has fallen, but the rate of decline has been slowing. Government projections suggest that the Borough's population will rise to around 149,000 by 2028.

It has a well-connected transport system with both rail and motorway links to the main national networks.

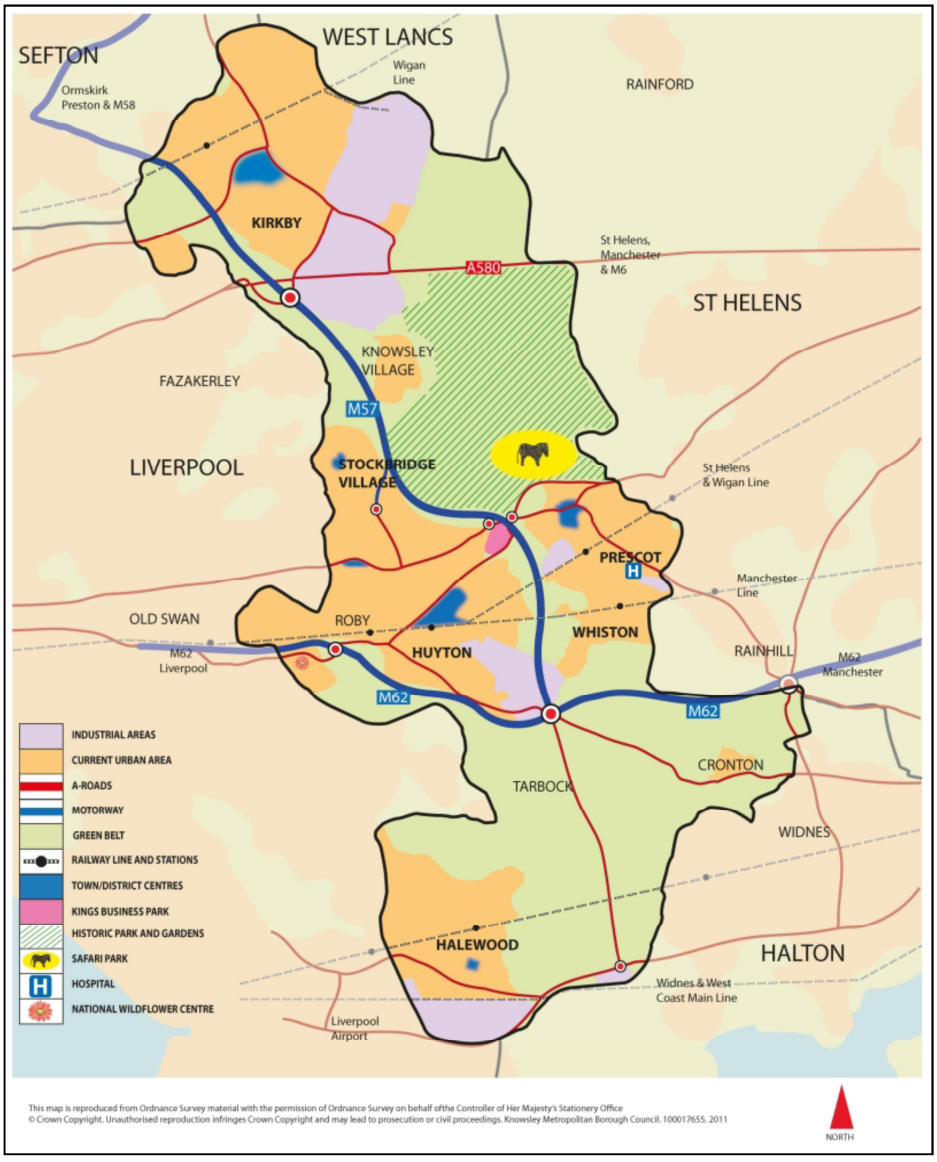

Figure 1: Knowsley Borough and its surrounding area.

1.1 Types of Flooding

There are five key types of flooding which are described in more detail below:-

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.

Surface water flooding (Pluvial)

This occurs, for example, when rainwater does not drain away through the normal drainage system, or does not soak into the ground, but lies on or flows over the ground instead. This type of flooding can be difficult to predict and pinpoint, much more so than river flooding.

Sewer Flooding

This can happen when sewers are overloaded 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 and ditches.

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. These are permeable rocks that water can soak into or pass through.

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 and cause flooding.

1.2 Legislative Background to Managing Flood Risk

Following the severe flooding in 2007, Sir Michael Pitt was commissioned by Government to review the response to flooding by the responsible parties. His resulting report, 'The Pitt Review', set out 92 key recommendations for improving flood risk management.

The Government accepted these recommendations and announced its intention to introduce new legislation to improve flood risk management in England. Fundamentally, the following two pieces of legislation have created clearer roles and responsibilities for bodies that manage flood risk and instilled a more risk based approach to managing that risk:-

- **Flood Risk Regulations (FRR) 2009**

  These regulations transposed the EU Floods Directive into UK law and made County and Unitary Councils Lead Local Flood Authorities (LLFAs), with primary responsibility for managing local flood risk. Additionally, they imposed duties on the risk management authorities to co-operate to:-

  - Prepare preliminary assessment reports about past floods and identify areas of significant risk.
  - Prepare flood risk maps and flood hazard maps for any areas identified as having a significant risk of flooding.
  - Prepare flood risk management plans, to include objectives for managing the flood risk and proposals for how this will be achieved.

- **Flood & Water Management Act (FWMA) 2010**

  This Act aims to improve both flood risk management and the way water resources are managed. It creates clearer roles and responsibilities and instils a more risk-based approach. There is a new lead role for local authorities in managing local flood risk and a strategic overview role for all flood risk for the Environment Agency.

Additionally, the following legislation also relate to the management of flood risk:-

- **Highways Act 1980**

  Section 41 requires the Council as Highway Authority to maintain the highway at public expense. In particular, a highway authority is under a duty to ensure, so far as is reasonably practicable, that safe passage along a highway is not endangered by snow or ice. A legal test case has determined that this also includes flood water.

- **Water Resources Act 1991**

  This outlines the roles and responsibilities of the National Rivers Authority. Subsequently, in 1995 the Environment Agency took over the roles and responsibilities of the National Rivers Authority and responsibility for issuing flood warnings.

- **Land Drainage Act (LDA) 1991 (as amended by the FWMA 2010)**

  This outlines the duties and powers to manage land drainage for a number of bodies including internal drainage boards and local authorities. On 6th April 2012, Schedule 2 (Sections 31, 32 and 33) of the FWMA amended the Land Drainage Act 1991 and transferred powers for the regulation of ordinary watercourses to the Council as the Lead Local Flood Authority (LLFA).

The powers of the LLFA to regulate ordinary watercourses broadly consist of two elements; the issuing of consents for any changes to ordinary watercourses that might obstruct or alter the flow of an ordinary watercourse, and enforcement powers to rectify unlawful and potentially damaging work to a watercourse.

- **Town & Country Planning (Development Management Procedure) (England) Order (DMPO) 2015**

  In April 2015 planning legislation was amended to make LLFA's statutory consultees for all major development proposals with surface water implications during the planning process.

  The Environment Agency is a statutory consultee for major development proposals within Flood Zone 2 and Flood Zone 3, and for developments in Flood Zone 1 within an area defined by the Agency as having critical drainage problems.

- **Other legislation and policy:**

  Flood risk management is affected by a range of other national and local legislation, policies, standards and non-statutory plans, the most significant of which are listed below:-

  - The National Planning Policy Framework (NPPF)
  - House of Commons Written Statement on Sustainable Drainage (HCWS 161)
  - The Planning Practice Guidance (PPG)
  - Defra's Technical Standards for Sustainable Drainage
  - The Climate Change Act (2008)
  - The Conservation of Habitats and Species Regulations (2010) (as amended)
  - The Civil Contingencies Act (2004)
  - The Strategic Environmental Assessment (SEA) Directive (2001)
  - Habitats Regulations (2010) (as amended)

1.3 National Strategy for Managing Flooding

The development of flood risk management (Flood and Coastal and Erosion Risk Management - FCERM) policy is led by the Department for Environment, Food and Rural Affairs (Defra) on behalf of the Government. Policy is prepared within the context of wider Government policy areas led by other departments, for example, covering the use of public funds (Treasury), emergency response (Cabinet Office) and land-use planning (Department for Communities and Local Government).

The Environment Agency and other organisations support this by providing evidence and advice. The Environment Agency has a strategic overview of the management of all sources of flooding, distinct from the operational function it has in relation to managing flood risk from main rivers and the sea.

The Environment Agency and Defra published a National Flood and Coastal Erosion Risk Management Strategy for England to ensure that the government, Environment Agency, local authorities, water companies and other organisations that have a role in Flood Risk Management understand each other's' roles and co-ordinate how they manage these risks.

The National Strategy guides organisations to work together with communities to:-

- Respond better to flood incidents and recovery.
- Help householders, businesses and communities better understand and manage the flood risks they face.
- Manage the risk of flooding to people and their property.
- Move the focus from national government-funded activities towards a new approach that gives more power to local people, either at an individual, community or local authority level. Local innovations and solutions will be encouraged.
- Invest in actions that benefit communities 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, so that we work with nature and benefit the environment, people and the economy.

Figure 2: National Strategy for managing flood risk

1.4 Introduction to the Local Flood Risk Management Strategy

The production of this Local Flood Risk Management Strategy (LFRMS) follows the publication of the National Flood & Coastal Erosion Risk Management Strategy (National Strategy) which sets out principles that must guide all flood risk management activities.

The production of the Local Flood Risk Management Strategy is a statutory requirement under Section 9 of the Flood & Water Management Act 2010. This requires Knowsley Council, as the Lead Local Flood Authority (LLFA), to develop, maintain, apply and monitor a strategy for 'local flood risk' management in its area.

1.5 Our Aims and Objectives

We will work with our partners, other flood risk management authorities, individuals, communities and organisations to reduce the threat of flooding. This will be achieved through the aims and objectives set out in this Strategy and our Flood Risk Action Plan (FRAP) which can be found in Appendix 3.

The Aim of this Local Flood Risk Management Strategy is to ensure that the overall context of the National Strategy is met through Knowsley's management of local flood risk.

The Objectives of this Strategy are:

1. To develop a collective understanding of the local flood risk within Knowsley to a sufficient level whereby studies and schemes can be identified, and to put in place long-term plans to manage these risks and to make sure that other plans take account of them.
2. To work in partnership with other risk management authorities, key stakeholders, partners, organisations and the community, to reduce the risk of flooding to communities, the economy and the environment from all sources.
3. To support the delivery of flood-appropriate sustainable development and ensure that the guiding principles for sustainable development are applied and inappropriate development is avoided in existing and future areas at risk of flooding.
4. To increase public awareness of the effects of climate change and the implications for an increase in flood risk, engage with people specifically at risk of flooding, to empower them and encourage them to accept their flood risk, to become resilient communities by taking action to manage and/or mitigate the risks that they face.
5. To support and assist those bodies responsible for improving the detection, forecasting and issue of warnings of flooding. Plan for and co-ordinate a rapid response to flood emergencies and promote faster recovery from flooding.
6. Where viable, build, maintain and improve local flood risk management infrastructure and systems to mitigate or reduce the likelihood of harm to people and damage to the economy; environment (natural, historic, built and social) and society as a whole.

This Local Flood Risk Management Strategy is intended to be a 'living document', with published reviews every 3 years.

2. Risk Management Authorities and Functions

2.1 National Overview

Department for Environment, Food and Rural Affairs (Defra) has overall national responsibility for policy on flood risk management, and provides funding for flood Risk Management Authorities (RMAs) through grants to the Environment Agency and Local Authorities. The responsibilities of each flood risk management authority are set out in more detail below.

2.2 Role and Responsibilities of Risk Management Authorities

In Knowsley, there are four flood risk management authorities (RMAs) as defined in Section 6(13) of the Flood and Water Management Act 2010. These are:-

Environment Agency (EA)

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 flood risk management activities on main rivers, regulating reservoir safety, and working in partnership with the Met Office to provide flood forecasts and warnings. Key activities include:-

- Developing long-term approaches to FCERM. This includes working with others to prepare and carry out sustainable Flood Risk Management Plans (FRMP's), Catchment Flood Management Plans (CFMPs) and Shoreline Management Plans (SMPs). CFMPs address flood risk in each river catchment and SMPs assess the risks of coastal flooding and erosion and ways to manage them.
- Collating and reviewing assessments, maps and plans for local flood risk management (normally undertaken by Lead Local Flood Authorities (LLFA)).
- 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.
- A statutory consultee on flood risk from rivers and sea.
- Working with others to share knowledge and the best ways of working. This includes work to develop FCERM skills and resources. 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.
- Monitoring and reporting on flood risk management. This includes reporting on how the national FCERM strategy is having an impact across the country.
- Establish and co-ordinate the RFCC committee as defined in the Flood and Water Management Act 2010, which brings together members appointed by Lead Local Flood Authorities (LLFAs) and independent members with relevant experience to:-
  - Ensure there are coherent plans for identifying, communicating and managing flood risks across catchments;
  - Promote efficient, targeted and risk-based investment in flood risk management that optimises value for money and benefits for local communities;
  - Provide a link between the Environment Agency, LLFAs, other risk management authorities, and other relevant bodies to engender mutual understanding of flood risks in its area.
  - Facilitate the Flood Defence Grant in Aid (FDGiA) process at a local level to determine which schemes get what funding.

United Utilities (UU)

As Water and Sewerage Company (WaSC) for Knowsley, United Utilities work with the Environment Agency and Knowsley Council to coordinate the management of water supply and sewage systems with other flood risk management work. Key activities include:-

- Ensuring that their systems have the appropriate level of resilience to flooding, and maintaining essential services during emergencies;
- Maintaining and managing their water supply and sewage systems to manage the impact of flooding and pollution to the environment;
- Providing advice to LLFAs on how water and sewage company assets impact on local flood risk;
- Working with developers, landowners and LLFAs to understand and manage risks - for example, by working to manage the amount of rainfall that enters sewage systems.

Knowsley Council (Lead Local Flood Authority and Highway Authority)

The Council hosts two flood risk management authorities as it is both the Lead Local Flood Authority (LLFA) and the Highway Authority (HA) for the area.

(a) Lead Local Flood Authority

As the Lead Local Flood Authority, under the Flood and Water Management Act 2010, its role is to manage flood risk from surface runoff, groundwater and ordinary watercourses (including other water bodies that flow into an ordinary watercourse). Key activities include:-

- Preparing and monitoring a strategy for local flood risk management.
- Coordinating views and activity with other local bodies and communities through public consultation and scrutiny, and delivery planning.
- Maintain a register of assets – these are physical features that have a significant effect on flooding.
- A statutory consultee for all major development proposals which have surface water drainage implications in any flood zone. As a statutory consultee the LLFA has an obligation to provide the local planning authority with an informed substantive response to applications on which they are statutorily consulted on within 21 calendar days.
- Issuing consents for altering, removing or replacing certain structures or features on ordinary watercourses.
- Working in partnership with the Environment Agency, United Utilities and other LLFAs to ensure their flood management activities are well coordinated.

(b) Highway Authority

As the Highway Authority, under the Highways Act 1980, the Council has the lead responsibility for providing and managing highway drainage and roadside ditches. Key activities include:-

- Undertaking routine maintenance of the highway drainage system.
- Responsibility for bridges and for culverted watercourses under the highway.
- Providing an emergency response to flooding by closing roads/setting up diversions.
- Ensuring that the owners of land adjoining a highway carry out their common-law duty to maintain ditches, to prevent them causing a nuisance to road users.
- Ensuring that road projects do not increase flood risk

Table 1: Risk Management Authorities and their Responsibilities

Flood Source	Environment Agency	Lead Local Flood Authority	United Utilities	Highway Authority
WATERCOURSE				
Main River	✓			
Ordinary Watercourse		✓		
SURFACE RUNOFF				
Surface Water		✓		
Surface Water from or to the Adopted Highway				✓
OTHER				
Sewer Flooding			✓	
Coastal/Tidal	✓			
Groundwater		✓		
Reservoirs	✓		✓	

2.3 Riparian Owner Responsibilities

A riparian landowner is a person or company who owns property or land where there is a watercourse on the boundary or within the land itself. The watercourse may be an open ditch or an underground culvert (pipe). If the land is rented there should be an agreement with the owner who will manage these rights and responsibilities.

It is often the case that property owners are unaware of their responsibilities for a watercourse, particularly when it is underground. Also, in the case of an open ditch, on the boundary of the land, it is normally presumed that adjoining landowners have joint responsibility i.e. each owns the land up to the centre of the watercourse, unless there are ownership records showing differently.

A riparian owner must allow water to flow through their land without any obstruction, pollution or diversion which then affects the rights of others. They have a legal obligation to notify the Council if they would like to build or alter a structure that then acts as an obstruction to a watercourse. If the watercourse runs in a pipe or culvert, they have the same responsibilities for the upkeep of the culvert as if it was an open watercourse. Activities include:-

- Maintaining any ordinary watercourse that flows though their land, such as by:-
  - Keeping any structures (culverts, trash screens, weirs, mill gates, etc.) clear of debris.
  - Keeping the banks clear of anything that could cause an obstruction and increase flood risk, either on their land or downstream if it is washed away.
  - Maintaining the bed and banks of the watercourse and the trees and shrubs growing on the banks.
- Controlling invasive alien species such as Japanese Knotweed.

3. Governance and Partnership Working

3.1 Regional Flood and Coastal Committee (RFCC)

In order to oversee the introduction of the Flood and Water Management Act 2010, Defra created thirteen new Regional Flood and Coastal Committees (RFCC). Knowsley Council falls within the North West RFCC area.

RFCC's are committees that approve the work of the Environment Agency in their region. They also provide a forum to share the work and progress of the Environment Agency in the region with local partners and ensure that local needs are met. All Lead Local Flood Authorities in the region have representation on the committee through their local Strategic Partnership, which is proportionate to the number of Council Tax Band D properties in their area.

Knowsley Council is represented at the RFCC by the Chair and Deputy Chair of the Merseyside Flood and Coastal Erosion Risk Management (FCERM) Strategic Partnership. There are also nine technical appointees on the Committee, who do not have voting rights.

The Committees also monitor the performance of LLFAs and ensure that investment in flood risk management delivers value for money.

The committee is also responsible for setting out and administering Local Levy, which is a fund paid into by each authority in the region according to the number of Council Tax Band D properties in the authority. Local Levy funding can be used to fund studies, to support a business case, to fund resources, and to attract additional grants for funding for flood protection schemes to benefit communities.

Figure 3: Regional Flood & Coastal Committees in England and Wales

3.2 Merseyside FCERM Strategic Partnership

The Merseyside FCERM Strategic Partnership brings together officers and member representatives from each of the Merseyside Lead Local Flood Authorities (of Knowsley, Sefton, Liverpool and Wirral) and the Risk Management Authorities of United Utilities and the Environment Agency, to discuss the management and delivery of flood risk activities across Merseyside.

Local flood risk partnerships have been tasked by the North West RFCC with guiding and steering the Merseyside FCERM Strategic Partnership and leading delivery of the management of 'local' flood risk from surface water, ground water and ordinary watercourses. They also consider the interactions between local flood risk and other sources. These wider discussions for all sources of flood risk provide a basis for a wider holistic approach to managing flood risk in Merseyside.

The Merseyside FCERM Strategic Partnership also provides an opportunity for strategic planning and coordination between risk management authorities and also the chance to come together and discuss local issues, prioritise actions and investment, and to facilitate joint working and efficiencies wherever possible.

The Merseyside FCERM Strategic Partnership is delivered and coordinated through quarterly meetings at two levels:-

1. **Tactical Group** – Officers from each of the risk management authorities discuss technical issues and put forward recommendations for action to be endorsed by the Strategic Group.
2. **Strategic Group** – Officers from each of the risk management authorities and elected member representatives from each LLFA discuss and endorse, or otherwise, recommendations made by the Tactical Group. This Strategic Group also has the power to raise key issues at the RFCC. The elected member representatives who sit on this Strategic Group are those which are represented by the Chair and Deputy Chair at RFCC.

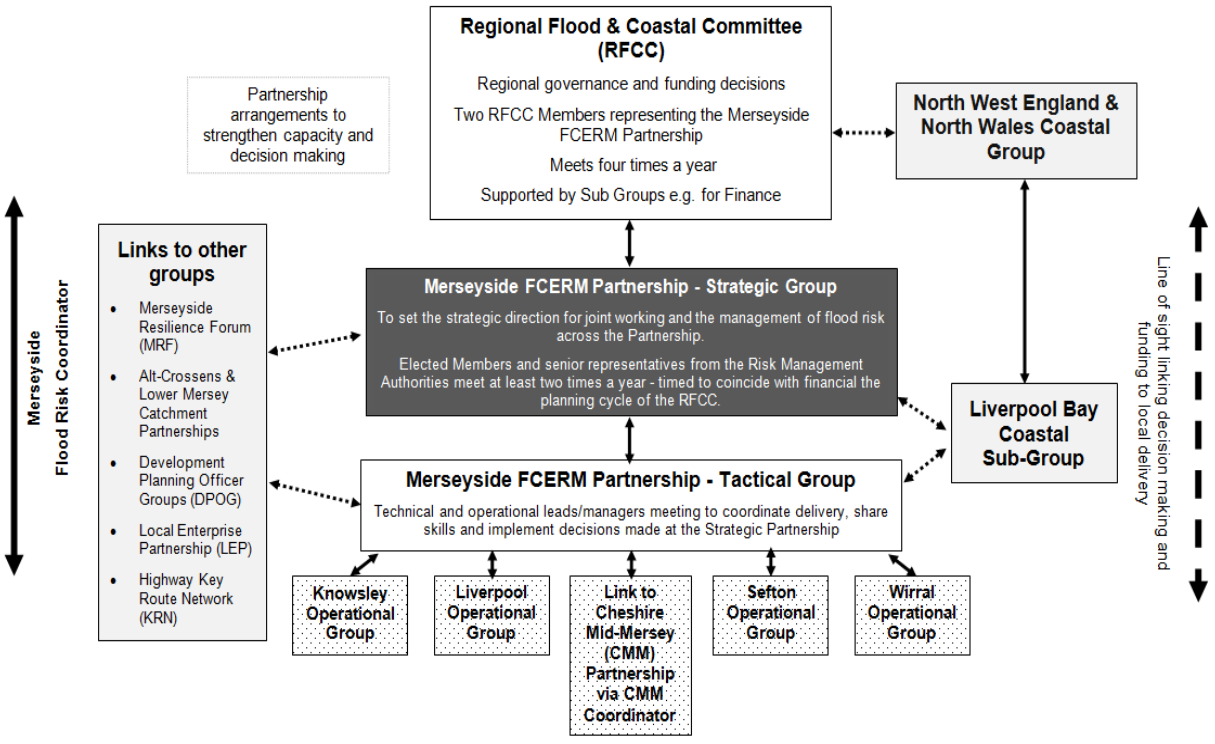

Figure 4: North West RFCC and Merseyside FCERM Strategic Partnership Structure

3.3 Knowsley Making Space for Water Operational Group

Knowsley's Making Space for Water (MSfW) Operational Group is made up of Council officers and representatives from the Environment Agency, Mersey Rivers Trust and United Utilities. The Group, which meets quarterly, has been established to deal with the day-to-day flooding and flood risk issues and is led by Knowsley's LLFA.

3.4 Other Partnerships

Knowsley Council LLFA works closely with a number of other partnerships, including:-

Alt-Crossens and Lower Mersey Catchment Partnerships
The National FCERM (Flood & Coastal Erosion Risk Management) Strategy identifies that the LLFA must work consistently within river catchments and not simply pass problems from one area to another. To manage risk at this catchment scale, these partnership working groups has been established and coordinated by the Mersey Rivers Trust with representatives from the Lead Local Flood Authorities, the Environment Agency, United Utilities, local Wildlife Trusts, the farming community and other interested local partners.

Local Resilience Forum
The Merseyside Resilience Forum (MRF) has been set up in response to the Civil Contingencies Act 2004, which requires local emergency responders such as the fire, police and ambulance services and local authorities to co-operate in preparing for, responding to and recovering from emergencies through a Local Resilience Forum. It aims to ensure that Merseyside has a high level of preparedness to enable effective response to recovery from any emergency. The MRF brings together local emergency services, the National Health Service and local authorities, plus other agencies which can help to prepare and respond to relevant events. Merseyside Prepared is the website of the Merseyside Resilience Forum (MRF).

Mersey Forest Partnership
The Mersey Forest is part of a national network of community forests and woodland initiatives, with a vision to "achieve more from trees". Planting and management of trees and woodland contributes to the Water Framework Directive and to the overall catchment approach, helping to reduce river and surface water flooding and improve water quality.

Woodlands Estate Flood Action Group
The Woodlands Estate is on the Liverpool/Knowsley boundary, within the Liverpool City Council administrative area. Representatives from Knowsley, Liverpool, National Flood Forum, United Utilities and the Environment Agency are working together with the residents group in order to mitigate the flooding problems in and around the estate.

4. Local Flood Risks in Knowsley

Knowsley Council is the Lead Local Flood Authority (LLFA) for the area and is responsible for managing local flood risk from surface water, groundwater and ordinary watercourses in Knowsley.

4.1 Documents and Data Sources

Knowsley Council has a number of documents and policies that relate to, and will form the basis of this Strategy:-

- Preliminary Flood Risk Assessment (PFRA) 2011 and 2017
- Merseyside Estuary Catchment Flood Management Plan (ME CFMP) 2008
- Merseyside Estuary Catchment Flood Management Plan – Summary Report Jan 2009
- Alt and Crossens Catchment Flood Management Plan (AC CFMP) 2008
- Alt and Crossens Catchment Flood Management Plan – Summary Report Dec 2009
- Strategic Flood Risk Assessment (SFRA) 2009 – Knowsley Council & Sefton Council, Level 1
- Knowsley Strategic Flood Risk Assessment (SFRA) 2012 - Level 2
- Climate Change Plan 2010
- Knowsley Local Plan Core Strategy (2016)
- Lower Mersey and North Merseyside Water Resources Study (2009)
- Mersey Heartlands Water Cycle Study (2014)

Environment Agency provides the following datasets, plans and documents:-

- Areas Susceptible to Surface Water Flooding
- Flood Map for Surface Water
- Flood Map (Rivers and the Sea)
- Areas Susceptible to Groundwater Flooding
- National Receptors Dataset
- Indicative Flood Risk Areas
- Historic Flood Map
- Alt Crossens CFMP
- Mersey Estuary CFMP
- North West river basin district flood risk management plan (FRMP)
- Lower Mersey and North Merseyside Water Resources Study (2009)

United Utilities provide the following datasets:-

- Manhole location
- Sewers
- Rising Mains
- Combined sewer overflow (CSO) location
- Pumping Station location
- Detention Tank location
- Waste Water Treatment Works (WWtW) location
- Drainage Areas and sewer modelling data
- United Utilities holds information of all properties which are known to be at risk of both internal and external sewer flooding
- Historical sewer incident record data (SIRS & WIRS)

4.2 Historic Flooding Incidents

Historical flooding records from surface water, ordinary watercourses and groundwater are kept within the Council's "Confirm (Pitney Bowes)" database. Anecdotal information regarding areas known to be susceptible to flooding from excessive surface water, groundwater or flooding from ordinary watercourses is also available.

United Utilities hold records of surface water and combined sewers that are identified to be hydraulically inadequate and at risk of flooding. They maintain a register of properties that are known to be at risk from sewer flooding. The register contains properties that are at risk based on previous internal or external flooding from various causes, though most often hydraulic inadequacy, and which occurs in events more frequently than one every 20 years.

Using the data from United Utilities' register, the Knowsley Level 2 Strategic Flood Risk Assessment (SFRA) has identified the following:-

- A property in Knowsley Village at risk of flooding with a frequency of 2 in 10 years;
- Various properties across Huyton at risk from flooding with frequencies ranging between 2 in 10 and 1 in 20 years;
- Various properties across Prescot at risk from flooding with frequencies ranging between 2 in 10 and 1 in 20 years; and
- Isolated properties in Halewood at risk from flooding with a frequency of 1 in 20 years.

The Environment Agency river-mapping data, along with United Utilities sewer records, has been used to establish the location of ordinary, non-main river watercourses. There is only one known well-established issue of flood risk associated with the system of ordinary watercourses within the borough. Table 2 below lists the incident dates and consequences of the flooding.

Date flooding reported	Sewer Type	Outfall	Chance of rainfall happening in any year	Consequence
Nov 2000	Culverted Watercourse	River Alt	Not Known	Highway Flooding
Feb 2005	Culverted Watercourse	River Alt	Not Known	Highway Flooding
Jan 2008	Culverted Watercourse	River Alt	Not Known	Highway Flooding
Oct 2010	Culverted Watercourse	River Alt	Not Known	Highway Flooding
Jan 2011	Culverted Watercourse	River Alt	Not Known	Highway Flooding
Feb 2011	Culverted Watercourse	River Alt	Not Known	Internal flooding to one property
Jan 2012	Culverted Watercourse	River Alt	Not Known	Highway Flooding
June 2012	Culverted Watercourse	River Alt	Not Known	Highway Flooding
Sept 2012	Culverted Watercourse	River Alt	Not Known	Highway Flooding

Table 2: Area in Kirkby identified to have flooded from an Ordinary Watercourse

Following the extreme rainfall events in 2012, two further locations of flooding from culverted watercourses were identified:-

- Warrington Road, Whiston – internal flooding to two properties plus highway flooding
- Salerno Drive area – highway flooding

It should be noted that this data is not used to attempt to predict if individual properties will flood.

4.3 Current and Future Local Flood Risk

Level 2 Strategic Flood Risk Assessment (SFRA)
Using historical flooding data, flood risk maps and computer modelling, the Environment Agency has identified areas of potential future local flood risk. These areas are effectively "low spots" where water would be expected to flow or gather during extreme rainfall. Using this information, the Knowsley Level 2 Strategic Flood Risk Assessment (SFRA) has identified at least 4,792 properties at risk of flooding from a rainfall event that has 1 in 200 chance of happening. For a similar rainfall event that produces flooding greater than 0. 3m (i.e. likely to enter properties), at least 1,006 residential properties have been identified to be at risk of flooding. Mapping of these areas shows that there are few individual locations of widespread flooding affecting a lot of properties, instead, locations are distributed across the borough.

Preliminary Flood Risk Assessment (PFRA)
The Preliminary Flood Risk Assessment is a high level screening exercise that brings together, from a number of sources, easily available information on past and potential flooding to enable judgments to be made about local flood risk. Knowsley Council completed its Preliminary Flood Risk Assessment (PFRA) in June 2011 and has reviewed this in 2017, in line with the Flood Risk Regulations 2009. Knowsley's Preliminary Flood Risk Assessment (PFRA) identifies areas where nationally 'significant' numbers of people are at risk of flooding from surface water, groundwater and from flooding from ordinary watercourses. There are no 'significant' areas of flooding in Knowsley that satisfy the national criteria.

Local Drainage Capacity
United Utilities have undertaken computer modelling of their drainage network and identified the location of surface water and combined sewers that are shown to be hydraulically inadequate and potentially a source of flood risk. These locations tie in favourably to the areas of predicted surface flood risk identified on the Environment Agency's Flood Map for Surface Water. Most of the sewer network is aging and is not designed to have the capacity required for sewers in new developments. As rainfall events become more extreme, the number of manholes likely to flood will increase, leading to both local and potentially widespread incidents. Climate change is expected to increase the number of local flooding sites and possibly identify flooding of areas that are not currently thought to be at risk. New development areas will add to the pressure on the existing surface water network, unless the run-off is effectively managed so as not to increase it from existing values and preferably reduce it.

Ordinary Watercourses
Information from the Environment Agency and United Utilities has been used to establish the location of ordinary, non-main river watercourses. In the urban areas, some of these watercourses have been culverted and partly incorporated into the sewer network. Throughout the UK there have been a number of watercourse restoration schemes, where the culverted section is re-opened to provide a wide range of urban needs, such as:-

- Water quality improvement
- More effective run-off management
- Recreational and educational opportunities
- Increased wildlife habitat

De-culverting or “daylighting” has the potential to create new ecosystems, instead of merely urban infrastructure. Daylighting can also reduce flooding caused by under-capacity culverts, since an open watercourse typically has a wider cross-section and a greater channel depth than the pipe it replaces. This is important because many pipes historically were not sized adequately to carry the extra run-off that comes with current upstream development.

Climate change and the occurrence of more extreme rainfall events, combined with lack of maintenance of the culverted ordinary watercourses has led to the identification of further areas of potential future flood risk.

Groundwater Flooding

Groundwater is water that has drained through surface layers of soil and rock until it reaches a layer of rock material that it cannot pass through, or can only pass through very slowly. This results in the storage of water in the rock layers above this impermeable layer. The water is stored in gaps in the rock, or between the particles of which the rock is composed.
Historically there has been a lack of local information in relation to groundwater flooding and the available Environment Agency mapping data only identifies wider areas that may be at risk (see Appendix 1). The data covers large areas and only isolated locations within the overall susceptible area are likely to suffer the consequences of groundwater flooding. Reported incidents of internal under-floor drainage issues that do not seem to be attributable to direct surface water run-off or leakage from sewers or drains are considered to be sourced from groundwater.

Information within the Lower Mersey and North Merseyside Water Resources Study (2009) suggests that the computer models covering the Knowsley area only indicate minimal groundwater level rise over the next few years. For Merseyside Basin in general, groundwater levels are known to be rising due to a decline in water abstractions for industrial use. This is likely to increase future flood risk in the low-lying parts of these areas.

Climate Change

There is clear and growing scientific evidence that global climate change is happening now. Over the past century the UK has seen sea level rise and more winter rain falling in intense wet spells. Seasonal rainfall can be highly variable. It seems to have decreased in summer and increased in winter, although winter amounts have changed little in the last 50 years. Some of the changes might reflect natural variations; however the broad trends are in line with the projections from climate models. There is enough confidence in these large scale climate models to say that we must plan for change. Rain storms may become more intense and impacts will depend on local conditions and vulnerability.

Wetter winters and more of this rain falling in wet spells may increase river flooding especially in steep, rapidly responding catchments. More intense rainfall causes more surface runoff, increasing localised flooding and erosion. In turn, this may increase pressure on drains, sewers and water quality. Storm intensity in summer could increase even in drier summers, so it is essential that we need to be prepared for the unexpected.

Sustainable development and the use of sustainable drainage systems (SuDS) will help in adapting to climate change and managing the risk of damaging floods in the future. Preparations can be made by understanding current and future vulnerability to flooding, by developing plans for increased resilience and building the capacity to adapt to the potential risks.

5. Managing our Local Flood Risk

5.1 Sustainable Drainage, Planning and Development

One of the 5 key priorities in the Council's 2017-20 Corporate Plan, is to maximise the Council's contribution to the health and wellbeing of Knowsley residents.

Flood risk management measures provide a significant opportunity to improve the natural, rural and built environment, helping to provide better environments for people and businesses as well as provide habitats for wildlife and improve biodiversity.

National Planning Policy

Policies on development and flood risk are set out in Paragraphs 93 to 108 of the National Planning Policy Framework (NPPF) and supported by guidance set out in the "Flood Risk and Coastal Change" section of the Planning Practice Guidance (PPG).

The NPPF requires that the allocation of development sites takes account of the nature and spatial distribution of flood risk as well as the degree of vulnerability of different types of development. This has been achieved through a sequential, risk-based approach to the allocation of development sites in the Knowsley Local Plan Core Strategy (2016) and to development type within sites. Flood risk considerations will continue through all stages of the development planning process, including the assessment of windfall planning applications.

Local Planning Policy

Policy CS24 of the Knowsley Local Plan Core Strategy (2016) outlines Knowsley Council's policy framework for managing surface water and promoting the use of Sustainable Drainage Systems (SuDS).

The Strategic Flood Risk Assessment (SFRA) and the Local Flood Risk Management Strategy (LFRMS) are material considerations in the planning process and will be used to derive flood mitigation measures to manage flood risk associated with or caused by proposed development.

Planning Applications and Sustainable Drainage Systems (SuDS)

Planning applications are assessed against policies contained within the Council's adopted Local Plan and the NPPF.

Paragraph 103 of the NPPF requires all major developments to use Sustainable Drainage Systems (SuDS) and proposals must not increase flood risk elsewhere. SuDS are a means of managing rainwater, using and mimicking natural processes so that the volume and flow rate of water from developments is similar to that of the land in its natural state. SuDS can have a significant role in managing flooding by regulating the amount of surface water that is discharged.

As well as managing flood risk high quality, landscaped SuDS can provide multiple benefits such as provision of accessible green space, improved amenity value, water quality improvements climate change adaptation and biodiversity enhancement.

In its role as a statutory consultee on all major development proposals, Knowsley Council LLFA will encourage the use of high quality SuDS on all development proposals to deliver multiple benefits and to contribute towards Green Infrastructure. This will be achieved by effectively implementing national and local SuDS policies and by requiring applicants to submit a sustainable drainage strategy and, where one is required, a site specific flood risk assessments in support of development proposals.

Flood Zones

Current national planning policy defines three distinct Flood Zones, 1, 2 and 3, with further sub-classification of Flood Zone 3 into Flood Zone 3a and Flood Zone 3b. Flood Zones only refer to fluvial flooding (flooding from rivers and the sea) and do not consider the presence of flood defences or other flood risk management infrastructure.

The Environment Agency is a statutory consultee for development (other than minor development) that is to be carried out in an area within Flood Zone 2 or Flood Zone 3, or within Flood Zone 1 which has critical drainage problems. The Environment Agency provides comments to the Local Planning Authority in relation to flood risks from main rivers and the sea.

Flood Zone	Definition
Flood Zone 1 – Low probability	Land assessed as having a less than 1 in 1000 annual probability of river or sea flooding in any year (< 0. 1% AEP)
Flood Zone 2 – Medium probability	Land assessed as having between a 1 in 100 and 1 in 1000 annual probability of river flooding (1% to 0. 1% AEP) or between a 1 in 200 and 1 in 1000 annual probability of sea flooding (0. 5% to 0. 1% AEP in any year
Flood Zone 3a – High probability	Land assessed as having a 1 in 100 or greater annual probability of river flooding (> 1% AEP) or a 1 in 200 or greater annual probability of flooding from the sea (> 0. 5% AEP) in any year
Flood Zone 3b – Functional floodplain	Land where water has to flow or be stored in times of flood. SFRAs should identify this Flood Zone (land which would flood with an annual probability of 1 in 20 (5% AEP) or greater in any year or is designed to flood in an extreme (0. 1% AEP) flood

Table 3: Flood Zone classifications

Catchment Flood Management Plans (CFMP)

Geographically, the Knowsley area is split between two river catchments. The Environment Agency has produced a Catchment Flood Management Plan (CFMP) for each of the areas.

The CFMP considers all types of flooding in order to establish flood risk management policies which will deliver sustainable flood risk management for the long term. The key actions for the plans can be viewed on the following Environment Agency web pages:

Alt Crossens CFMP

For this catchment, the Environment Agency has adopted the policy of taking action in order to sustain the current level of flood risk into the future.

Mersey Estuary CFMP

For this catchment, the Environment Agency has adopted the policy of reducing existing flood risk management actions (accepting that flood risk will increase with time). This is considered to be the most sustainable long-term option, with the possibility of introducing additional environmental benefits.

North West Flood Risk Management Plan (FRMP)

Flood Risk Management Plans (FRMP) bring together information from previous plans such as the CFMPs and Shoreline Management Plans so that the Environment Agency can set out how flood risk can be managed sustainably.

The current North West FRMP runs from 2015 to 2021 and provides:-

- A better understanding of flood risk in the Northwest.
- Identification of communities with the highest risk of flooding so that funding can be targeted at those in most need.

5.2 Asset Register and Record

The Flood and Water Management Act 2010 requires the LLFA to establish and maintain a register of structures or features which are likely to have a significant effect on a flood risk in its area, and also keep a record of information about each of them. This includes information about ownership and state of repair.

The Council's register is being developed in line with the principles detailed in Table 4 below.

	Register	Record
a	Must be made available for inspection at all reasonable times.	For the LLFA to decide if they wish to make it available for inspection.
b	Must contain a list of structures or features which in the opinion of the authority, are likely to have a significant effect on a flood risk in its area.	For each structure or feature listed on the register, the record must contain information about its ownership and state of repair.
c	Section 21(2) of the Act allows for further regulations to be made about the content of the register and record. There is currently no plan to provide such regulations therefore their content should be decided on by the LLFA depending on what information will be useful to them.	
d	There is no legal requirement to have a separate register and record although as indicated above, only the register needs to be made available for public inspection.	

The Asset Register is a 'living document' with new entries being added as they are identified and entries being removed as improvements are made. You can view the Flood Risk Asset Register by appointment (telephone 0151 443 2704) at Huyton Municipal Building, Archway Road, Huyton, L36 9YU.

5.3 Regulating Ordinary Watercourses

On 6th April 2012, Schedule 2 (Sections 31, 32 and 33) of the FWMA amended the Land Drainage Act 1991 and transferred powers for the regulation of ordinary watercourses from the Environment Agency to the LLFA.

Ordinary Watercourse Consenting

Under Section 23 of the Land Drainage Act 1991 (as amended), consent is required from the Lead Local Flood Authority for carrying out any works that have the potential to alter or obstruct the flow in an ordinary watercourse, regardless of whether the watercourse is culverted or not, or that involve the culverting of an ordinary watercourse.

Ordinary watercourse consent applies to watercourses which have **not** been designated as a 'Main River' on the Environment Agency's flood maps. Work on or near watercourses which are classified as **'Main River'** may require an Environmental Permit. To identify whether a watercourse is classified as a 'main river' or 'ordinary watercourse', visit the Environment Agency's website and view their flood maps.

Ordinary watercourse consent* is required for:

1) **The erection of or alteration to, any mill, dam, weir or similar obstruction to the flow of any ordinary watercourse *(i.e. any works below the level of the top of the banks of the watercourse)*; or**
2) **The construction of a culvert in any ordinary watercourse; or**
3) **The alteration of a culvert in a way that would be likely to affect the flow of an ordinary watercourse; or**
4) **Temporary works in an ordinary watercourse such as scaffolding, a dam, pumping off excessive water, or any major drainage work.**

***Footnote:**

a) Consent is required for both permanent and temporary works.
b) Even if planning permission or other consents have been secured, consent is still required from the LLFA for work to ordinary watercourses.
c) You **must** apply for and obtain written consent **BEFORE** carrying out any works. Failure to do so may result in enforcement action.
d) Consents will be determined in line with all parts of this policy document.
e) The Council is consulted on all development proposals within 8 metres of the top of the banks of an ordinary watercourse.

Ordinary Watercourse Enforcement

The aim of enforcement in flood risk management is to ensure there is proper flow of water in a watercourse and over the floodplain; the control of water levels and the security of existing assets. To achieve these aims, the Council will use its powers, at its discretion, to rectify unlawful and damaging or potentially damaging work.

As a result of changes introduced by the Flood and Water Management Act 2010, there are three main situations in which Knowsley Council, as LLFA, can execute its enforcement powers under Sections 21, 23, 24 and 25 of the Land Drainage Act 1991 (as amended) in relation to ordinary watercourses.

- **Section 21 - Enforcement of obligations to repair watercourses, bridges, etc.**

  Section 21 of the Land Drainage Act 1991 (as amended) relates to person(s) who, before the commencement of the Land Drainage Act (i.e. 1st December 1991) had an obligation to do work to repair and maintain a watercourse, bridge or drainage work, but fails to do so. The drainage board (the LLFA) can serve notice requiring the completion of works to fulfil that obligation.

  A common law obligation to carry out works to remove an obstruction from a watercourse, arising out of the riparian ownership responsibilities, falls within the "obligation" referred to in Section 21, and can therefore be subject to enforcement under this Section.

- **Section 23 & 24 - Prohibition on obstructions etc. in watercourses**

  Sections 23 and 24 of the Land Drainage Act 1991 (as amended) relate to action which may be undertaken where damaging or potentially damaging works on ordinary watercourses have been undertaken without the necessary consent. Action may also be taken where consented works have been undertaken in a manner contravening the consent.

  It should be noted, however, that these powers are permissive and are not a duty and as such the exercising of these powers is at the Council's discretion.

- **Section 25 - Powers to require works for maintaining flow of watercourse**

  Section 25 of the Land Drainage Act 1991 (as amended) gives the Council powers to ensure that appropriate maintenance is carried out by riparian landowners on ordinary watercourses. These powers can be exercised if it is deemed that a lack of maintenance or an alteration to a watercourse pose a flood risk.

  If a landowner carries out actions that adversely impact on the flood risk to another landowner's property, the Council has the right to serve a legal notice on the responsible party to carry out remedial work to resolve the issue.

  It should be noted, however, that these powers are permissive and are not a duty and as such the exercising of these powers is at the Council's discretion.

5.4 Effectively Responding to Flooding

Flooding can never be prevented entirely. The overall aim is to provide people at risk of flooding from rivers, ground and surface water with appropriate and effective flood information, forecasts and warnings that prompt the right actions and reduce the impacts and consequences of floods.

Defra is the lead government department for flood emergencies in England. Defra Ministers have overall responsibility for national level flood emergency planning and for ensuring co-ordinated policy and other support, as necessary, to local emergency responders. For more on this, please refer to the National Flood Emergency Framework.

The Civil Contingencies Act 2004 is one of the most relevant pieces of legislation to emergency planning for flooding. It formalises a number of duties on Local Authorities, the Emergency Services and other organisations involved (including the Environment Agency) in responding to any emergency. Amongst these are contingency planning and risk assessment for emergencies at the local level, including flooding.

The Act lists Local Authorities, the Environment Agency, and Emergency Services as 'Category 1' responders to emergencies. It places duties on these organisations to:-

- undertake risk assessments;
- manage business continuity;
- carry out emergency planning;
- share information and cooperate with other responders; and
- warn and advise the public during times of emergency.

Incident management is vital to reducing the consequences of flooding to people. Prompt action to minimise the consequences is the most effective way of limiting the longer-term impact the wellbeing of individuals and the economic resilience of communities.
The Environment Agency has a key role in relation to flooding. It has a responsibility under the Civil Contingencies Act to provide flood warnings to those at risk from flooding from rivers and the sea and permissive powers to maintain and improve flood defences.

Local Resilience Forums (LRFs) – of which the Environment Agency is a member in all regions – are responsible for developing multi-agency flood plans (MAFPs). These plans allow all responding parties to work together on an agreed coordinated response to flooding. Knowsley Council is a member of the Merseyside Resilience Forum (MRF).

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. There are also a number of LRF sub-groups that will cover specific subjects such as severe weather and flooding. While the MRF and associated sub-groups focus on planning for incidents, there are other levels of control that may convene to manage the response during a flood. They are:

1. **Bronze** - Operational level, at which the management of ‘hands-on’ work is undertaken at the incident site or impacted areas;
2. **Silver** - Tactical level of management is introduced to provide overall management of the response; and
3. **Gold -** Strategic decision makers and groups at local level. They establish the framework within which operational and tactical managers work in responding to and recovering from emergencies.

This has been further strengthened by the government's commitment to developing a National Flood Emergency Framework (NFEF), which was published by Defra in 2010. The NFEF is a forward-looking policy framework for flood emergency planning and response prompted by Sir Michael Pitt in his report on the summer 2007 floods. It brings together information, guidance and policies and is a resource for those involved in flood emergency planning at local and national levels.

There are a large number of organisations involved in flooding emergencies. These include the Category 1 and 2 responders identified in the Civil Contingencies Act and are likely to expand during the event, depending on the size, duration, and recovery phases.

The following lists the key roles and responsibilities for Knowsley Council during and after a flooding emergency:-

- Coordinate emergency support within their own functions;
- Deal with surface water and groundwater flooding, flooding from 'non main rivers' within its resource capabilities;
- 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 central and regional government departments;
- Liaise with essential service providers;
- Open rest centres;
- Manage the local transport and traffic networks;
- Mobilise trained emergency social workers;
- Provide emergency assistance;
- Deal with environmental health issues, such as contamination and pollution;
- Coordinate the recovery process;
- Manage public health issues;
- Provide advice and management of public health;
- Provide support and advice to individuals; and
- Assist with business continuity.

Local authorities will continue to lead post-flood recovery within communities. This will draw on and align with Government National Recovery Guidance and advice. However, it should be noted that the level of response that Knowsley Council will be able to provide will always be limited by the resources available to it at the time of the incident.

Emergency Planning

An important part of managing the risks is ensuring an effective response to incidents when they do happen. Flood warnings for fluvial (river) flooding are available from the Environment Agency and should be issued in good time so that individuals, businesses, the public and the emergency services can minimise the potential loss of life and damage to property and infrastructure. Prompt action to minimise the consequences is the most effective way of limiting the immediate and longer term impact on individuals' well-being and affected areas' economic prosperity.

We aim to ensure that everyone living or working within the borough is made aware of the potential risks and inevitable after effects of flooding. We also aim to ensure that all residents and businesses understand what they themselves can do about flood risk, as well as highlighting what the Council, acting as LLFA, and other agencies can do about local flood risk.

Who do we need to inform

- Key Stakeholders / Partners
- Residents Borough-wide
- Businesses
- Residents in specific flood risk areas
- Ward Members, Council staff and Service deliverers

Key Stakeholders / Partners

The role of the LLFA is to ensure that all partner agencies contribute to flood risk management in a co-ordinated way by working together and sharing information. We are already working with:-

- Environment Agency
- United Utilities
- Neighbouring LLFAs- Liverpool, Sefton, Wirral and St Helens
- Local Flood Action Groups
- Local Resilience Forum
- Merseyside Fire and Rescue Service
- Merseyside Police
- Local Businesses
- Merseytravel

Flooding does not stop at political boundaries, so when any cross-boundary issues occur they are jointly reviewed to gain an understanding of how one LLFA area affects another's. Good communication and management through joint working and sharing of information will provide more opportunities to reduce future flood risk.

Residents and Businesses

Everyone has a part to play in the management of flood risk. Not all types of flooding can be prevented and householders and businesses have a responsibility to protect their own property against the effects of flooding. Information on flood risk locations can be found on:-

- Environment Agency flood maps
- Knowsley Council webpage
- Preliminary Flood Risk Assessment 2011 (PFRA)
- Strategic Flood Risk Assessment 2009 – Knowsley Council & Sefton Council, Level 1 (SFRA)
- Knowsley Strategic Flood Risk Assessment (SFRA) 2012 - Level 2
- Knowsley Local Plan Document Library

We will aim to create a culture of community resilience and increased awareness and ownership of flood risk issues across the borough.

For Residents and Businesses at specific risk, we will work with them (neighbourhood groups and businesses) at known greater risk of flooding to:-

- Understand specific risk issues and possible mitigation measures
- Develop their own community resilience plans
- Introduce physical resilience measures where possible.

What do we need to do

- Provide clear, balanced and consistent information.
- Clearly identify who is responsible for what.
- Clearly identify where further information can be obtained.
- Ensure Equality of Access to information for all.

Members of the public can contribute valuable information to flood risk management. Public engagement can provide significant benefits including building trust, gaining access to additional local knowledge and increased public input into options and decisions for future flood risk management plans. Elected members can also play an important part in engaging with residents on flood risk management issues.

Communication Plan

Key Messages

- Climate change is a reality – we need to prepare for flooding
- We are developing our working relationships with the other flood risk management authorities
- We will encourage community engagement and participation
- We will increase awareness of flood risk to the community through information / education
- We will aim to manage community expectations – informing a community at risk what we can do and what we can't. How we can manage the risks together.
- We will help communities to help themselves prepare for flooding
- We will encourage communities to sign up to EA Flood Warnings where these are available
- We want to build long-term relationships with our residents and businesses

How will we do it

- Through the Knowsley website, Knowsley News and "Have your Say"
- Using Social Media such as Facebook, Twitter and Community Messaging to get key messages quickly out to affected residents
- Having links to other websites about flood protection and recovery, including the Local Resilience Forum website (Merseyside Prepared)
- By listening to and understanding people's concerns and responding appropriately
- Raising awareness of the existing EA flood warning system
- Having flood information leaflets available in the One Stop Shops and libraries
- Using Local media
- Using our Elected Members and Neighbourhood Teams to raise awareness of flood risk with our residents and businesses
- By signing up to Extended Floodline Service

5.5 Investigating Flooding Incidents

Under Section 19 of the Flood and Water Management Act (FWMA) 2010 LLFAs have a duty to investigate flood incidents in their area and are responsible for ensuring all risk management authorities are working together to resolve flood problems in their respective areas.

The FWMA is clear that the LLFA's responsibility for investigation only extends as far as establishing which of the risk management authorities has a flood risk management function and whether they have, or will be, exercising that function. It may be the responsibility of one of the other risk management authorities, or even the land or property owner themselves, to take action to resolve the issue.

Section 19 of the FWMA allows LLFAs to define *'the extent that it considers it necessary or appropriate'* to investigate a flood incident in their area and therefore to set investigation parameters. Given the potential complexity of a flood event, a Section 19 Investigation has the potential to be a complex and lengthy process requiring a significant resource input. Therefore it was agreed a set of parameters for triggering a Section 19 Investigation was required which will enable risk management authority resources to be managed and focussed where there is greatest need.

Knowsley Council's Section 19 Flood Incident Investigation and Reporting Policy outlines our legal requirement to investigate flood incidents and provides details on the criteria the LLFA will apply in deciding whether or not a formal Section 19 Investigation is appropriate.

6. Investing in Flood Risk Management

In addition to continued national funding, known as Grant in Aid (GiA), local areas and partners are encouraged by Defra to invest in flood risk management. Doing so will mean more communities can enjoy the benefits of protection, whilst giving each area at risk a bigger say in the action taken.

6.1 Funding Process

Decisions can be taken locally, and voluntarily, on whether and how to contribute towards schemes. Government GiA funding will prioritise help for those most at risk and least able to afford to protect themselves.

The established government policy of Flood and Coastal Resilience Partnership Funding (known as 'partnership funding') will control how money is allocated to projects. Under this approach every worthwhile project has the potential to be supported by national funding over time.

Any project will be either fully-funded or part-funded based on the benefits (outcome measures) it provides. These benefits can include better protecting households, commercial properties, public buildings, infrastructure and agricultural land, and creating or improving water dependent habitat. Ultimately, by 2021 the Government hope to have better protected 300,000 homes from flooding in England.

The changes in the way FCERM projects are now funded provide an opportunity for many communities to progress schemes that otherwise would not happen. By raising money to meet any shortfall in central funding, communities can unlock funding that would otherwise be unavailable. Defra hopes that flood action groups, flood partnerships, charities and landowners will be inspired to become involved in these partnership projects.

The Partnership funding approach applies to all FCERM projects in England applying for government funding (known as flood defence grant in aid funding or FDGiA). It also applies to funding for individual property protection schemes. This approach aims to allow more projects or schemes to go ahead than before and to give each community more say in how risk is managed.

The amount of central government funds available to any project will be calculated on the benefits it is expected to bring. This is represented by a "score" which shows the percentage of costs that could be covered by central government. It is then possible to calculate what percentages of the costs are still to be raised by other funding partners and/or the local community.

All projects must score a minimum of 100% to be eligible for central funding. However, as there is a limited pot of central government funding, payments to approved projects will be subject to the availability of funds. A project that scores more than 100% has a better chance of receiving the central funding available.

The North West Regional Flood and Coastal Committee (RFCC) approve the annual programme of FCERM work to be funded and will be aware of local flood risk issues and priorities. In general, all new flood defences and work to replace or maintain existing ones are eligible for partnership funding, together with schemes to protect individual properties and manage the risk from surface water and ground water flooding.

6.2 Our Investment Strategy

Knowsley Council has developed an Investment Programme which identifies those locations with the highest priority flood risk and a need to reduce the risk, assessing options to manage the risk or develop solutions which may remove or at least reduce the flood risk. This may include flood prevention, mitigation, and property resilience works or a combination of these.

The Council has applied to the Environment Agency for funding through the Six Year Investment Programme for projects to investigate and mitigate the potential flood risk at these locations:

Salerno Drive Culvert Investigation

Historical records show that there was an open watercourse in this area, which is the source of the River Alt. To allow development of a large wartime camp, this watercourse was culverted for a length of approximately 550m. Extreme rainfall and known United Utilities capacity issues in both the combined and the surface water system cause residential and highway flooding in Adswood Rd, Alt Rd and Salerno Drive. To reduce the potential flood risk and scope out any remedial works, there is a need to establish its condition through a man-entry survey. This will also identify the connection points for the United Utilities surface water sewers.

This scheme is a result of partnership working with United Utilities, whereby they have installed a large attenuation storage tank in order to resolve the lack of capacity in their sewer network. Success of their proposal relies on the culverted watercourse being in good condition and able to pass the flow of water onto the River Alt.

Knowsley Village Land Drainage Investigation

Within Knowsley Village there are approximately 100 properties identified to be potentially at risk of flooding from a culverted watercourse. This watercourse was culverted in around 1900 runs through a residential estate and adjacent to a school. Sections of the pipe work are known to be in poor condition.

The proposed investigation is to create access points to the culvert in order to carry out a CCTV survey. The results will be used to scope out any remedial works.

Warrington Road Culvert Investigation

Historical records for the area show that between 1840 and 1927, there were open brook courses (Holt Brook and Stank Brook) acting as tributaries to Prescot Brook. Post 1927, further residential development took place between Warrington Road and Shaw Lane resulting in the culverting of the open watercourse.

The majority of the open watercourse is now culverted (overall approximately 3km). Flooding of properties and highway from the culverted watercourse occurred in August 2012. To reduce further flood risk to approximately 102 properties and to scope out any remedial works, there is a need to establish both the location and structural condition of the culverted watercourse.

Other culverted ordinary watercourses

There are other culverted ordinary watercourses within Knowsley that need further investigation. Lack of maintenance by the landowners and structural deterioration has the potential to increase the risk of collapse and associated flooding. Further works will be undertaken to locate and carry out condition surveys of these important assets.

Merseyside Strategic Groundwater Flood Risk Pilot Strategy

Sefton Council has led a joint bid for funding to investigate the issues of groundwater flooding across Merseyside. It is intended to be a long-term study to investigate groundwater levels at known problem locations across each of the Council's areas.

Highway Flooding

The Council has a planned programme for highway gulley and drainage channel cleaning. Currently these are cleaned once a year, with additional reactive cleaning when flooding of the highway is reported. In addition, to increase the potential for reducing flood risk across the highway network, the Council will aim to identify the location and condition of unrecorded highway drains.

The delivery of our Investment Programme will be monitored by the Environment Agency and Knowsley Council through the Merseyside FCERM Strategic Partnership and North West RFCC.

7. Flood Risk Action Plan (FRAP)

Knowsley LLFA has developed a Flood Risk Action Plan (FRAP) which sets out how we will deliver our aims and objectives set out in this Local Flood Risk Management Strategy. The FRAP can be found in Appendix 3.

7.1 Monitoring our Progress and Delivery

Knowsley's Operational 'Making Space for Water' Group is a partnership between the various risk management authorities at Knowsley Council, the Environment Agency, United Utilities and the local Mersey Rivers Trust. This group will monitor and oversee the delivery of the Flood Risk Action Plan.

Progress of the delivery of the Flood Risk Action Plan will be also subject to scrutiny by the Cabinet Lead Member for Regeneration and Economic Development and through Knowsley's Economic Growth and Prosperity Committee.

Appendix 1: Glossary of Terms

Term	Meaning
Annual Event Probability (AEP)	See Standard of Protection (SOP).
Aquifer	A source of groundwater comprising water bearing rock, sand or gravel capable of yielding significant quantities of water.
Assets	Structures or a system of structures used to manage flood risk.
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	Long term variations in global temperature and weather patterns caused by natural and human actions.
Combined Sewer	A sewer that drains both rainwater and foul water.
Consequence	A condition or occurrence traceable to a cause e.g. the flood was an inevitable consequence of the prolonged, heavy rains.
Culvert	A covered structure under a road, embankment etc, to direct the flow of water.
Defra	Department for Environment, Food and Rural Affairs.
Discharge	The discharge of a river is the volume of water, which flows through it in a given time. It is usually measured in cubic meters per second (m^3/s).
Drainage Authorities	Organisations involved in water level management, including IDBs, the Environment Agency, and Regional Flood Defence Committees.
Environment Agency (EA)	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.
Flood	A flood is defined as when water covers land that is normally dry.
Flood mitigation	Methods of reducing the effects of floods. These methods may be structural solutions (e.g. reservoirs) or non-structural (e.g. land- use planning, early warning systems).

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 run-off reaches the rivers and eventually causes them to overtop their banks.
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 (HA)	A local authority with responsibility for the maintenance and drainage of highways maintainable at public expense.
Infiltration	The passage of surface water though the surface of the ground / the entry of groundwater to a sewer.
Lead Local Flood Authority (LLFA)	Local Authority responsible for taking the lead on local flood risk management.
Ordinary Watercourse	Any watercourse that does not form part of a main river and is not classified as a main river.
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) cause by man or man's activities that is injurious to existing, intended or potential uses of the resource.
Prevention	Site design and management to stop or reduce the occurrence of pollution and to reduce the volume of runoff by reducing impermeable areas.
Probability	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 low.

Resilience	The ability of the community, services, area or infrastructure to withstand the consequences of an incident.
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 (RMA)	Organisations that have a key role in flood risk management as defined by the Flood and Water Management Act (2010). These are the Environment Agency, sewerage undertakers, lead local flood authorities, district councils where there is no unitary authority, internal drainage boards, water companies, and highways authorities.
Run-off	Water flow over the ground surface to the drainage system. This occurs if the ground is impermeable, is saturated or if rainfall is particularly intense.
Sewer	A pipe or channel taking domestic foul and/or surface water from buildings and associated paths and hard standings 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.
Significant	Defined threshold of flooding consequence.
Standard of Protection (SOP)	The standard to which an area is protected against flooding. This is generally expressed as a Annual Event Probability (AEP). For example, an SoP of 10% means an area is protected against a flood with a 10% probability of occurring in any given year. An SoP of 0.5% AEP means an area is protected against a flood with a 0.5% probability of occurring in any given year. The flood with a 0.5% AEP has a lower likelihood of occurring than a flood with a 10% probability, but will be greater inseverity (higher water levels). A 0.5% AEP standard of protection is therefore higher than a 10% standard of protection.
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.

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.
Water Framework Directive (WFD)	EU Water Framework Directive.

Appendix 2: Environment Agency Flood Warning Areas for Knowsley

Flood Warning Area Name	Flood Warning Area Description	Number of Properties
Ditton Brook at Halewood	Areas at risk include land and property in the vicinity of Cart Bridge and Greens Bridge, including the kennels. Some properties on Applewood Grove, Lightoaks drive, Cherrywood Avenue and Redoaks Way. Other properties at risk are some of the caravans on the Lower Road site.	96
Prescot Brook at Huyton Green	Areas at risk include some land at Huyton and Prescot Golf Club, some properties on Rutland Way, Whiston Lane, and Wood Lane adjacent to the watercourse.	22
Childwall and Court Hey Brooks at Childwall	Areas at risk include land adjacent to the brooks from Court Hey to the sports ground, including property on Court Hey and Buttermere Road, Glynne Grove, Gladstone, Edenhurst Avenue, St Paschal Church and Sandbrook Road	87
Netherley Brook at Netherley	Areas at risk include land, and some property along Winster Drive	6

Floodline is a free government service that gives advance warning of flooding via phone, text, email, pager or fax. The Environment Agency is urging homes and businesses to sign up and take advantage of the service.

To find out if you are at risk and if you are eligible for direct flood warnings call Floodline on **0345 988 1188** or sign up via the Environment Agency's 'Sign up for flood warnings' service.

Flood warnings are also broadcast on local radio and television with updates every 15 minutes.

Appendix 3: Flood Risk Action Plan

Progress	Not Started
	In Progress
	Complete

Timeframe	Short Term *(0-12 months)*
	Medium Term *(1-3 years)*
	Long Term *(3 years +)*

The aim of the Local Flood Risk Management Strategy is to ensure that the overall context of the National Strategy is met through Knowsley's management of local flood risk.			
Objective 1:	**To develop a collective understanding of the local flood risk within Knowsley to a sufficient level whereby studies and schemes can be identified and to put in place long-term plans to manage these risks and to make sure that other plans take account of them.**		
	Actions for Delivery	**Lead RMA**	**Timeframe**
1a	Clearly define each Risk Management Authorities' (RMA) role and responsibility in relation to managing flood risk in Knowsley.	**Knowsley Council LLFA**	**Short Term**
1b	Improve and maintain the flood risk evidence base to support both risk assessment and the prioritisation of future actions to manage flood risk. • Record local flooding incidents appropriately through a flooding register and use this information in all areas of flood risk management to help inform and manage risk. • Identify, map and risk assess all ordinary watercourses, ponds and reservoirs in Knowsley to inform flood risk management decision making. • Update the Preliminary Flood Risk Assessment for Knowsley in line with national guidelines. • Feed into other RMA evidence base documents and business plans, such as the North West Flood Risk Management Plan and water company price reviews, to ensure these take account of Knowsley's flood risks.	**Knowsley Council LLFA**	**Long Term**
1c	Develop Knowsley's Flood Risk Asset Register and Record and maintain up-to-date information on those assets. • Develop a Flood Risk Asset Register and Record Policy to guide population of the register and record. • Confirm and clearly communicate how the Flood Risk Asset Register is available to view.	**Knowsley Council LLFA**	**Medium Term**

Objective 2:	To work in partnership with other risk management authorities, key stakeholders, partners, organisations and the community, to reduce the risk of flooding to communities, the economy and the environment from all sources.		
	Actions for Delivery	**Lead RMA**	**Timeframe**
2a	Develop an effective local governance framework for managing flood risk, including engagement with Senior Officer and Elected Members to support prompt decision making and to steer local flood risk management in Knowsley. • Set up, lead and deliver regular operational flood meetings for Knowsley to provide a local forum in which flooding issues can be discussed with RMAs and other partners. Issues will be recorded, actions delegated to a lead RMA or partner and progress of actions monitored.	**Knowsley Council LLFA**	**Short Term**
2b	Engage with and attend meetings of the North West Regional Flood and Coastal Committee (RFCC) and Merseyside Flood and Coastal Erosion Risk Management (FCERM) Partnership as required. • Work in partnership to deliver flood risk management functions efficiently and where appropriate to do so.	**Knowsley Council LLFA**	**Short Term**
2c	Where opportunities arise and it is appropriate to do so, work with the Liverpool City Region Combined Authority and Local Enterprise Partnership to influence strategic direction and to capitalize on opportunities for investment in the reduction of flood risks in Knowsley.	**Knowsley Council LLFA**	**Long Term**
Objective 3:	**To support the delivery of flood-appropriate sustainable development and ensure that the guiding principles for sustainable development are applied and inappropriate development is avoided in existing and future areas at risk of flooding.**		
	Actions for Delivery	**Lead RMA**	**Timeframe**
3a	Develop a formalised process for responding to planning application consultations. • Develop best-practice drainage guidance to assist developers in reducing flood risk to and from their schemes. • Adopt a consistent and proportionate approach to assessing development proposals • Develop Standing Advice to assist the local planning authority in assessing local flood risk and surface water drainage proposals on minor planning applications.	**Knowsley Council LLFA**	**Medium Term**

3b	Engage and work with the local planning authority in the development of local planning policies, including any supplementary planning documents or guidance notes. • Assist the local planning authority in preparing evidence base documents in relation to the flood risk management, notably the Strategic Flood Risk Assessment. • Engage and assist in the development of local planning policies which directly and indirectly impact on the management of surface water drainage and flood and coastal erosion risk management in Knowsley.	**Knowsley Council LPA**	**Long Term**
3c	Work in partnership with other RMAs in the planning process to ensure a consistent approach is taken when commenting on planning applications in our consultee roles. • Agree common principles and refer to each other consents and permits as and when needed in planning consultation responses. • Work with the local planning authority and the planning committee to build knowledge and understanding in relation to the role and responsibility of each RMA in the different areas of flood risk management and the risks associated with flooding in Knowsley so that informed planning decisions can be made.	**Knowsley Council LLFA**	**Long Term**
3d	Effectively deliver Knowsley's role as regulator for ordinary watercourses. • Develop an Ordinary Watercourse Consenting and Enforcement Policy to guide works and to ensure changes to ordinary watercourses are appropriate and sustainable. • Create a formalised process for assessing and processing applications for consent and for delivering effective enforcement.	**Knowsley Council LLFA**	**Medium Term**
3e	Set out when Knowsley Council considers it appropriate to formally designate a structure or feature for flood risk management purposes. • Develop a Flood Risk Designation Policy and process to support our approach. • Maintain up-to-date information on all Flood Risk Designations through the creation of a Flood Risk Designation Register.	**Knowsley Council LLFA**	**Long Term**

Objective 4:	To increase public awareness of the effects of climate change and the implications for an increase in flood risk, engage with people specifically at risk of flooding, to empower them and encourage them to accept their flood risk, to become resilient communities by taking action to manage and/or mitigate the risks that they face.		
	Actions for Delivery	**Lead RMA**	**Timeframe**
4a	Develop Knowsley Council's flooding webpages to ensure that emergency contact information is clearly displayed and is supported internally by an effective Local Response Plan and Multi-Agency Flood Plan for Knowsley.	**Knowsley Council LLFA and Emergency Planning**	**Medium Term**
4b	Work with householders and businesses at risk of local flooding to promote awareness and resilience, including property level works and encourage them to develop a personal flood plan.	**Knowsley Council LLFA**	**Long Term**
4c	Work with academic institutions to ensure Knowsley is at the forefront of new thinking and can actively contribute towards research opportunities and incorporate the latest research into all aspects of work in relation to planning, flooding, resilience and climate change where possible.	**Knowsley Council LLFA**	**Long Term**
Objective 5:	**To support and assist those bodies responsible for improving the detection, forecasting and issue of warnings of flooding. Plan for and co-ordinate a rapid response to flood emergencies and promote faster recovery from flooding.**		
	Actions for Delivery	**Lead RMA**	**Timeframe**
5a	Deliver the recommendations of Section 19 Flood Investigation Reports to improve flood warnings and emergency responses to flood events following lessons learned following significant flood events in Knowsley and elsewhere. • Produce an Action Plan to deliver the recommendations of Section 19 Flood Investigation Reports • Monitor the delivery of Action Plans through governance arrangements to manage flood risk in Knowsley	**Knowsley Council LLFA**	**Medium Term**
5b	Work with RMAs and other organisations to develop an effective and up-to-date Multi-Agency Flood Plan and Local Response Plan for flooding with clearly defined 'trigger' levels for each. • Identify the roles and responsibilities of all involved in an emergency response, including those for updating the Plans. • Identify clear communication pathways, including during out-of-hours and for all those involved in responding from coordination through to on-the-	**Knowsley Council Emergency Planning**	**Medium Term**

	ground operational level. • Confirm and clearly communicate Knowsley Council's position on sandbags		
5c	Work with the Emergency Services, Elected Members, businesses and communities at risk of flooding to promote flood awareness, preparedness and resilience. • Deliver a web based campaign to promote key messages and tools.	**Knowsley Council LLFA and Emergency Planning**	**Long Term**
Objective 6:	**Where viable, build, maintain and improve local flood risk management infrastructure and systems to mitigate or reduce the likelihood of harm to people and damage to the economy; environment (natural, historic, built and social) and society as a whole.**		
Actions for Delivery		**Lead RMA**	**Timeframe**
6a	Develop and deliver a targeted Investment Programme of flood risk management works for Knowsley, the progression of which will better manage / reduce flood risk and improve water quality, local amenity and biodiversity where possible. • Work in partnership with RMAs and other bodies to secure contributions from all potential sources where possible to deliver more schemes in Knowsley • Deliver schemes and studies efficiently to ensure their cost effectiveness is maximised. • Maximise outcome measures delivered on schemes by first undertaking studies as necessary and through seeking expert advice.	**Knowsley Council LLFA**	**Short Term**
6b	Work with Knowsley's local Highway Authority to create a targeted gully cleaning regime to reduce highway flooding where required. • Where necessary and appropriate, engage with other RMAs in developing this regime. • Update and monitor the effectiveness of the regime through operational meetings.	**Knowsley Council Highway Authority**	**Medium Term**
6c	Where there is a need to do so, explore opportunities to store flood water on land owned by Knowsley Council to deliver local flooding benefits.	**Knowsley Council LLFA**	**Long Term**