



Local Flood Risk Management Strategy

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Executive Summary

Wirral Council is the Lead Local Flood Authority (LLFA) for the Wirral borough area and undertakes the flood and coastal erosion risk management functions as described in Sections 4 and 5 of Part 1 of the Flood and Water Management Act (FWMA) 2010. Wirral Council is also the Highway Authority and Local Planning Authority; the Land Drainage body, in accordance with the Land Drainage Act 1991, and the Coastal Defence operating authority, although the latter two are operated under permissive powers.

The FWMA placed a requirement for the Environment Agency (EA) to develop a National Strategy for Flood and Coastal Erosion Risk Management in England. This Strategy provides a framework for the work of all LLFA's and sets out the long-term national objectives for managing flood and coastal erosion risks. It sets the context for and informs the production of Local Flood Risk Management Strategies (LFRMS) by the LLFA's. These local strategies in turn provide the framework for the delivery of local improvements needed to manage local flood risk. They also aim to encourage more effective risk management by enabling people, communities, business and the public sector to work together.

What is risk?

Local flood and coastal erosion risk is flood risk from the sea; groundwater; rivers, ordinary watercourses (which includes a lake or pond or other areas of water which flows into an ordinary watercourse) and surface runoff.

Historical Flood Risk on Wirral

Records suggest that local flooding has occurred in the past but only recent incidents could be classed as significant. The majority of the flooding in the past was mainly isolated, external to property, or restricted to the highway, open space and farmland.

However, a number of rainfall and coastal storm surge events have occurred since 2011 flooding some 221 properties. The flooding resulting from a combination of factors, including overtopping of coastal defences; and an incapacity within the public sewerage, the highway or land drainage systems to deal with what were sometimes extreme events.

Future Flood Risk

Additionally, the risk of future flooding to properties following the effects of climate change has established that some 13100 properties within the Wirral could be at risk following a 1in 200 year rainfall event, although there is only a 0.5% chance of it occurring in any one year.

Wirral Council will, through its flood and coastal erosion activities and its ongoing partnerships, manage the local risk to people and their property through the following objectives:

Objective 1: Understand the local risks of flooding and coastal erosion, working together with partners, other risk management authorities, organisations and the community to identify the causes and put in place long-term plans to manage these risks and make sure that other plans take account of them;

Objective 2: Ensure that the guiding principles for sustainable development are applied and inappropriate development is avoided in existing and future areas at risk of flood and coastal erosion while elsewhere, carefully managing other land to avoid increasing the risks;

Objective 3: Where financially viable, build, maintain and improve local flood and coastal erosion 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;

Objective 4: 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 encourage them to take action to manage and/or mitigate the risks that they face and to make their property more resilient;

Objective 5: 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.

Strategic Environmental Assessment

The LFRMS has been subject to a Strategic Environmental Assessment (SEA) which is a statutory assessment process, requiring consideration of the effect on the environment of all plans and programmes. Its aim is to identify any significant environmental effects that are likely to result from the implementation of the LFRMS. The findings of the assessment are presented in an environmental report that is consulted upon, with the public, alongside a draft of the LFRMS.

The findings of the draft SEA Report has been taken into account in the preparation of this draft strategy

Action Plan

The Strategy will be delivered through an Action Plan which will:-

- Identify options for managing flood risk as a result of
 - partnership working with other Risk Management Authorities
 - investigation to understand current flood risk interaction

The Action Plan will require Wirral Council as LLFA to work with partners to

- manage flood risk through delivery of its statutory responsibilities under the Flood and Water Management Act
- work with communities to help make them more flood aware, flood prepared and flood resilient.

1. Introduction

1.1 The Wirral

The Wirral Peninsula is set between the River Dee and the River Mersey, extending into Liverpool Bay and the Irish Sea and overlooking both the Welsh Hills and the Liverpool skyline. It has a rich cultural and maritime heritage with a legacy of picturesque country villages, medieval hamlets and buildings, a wide variety of private and municipal golf courses, including the world famous Links course, Royal Liverpool Golf Club and a number of operating ports and 25 miles of unspoilt coastline with three of the five recommended good beaches in the North West. It has a well-connected transport system, with both rail and motorway links to the main national networks. It is also home to several protected coastland parks, preserving some of the finest coastal scenery in Britain. There is also an unusual array of wildlife, from migratory birds to colonies of grey seals.

1.2 Background

Following the 2007 summer floods, Sir Michael Pitt published his review of the response by the responsible parties, setting out 92 recommendations to be addressed. Government accepted these recommendations and announced its intention to introduce a Floods & Water Bill in order to respond to them.

This resulted in two key pieces of legislation;

1. Flood Risk Regulations (FRR) 2009

These regulations transpose 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.

2. Flood & Water Management Act (FWMA) 2010

The FWMA 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.

Collectively this framework created clear roles and responsibilities for bodies that manage flood risk and instilled a more risk based approach to managing that risk.

1.3 National Strategy for Flooding and Coastal Erosion Risk Management

The FWMA gives the Environment Agency a national strategic overview role for flood risk management. The Environment Agency has produced a National Strategy for Flooding and Coastal Erosion Risk Management (the National Strategy) as part of their national strategic role.

The FWMA placed a requirement for the Environment Agency (EA) to develop the National Strategy for Flood and Coastal Erosion Risk Management in England. This strategy provides a framework for the work of all LLFA's.

The National Strategy sets out the long-term objectives for managing flood and coastal erosion risks and the measures to achieve them. It sets the context for and informs on the production of local flood risk management strategies by the LLFA. These local strategies in turn provide the framework for the delivery of local improvements needed to help communities to manage local flood risk. They also aim to encourage more effective risk management by enabling people, communities, business and the public sector to work together.

1.4 Local Flood Risk Management Strategy (LFRMS)

Wirral Council is the Lead Local Flood Authority (LLFA) for the Wirral borough area and undertakes the flood and coastal erosion risk management functions as described in Sections 4 & 5 of Part 1 of the Flood and Water Management Act 2010 (FWMA).

The Flood & Water Management Act also included a number of measures and responsibilities for the LLFA, which includes the production of a Local Flood Risk Management Strategy (LFRMS) A Local Flood Risk Management Strategy is a requirement under Section 9 of the FWMA for all lead local flood authorities to set out how local flood risks will be managed, who will deliver them and how they will be funded.

2. Aim & Objectives

Wirral Council as the LLFA will work with its partners, other flood risk management authorities, individuals, communities and organisations to reduce the threat of flooding and coastal erosion. It will achieve this through the aim and objectives set out in this strategy.

The aim of the local strategy is to ensure that the overall context of the National Strategy is met through Wirral's management of local flood and coastal erosion risk.

The Council will, through its flood and coastal erosion activities, manage the local risk to people and their property through the five key objectives set out below.

Objective 1: Understand the local risks of flooding and coastal erosion, working together with partners, other risk management authorities, organisations and the community to identify the causes and put in place long-term plans to manage these risks and make sure that other plans take account of them;

Objective 2: Ensure that the guiding principles for sustainable development are applied and inappropriate development is avoided in existing and future areas at risk of flood and coastal erosion while elsewhere, carefully managing other land to avoid increasing the risks;

Objective 3: Where financially viable, build, maintain and improve local flood and coastal erosion 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;

Objective 4: 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 encourage them to take action to manage and/or mitigate the risks that they face and to make their property more resilient;

Objective 5: 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.

The delivery of these objectives will be monitored through our Action Plan which can be found attached as an appendix to this Strategy.

3. Flood Risk Management Authorities: Roles & Responsibilities

3.1 Wirral Council

Wirral Council is the Lead Local Flood Authority (LLFA) for the Wirral borough area and its primary purpose is to manage flood risk from local sources of flooding; defined as flooding from surface water, groundwater or ordinary watercourse sources.

Wirral Council is also the Highway Authority, Local Planning Authority and Coastal Protection Authority.

- **Highway Authority** - Wirral Council has the lead responsibility for providing and managing highway drainage and roadside ditches under the Highways Act 1980. The Council is the Land Drainage Body for consenting and enforcement activities on ordinary watercourses, in accordance with the Land Drainage Act 1991.
- **Local Planning Authority** – In this capacity, Wirral Council has a duty to prepare and adopt an up-to-date Local Plan for the area and also to determine planning applications in accordance with planning legislation and regulation.
- **Coastal Protection Authority** – Wirral Council has responsibilities for managing flood risk from the sea under the Coast Protection Act 1949.

3.2 Environment Agency

The Environment Agency is an executive, non-departmental public body responsible to the Secretary of State for Environment, Food and Rural Affairs. Its principal aims are to protect and improve the environment, and to promote sustainable development.

The Environment Agency has an overarching strategic overview role of all sources of flooding and is also the responsible risk management authority in relation to flooding from main rivers, the sea and reservoirs and also includes taking the lead role in coastal erosion risk management.

3.3 United Utilities and Dŵr Cymru (Welsh Water)

United Utilities and Dŵr Cymru (Welsh Water) are the water and sewerage companies for the Wirral area and hold an appointment and licence, under the Water Industry Act 1991, to have regard to local strategies. United Utilities and Dŵr Cymru are the responsible risk management authorities for managing the risks of flooding from their water supply, surface, foul or combined sewer systems.

Other risk management functions include for planning the future development and maintenance of its services, taking account of flood and coastal erosion risk management plans in their own planning processes, ensuring their assets and

systems are resilient to flood and coastal risks and ensuring the required level of service can be maintained in the event of a flood incident. In addition, they should also work with developers and landowners to reduce the input of rainfall into sewers through the use of storage, source control and Sustainable Drainage Systems (SuDS)

3.4 Other Organisations

While the risk management authorities above are specifically referred to in the FWMA, it is necessary to identify other internal and external authorities and stakeholders which have a responsibility for flood risk management in their own areas of discipline will also be key contributors. These include:

Internal	External
<ul style="list-style-type: none"> • Health, Safety & Resilience • Planning <ul style="list-style-type: none"> ○ Strategic (Planning Policy) ○ Development Control • Environmental Health and Parks & Countryside 	<ul style="list-style-type: none"> • Highways Agency • Emergency Services • Mersey Travel / Mersey Rail • Network Rail • Other Utility Services • Housing Associations • Peel Ports • Historic England • Local partnerships, forums and Community Groups • Royal Society for the Protection of Birds • National Farmers Union • Land Owners and estate managers • Natural England • Developers • Regional Flood Coastal Committee

The roles and responsibilities of the risk management authorities are summarised in Table 1.

Table 1: Risk Management Authorities and their Responsibilities

Flood Source	Environment Agency	Lead Local Flood Authority	Water & Sewerage Undertaker	Highway Authority
RIVERS				
Main River	✓			
Ordinary Watercourse		✓		
SURFACE RUNOFF				

Surface Water		✓		
Surface Water originating on the Highway				✓
OTHER				
Sewer Flooding			✓	
Coastal/Tidal	✓			
Groundwater		✓		
Reservoirs	✓		✓	

4. Governance and Local Partnerships

4.1 Regional Flood and Coastal Committee (RFCC)

Regional Flood and Coastal Committees are committees that approve the work of the Environment Agency in their region. It is also 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, which is proportionate to the number of Council Tax Band D properties in their area.

Wirral is a member of the North West Region Regional Flood and Coastal Committee. Wirral is represented at the RFCC by the Chair of the Merseyside Flood and Coastal Risk Management Partnership. There are also nine technical appointees on the committee, who do not have voting rights.

Wirral chairs the Merseyside Flood and Coastal Risk Management Partnership.

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.

4.2 Merseyside Flood and Coastal Risk Management Partnership

The Merseyside Flood and Coastal Risk Management Partnership brings together officers and Member representatives from each of the Merseyside Lead Local Flood Authorities of Wirral, Sefton, Liverpool and Knowsley and the Risk Management Authorities of United Utilities and the Environment Agency to discuss the management and delivery of flood risk activities across Merseyside. The Partnership 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 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 elected Members.
- 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 group also has the power to raise key issues at the RFCC. The Member representatives who sit on this group are those which are represented by the Chair at RFCC.

4.3 Wirral Flood Management Partnership

In 2008, in response to the Pitt review and recommendations, Wirral's Streetscene & Transportation Overview & Scrutiny approved the establishment of a cross-party Elected Members Steering Group, which meet regularly with the cross-departmental Officers Flood Group. Both groups were set up in following a local flood incident as a way in which such events could be tackled from a multi-agency perspective before the introduction of the Flood & Water Management Act.

The present Wirral Flood Group is a combination of these two groups, plus representatives from the Environment Agency, United Utilities, Welsh Water, Wirral NHS, MerseyTravel and the Emergency Services. The partnership relationship has been strengthened by re-branding as the Wirral Flood Management Partnership Group, together with the introduction of agreed Terms of Reference. This group meets twice a year and also reports annually to the Environment Policy & Performance Committee on flood risk management undertaken during the previous year and sets out its actions/targets for the next.

4.4 Wirral Operational Sub-Group

In addition an Operational Sub-Group, made up of Council Officers and representatives from the Environment Agency, United Utilities and Welsh Water, has been established to deal with the day-to-day flooding and flood risk issues. This Operational Sub-Group meets quarterly, or as required, and reports to the Wirral Flood Management Partnership Group.

The Governance and Partnership Arrangements structure is detailed below in Figure 1 and Table 2.

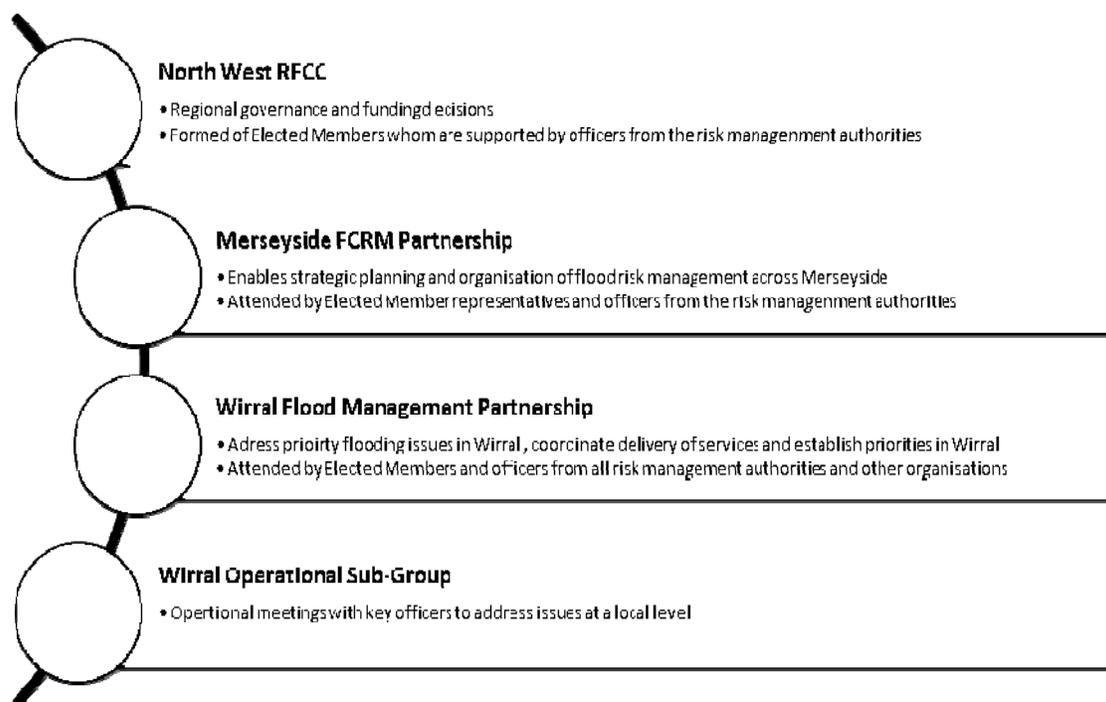


Figure 1: Governance of Flood Risk Management Groups in Wirral

4.5 Other Partnerships

The Council is a member of the Liverpool Bay Coastal sub-Group to the North West and North Wales Coastal Group. Wirral is also represented at RFCC by the Chair of the North West and North Wales Coastal Group.

The Council also has existing arrangements for community consultation via its Local Strategic Partnership, Local Constituency Committee's, Wirral Youth Engagement, and Wirral Voluntary and Community Services Network.

Table 2: Wirral Partnership Working Arrangements

Group	Wirral Operational Flood Group	Wirral Flood & Water Management Partnership	Merseyside Flood & Coastal Erosion Risk Management Partnership	
			Strategic Group	Tactical Group
Meeting Frequency	Quarterly	Biannual	Quarterly	Quarterly
Purpose	To provide a collaborative response to local flooding, flood and coastal erosion risk and ensure effective management of any relevant issues.	To achieve through joint working an effective response to flood and coastal erosion risk in Wirral.	To make decisions about flood and coastal erosion risk management and raise key issues at the Regional Flood & Coastal Committee.	To share knowledge and expertise between RMAs and develop partnership working arrangements to deliver efficiency savings
Lead Local Flood Authority	✓	✓	✓	✓
Emergency Planning	✓	✓		
Highway Authority	✓	✓		
Planning Authority	✓	✓		
Environment Agency	✓	✓	✓	✓
United Utilities	✓	✓	✓	✓
Welsh Water (Dwr Cymru)	✓	✓		
Wirral NHS		✓		
Elected Members		✓	✓	
Wirral PCT		✓		
Climate Change Officer		✓		
Building Control		✓		
Press & Public Relations		✓		
Legal Officer		✓		
Merseytravel		✓		
Coastal Erosion Officer	✓	✓		
Liverpool Council				✓
Knowsley Council				✓
Sefton Council				✓
St Helens Council				✓

5. Flood Risks in Wirral

Wirral is vulnerable to flooding from several sources and often during a flood event flooding is caused by a combination of these flooding sources.

5.1 Local Flood Risk

Local flood risk is the risk of flooding from surface water, groundwater and/or from ordinary watercourses, which includes a lake or pond or other area of water which flows into an ordinary watercourse.

Surface Water Flooding

Surface water flooding occurs when heavy rainfall exceeds the capacity of the ground and local drainage network to absorb it. This can lead to water flowing across the ground and ponding in low-lying areas, which may be a long way downstream and it may not be obvious that one area is contributing to flooding elsewhere. This type of flooding is typically caused by short, intense rainfall and is often localised and with short lead-times, making it difficult to predict. It can occur where no watercourse exists. The problem and severity of surface water flooding can be exacerbated by: topography, drainage system capacity and surfaces with low permeability.

Groundwater

Groundwater flooding results when the natural water table within the underlying strata rises to ground level. This can result from reductions in water abstraction, or following extended periods of sustained rainfall. The areas most at risk can be low-lying areas or where the ground water table is at a naturally shallow level.

The Environment Agency Areas Susceptible to Groundwater Flooding Map (AStGWF) suggests that the coastal fringes to the east and northeast together with the northwest of the Wirral could be susceptible to groundwater flooding. However, the production of these maps was based on limited geological information and does not take account of groundwater rebound following reductions in water abstraction. In addition, the maps show 1km grid squares where geological and hydrogeological conditions show that groundwater might emerge but it is likely that only isolated locations within the overall susceptible area are actually likely to suffer the consequence of groundwater flooding.

No records were identified of known groundwater flooding within the Wirral and therefore it is not possible to conclude if any past groundwater flooding has had any significant effect on existing recorded surface water flooding.

Groundwater does affect the operation of the three Mersey tunnels and continuous pumping is undertaken at present by the operator.

Ordinary Watercourses

An 'ordinary watercourse' is a watercourse that does not form part of a main river and includes rivers, streams, ditches, drains, cuts, culverts, dikes, sluices, sewers (other than public sewers within the meaning of the Water Industry Act 1991) and passages, through which water flows.

Flooding from ordinary watercourses occurs as a result of flows in a watercourse exceeding their capacity. This type of flooding may result from overtopping and / or breaching of flood defences following heavy rainfall and / or melting snow, which causes abnormally high water levels. It can also be caused by debris build up which can ultimately block them or any screens located on them.

There is a network of ordinary watercourses for which Wirral Council is the relevant operating authority. There are 5.04km of 'critical ordinary watercourses' of which 3.89km are culverted (piped) and, although these are non-main river, they are considered critical due to their potential to put large numbers of people and property at risk of flooding should they not be maintained appropriately.

Prior to the introduction of the FWMA, consenting and enforcement of works on ordinary watercourses was the responsibility of the Environment Agency. It is now, however, the responsibility of the LLFA to manage both consenting and enforcement activity related to ordinary watercourses (except in those areas covered by an Internal Drainage Board).

Wirral Council, as LLFA, has no statutory responsibility for maintaining ordinary watercourses. Instead their responsibility, including for maintenance, lies with the riparian owner.

Riparian owners (those who own land adjoining, above, or with a watercourse running through it) are responsible for the maintenance of watercourses on their land. A riparian owner can be an individual land owner, a range of individuals, private companies, local authorities or other organisations. These riparian responsibilities apply to both ordinary watercourses and main rivers.

Riparian owners must let water flow through their land without any obstruction, pollution or diversion which affects the rights of others. They are responsible for maintaining the bed and banks of the watercourse as well as the trees and shrubs growing on the banks. Riparian owners must also keep any structure, such as culverts, trash screens, weirs and mill gates, clear of debris. They must accept flood flows through their land, even if these are caused by inadequate capacity downstream. However a landowner has no duty in common law to improve the drainage capacity of a watercourse for which they are responsible.

5.1.1 Historical and Current Risk

Prior to the introduction of the FWMA Wirral did not have status as LLFA and there was no requirement to maintain a register of flood risk locations. Some records exist which provide an indication of flood locations however the cause or type of these floods is not always recorded. Strategic planning documents, such as the Shoreline Management Plan, Wirral Coastal Strategy, Catchment

Flood Management Plans, Preliminary Flood Risk Assessment and Wirral Strategic Flood Risk Assessment have been produced which draw upon these records to provide a picture of historic flood and coastal erosion risk locations.

Since the introduction of the FWMA, Wirral now has a statutory responsibility to investigate and report upon 'significant' flood events. Wirral's Section 19 Flood Investigation Policy is available on the Council's website and, as there is a requirement to make the investigation reports publically available, so are the reports. These reports and underlying database of flood events now form the basis for the definition of high flood risk locations in Wirral.

The LLFA has a statutory responsibility to maintain a Flood Risk Asset Register. By producing and maintaining this register, features which have the capacity to significantly increase flood risk are identified and lead to an improved understanding of the management of local flood risk.

5.1.2 Managing Risk

The Government, drawing on information from existing surface water flood risk maps, identified locations across the UK where local flood risk is significant and where these locations are clustered together they have been identified as Indicative Flood Risk Areas. This criterion did not identify any indicative flood risk areas within the Wirral. However, although no indicative flood risk areas were identified, it was established that a number of locations were at flood risk across Wirral from future flooding.

Current and future local flood risks will be managed by Wirral Council as LLFA, in partnership with other risk management authorities, through the implementation of the statutory requirements of the Flood Risk Regulations 2009 and the Flood and Water Management Act 2010, including:

- Working in partnership to manage those risks
- Maintaining an asset register of structures and features of flood risk assets
- Designating flood risk assets or features which are situated on private land and which manage flood and/or coastal erosion risk
- Investigating 'significant' flooding incidents in our area and make recommendations to improve flood risk management as a result of those recommendations
- Consenting and enforcement of activities on ordinary watercourse to manage the flood risk
- Engaging in the planning process as a statutory consultee to proactively manage and minimise any 'new' risks from or to new development proposals

In addition, we will also work to reduce local flood risk in a number of other ways, including:

- Working with our communities to help them become more resilient
- Investing in areas identified at risk, where economically feasible to do so

- Developing robust emergency plans to support a coordinated response to flooding emergencies

This is discussed in more detail in Sections 6 and 7.

5.2 Main River Flood Risk

‘Main rivers’ are classified as such by the Environment Agency typically because of their importance in land drainage for the catchment which they serve. Where watercourses are classified as a ‘main river’ the responsible risk management authority for their regulation is the Environment Agency.

Flooding from main rivers occurs as a result of flows in a watercourse exceeding their capacity. This type of flooding may result from overtopping and / or breaching of flood defences following heavy rainfall and / or melting snow, which causes abnormally high water levels. It can also be caused by debris build up which can ultimately block them or any screens located on them.

5.2.1 Historic and Current Risk

The Environment Agency maintains 97km of main rivers and any associated flood defences within the Wirral catchment. Main rivers in Wirral which the Environment Agency manages are:

- Dibbinsdale Brook
- Dibbinsdale Brook Tributary
- Clatter Brook
- Prenton Brook
- River Fender
- Newton Brook
- Greasby Brook
- Carr Drain
- Perimeter Drain
- Arrowe Brook
- The Birket
- Birket Old Courses

The Environment Agency has a prioritised programme of regular maintenance on all its main rivers, which includes inspections, litter and debris removal, desilting, strimming, flailing and weed treatment.

Where these main rivers pass into culverts under the public highway Wirral Council, as the Highway Authority, has inspection and maintenance responsibilities.

5.2.2 Managing Risk

The Environment Agency has produced mapping which identifies areas at risk of flooding from rivers or the sea. The Environment Agency produce Flood Warning Areas used by the Agency to warn residents of possible flooding events.

5.3 Coastal Erosion and Tidal Flood Risk

Coastal erosion and tidal flood risk is managed through the Council's responsibilities for coastal defence as a Coastal Protection Authority.

Coastal erosion is a natural process caused by wind and wave action wearing away the land, such as the foreshore or cliffs. Where tidal currents, wind and waves, cause the land to be worn away and removes sediment which is not replenished, then erosion occurs. Erosion of foreshores can happen slowly over time. However, lowering beach levels can increase the risk of failure of coastal defence structures, while erosion at the base or toe of a cliff can cause instabilities, which become immediately apparent.

Tidal flooding can be caused by river or sea defences being overtopped, usually caused by a combination of low pressure and high tide. However, where defences are not overtopped or exceeded, tidal flooding can also be caused by spray overtopping.

5.3.1 Historic and Current Risk

The shoreline of England and Wales is split into suitable divisions of coastline within which a strategic framework for the development of sustainable policies for coastal defences are identified, based on natural process behaviour. In the North West of England and North Wales the coastline was identified as being a major cell denoted as Cell 11, which from the Great Ormes Head at Llandudno to the Solway Firth. Within this cell five sub-cells were identified:

Sub-cell 11a	Great Ormes Head to Formby Point
Sub-cell 11b	Formby Point to River Wyre
Sub-cell 11c	River Wyre to Walney Island
Sub-cell 11d	Walney Island to St. Bees Head
Sub-cell 11e	St. Bees Head to Solway Firth

Wirral Council is an active member of the North West and North Wales Coastal Group, leading on the sub-cell 11a shoreline management plan (SMP) production in 2010. Membership together with collaborative working between members of the Coastal Groups reinforces the strategic approach taken towards flood and coastal erosion risk management. The current North West England and North Wales Shoreline Management Plan (SMP2), was adopted by Wirral Council in September 2010 and defines a preferred shoreline management policy for each Policy Unit defined along the Wirral Frontage.

Whilst the SMP identifies what policy should be adopted for future coastal defence management, the Wirral Coastal Strategy identifies how the policies would most appropriately be implemented, based on a more detailed understanding of coastal processes applying, flood and coastal erosion risks faced by coastal communities, environmental impacts and the economic justification for different future coastal management scenarios.

The Wirral Coastal Strategy has identified Preferred Management Options for each of the 14 Strategy units forming the Wirral coast with priority areas for intervention which are identified in Table 3.

Table 3: Priority areas for intervention

Strategy Unit	Proposed Works	Timescale for Implementation
West Kirby	New flood prevention measures	2-3 years
Rock park Esplanade	Refurbishment works	3-4 years
Meols Parade	Sea Wall refurbishment	2-6 years
Wallasey Embankment	Embankment toe protection	11-20 years

5.3.2 Managing Risk

In addition to proposed intervention actions, on-going collection of coastal process, shoreline response and asset inspection will continue to be carried out through the North West Regional Framework of the National Network of Strategic Regional Coastal Monitoring Programmes and information collected will inform proposed strategy actions.

Wirral Council is the major owner of the 42km of sea and river frontage between its boundaries on the Dee and Mersey Estuaries, whilst most of this frontage is artificially defended to reduce flood and coastal erosion risk no major works have been undertaken on the Wirral since West Kirby Marine Lake Outer Wall in 2008. There has, however, been on-going revenue expenditure on the maintenance of existing coastal defence assets. A programme of regular inspection and monitoring is also in place and the output from these activities has informed and been fully considered during the production of the Wirral Coastal Strategy.

The Environment Agency has produced mapping which identifies areas at risk of flooding from rivers or the sea. The Environment Agency produce Flood Warning Areas used by the Agency to warn residents of possible flooding events.

5.3 Sewer and Man-Made Flood Risk

During sewer flooding both foul and surface water can occur as a result of heavy rainfall overloading sewers or failure of a sewer due to collapse or debris build up.

Man-made structure flooding can result from the failure of canals, reservoirs, and other man-made structures along with problems caused by the failure of pumping stations, water mains and industrial activity.

5.3.1 Historic and Current Risk

The majority of the public sewerage system in the Wirral is owned and maintained by United Utilities, however the southwest corner of the Borough, around Heswall, is the responsibility of Dwy'r Cymru (Welsh Water). Much of the highway drainage system within the Wirral discharges into these public sewers and during high intensity storm events or extended periods of heavy rain the public sewerage system often becomes overloaded resulting in both surface water and foul flooding of the highway and property.

A register of reported sewage flooding incidents is held by both United Utilities and Welsh Water; and are utilised to identify locations where sewer capacity improvements are necessary and would provide economical local benefits. Both produce 5-yearly investment plans identifying those locations that will benefit from improvements over that period. In addition they undertake both planned and reactive maintenance on their sewerage assets to reduce flood risk.

The failure of man-made structures can lead to flooding which can have no relationship with rainfall events. The failure of canals, reservoirs, pumping stations, water mains and the infrastructure at industrial sites can lead to flooding. The responsibility to maintain these where they occur in the Wirral rests with a number of public and private organisations. As they are identified the flood risk will be assessed and the flood risk management authority with responsibility will be notified.

5.3.2 Managing Risk

Any new sewers or upsizing that is undertaken are designed in accordance with national standards while taking account of climate change and urban creep.

5.4 Climate Change

The predicted changes are generally based on the Governments own UK Climate Impacts and the most recent predictions from the UK Climate Projections 2009 (UKCP09), which has produced a series of potential climate change scenarios based on differing global emission rates from low to high. There are a large number of uncertainties associated with predicting the outcome of these scenarios, which create limitations on the accuracy of the predictions.

Recent changes in climate, particularly in the North West have included: -

- average mean temperatures rising by about 2.65°C over the last century

- the 1990s being globally the warmest decade in the last century with 1998 being the hottest year on record
- seasonal rainfall has varied by as much as 15% from the average in the last 30 years
- decreases in summer rainfall during the last century of up to 20%
- increases in high intensity winter rainfall having been experienced since the 1960s
- increases in flooding of some major rivers in the region in the last few decades
- sea levels around Liverpool having risen by about 6cm in the last 50 years and 10cm over the last 100 years.

Predicted changes which may affect the climate of the UK include:-

- Warming in the North West, which will increase mean winter temperatures between 1 and 3°C and in summer between 2.6 and 4.1°C by the 2050's. While by the 2080's summer mean temperatures across the North West may have risen between 2 and 5.9°C.
- More warming in summer and autumn than in winter and spring.
- Winters will become wetter than at present by up to 26%, whilst summers will most likely become drier.
- This contrast between winter and summer climate will increase with time. Winters will become wetter and summers drier.
- Sea level rises of up to 30cm by the 2050's and 80cm by the 2090's (these are specifically based on latest climate change guidance from EA in 2011).

There are a large number of potential consequences of climate change with differing degrees of likelihood associated with them. Wirral will ensure that it is as prepared as possible, within the resource constraints placed on it, to respond to the challenges posed by extreme weather events, in-line with Government guidance.

The National Planning Policy Framework (NPPF) sets out how the planning system should help minimise vulnerability and provide resilience to the impacts of climate change, particularly in managing flood and coastal erosion risk. Making an allowance for climate change will help to minimise vulnerability and provide resilience to flooding and coastal change in the future.

Wirral Council is mitigating climate change through behavioural changes and by reducing its carbon emissions thus reducing its carbon footprint, for example through initiatives such as energy management to reduce consumption, recycling and green transport initiatives.

6. Principles for Managing Flood Risk

6.1 Local Flood Risk Management Guiding Principles

For local flood and coastal erosion management to be viable and sustainable it will be necessary to make difficult decisions on where risk management activities can and cannot be carried out. These decisions, and the processes by which they are taken, will be guided by a number of high-level principles.

- Community focus and partnership working
- A catchment and coastal “cell” based approach
- Sustainability
- Proportionate, risk-based approaches
- Multiple benefits
- Beneficiaries should be encouraged to invest in risk management

6.2 Community Focus and Partnership working

Wirral will work with other flood risk management authorities in partnership with communities to understand the community perspective of flooding and coastal erosion, helping communities understand and actively prepare for the risks, and encourage them to have direct involvement in decision-making and risk management actions. The aim is to ensure that decision-making and ownership of risk management measures are as local as possible but within a catchment or coastal cell that ensures a fair allocation of funds and avoids the transfer of risk elsewhere without prior agreement. Wirral will co-ordinate its consultations and the input of local bodies and communities through its four local Neighbourhood Forum’s and public scrutiny and overview proceedings.

It will work closely with the Regional Flood and Coastal Committee (RFCCs) to consider how both the costs and benefits of investment resulting from local flood risk management strategies should be spread between geographical areas, communities and sectors. Involving those communities identified as being at risk can help inform local decisions on what is needed and who should be asked to contribute towards the costs of investment, so that costs and benefits are shared fairly.

Partnership working will also ensure that risk is managed in a co-ordinated way beyond authority boundaries, for example across catchments or along the coast, with lead local flood authorities working together collectively. By working in partnership with communities, Wirral will achieve a clearer understanding of the issues, and be able to bring together those best placed to develop and provide solutions.

The key aims will include the identification of synergies and efficiencies and ways of maximising these, the development of better links with other related work, and the promotion of better sharing of information and expertise

6.3 A Catchment and Coastal “Cell” based Approach

In understanding and managing flood and coastal risks locally, Wirral will ensure that it considers the impact on other parts of the catchment or coast, to avoid passing risk on to others within the catchment or along the coast without prior agreement. This catchment or coastal cell approach will be a key aspect to managing risks at source and achieving wider benefits through better integrated water management and increase the opportunity for developing new sources of funding as well as pooling resources and expertise. The existing catchment flood management plans (CFMPs) and shoreline management plans (SMPs) supports this approach.

6.4 Sustainability

Wirral will support local communities by managing flood and coastal erosion risks in ways that take account of all impacts and the whole-life costs of any investment. The risk management solutions will be forward-looking, taking account of potential risks that may arise in the future and being adaptable to climate change. They will, where possible, also work with natural processes and aim to enhance the environment. By adopting a more sustainable approach to the management of flood and coastal erosion risks, Wirral aims to greatly improve the environmental condition of rivers, wetlands, coastal areas, and the social and economic circumstances around and within the local settlements.

6.5 Proportionate, risk-based approach

It is not technically, economically or environmentally feasible to prevent flooding and coastal erosion altogether. Therefore, Wirral’s risk-based management approach will target resources to those areas where they will have the greatest benefit. These risk management measures will consider both the probability over time of a flood or coastal erosion happening and the consequences that might arise if it did. To do this the sources, pathways, receptors and consequences of risk need to be understood and addressed as appropriate to manage all of the factors that combine to create risk. This approach involves using a tiered assessment i.e. starting at a high, screening level and in stages becoming more detailed to address the risks identified. It will seek to make risk management more straightforward, removing unnecessary barriers while ensuring that legal and Government policy requirements are met. All aspects of risk management will be carried out in a proportionate way that reflects the size and complexity of the risk and society’s ability to manage it. Investment in managing risk, and who pays for it, should reflect the benefits that result.

6.6 Multiple benefits

As well as reducing the risks to people and property, FCERM can bring significant economic, environmental and social benefits. It can enhance and protect the built, rural and natural environments, cultural heritage and biodiversity by preventing loss and damage to habitats and heritage assets and reducing pollution. It can contribute to regeneration and income generation, protect infrastructure and transport links, and

contribute to economic growth. It is important that communities are able to shape risk management actions to take account of local priorities, and that this is supported, where appropriate, by local contributions to achieve additional benefits that might not be possible otherwise. In all instances, Wirral's flood and coastal risk management activities will seek to avoid damaging the environment, including the historic environment, and wherever possible work with natural processes; and always seek to provide environmental benefit, as required by the Habitats, Birds and Water Framework Directives. This may include providing new habitats, which may not be directly linked to FCERM schemes, to compensate for those that are lost as a result of actions to protect people and property.

6.7 Beneficiaries should be encouraged to invest in risk management

When flood and coastal erosion risks are managed, the benefits achieved are in many cases localised and lead to personal or private gain through the protection of specific individuals, communities and businesses. However, they can also be public, through the reduction of future costs to society arising from incident recovery. The Government have identified that as the private as well as the public will benefit, then the costs should not fall to the general taxpayer alone. If costs are borne by national budgets alone, the plans would be subject to national controls to ensure value for money to the taxpayer, limiting the scope for local influence and hence there would be a lack of local incentive to take sensible steps to reduce risk where possible, to avoid actions that might increase it, or to keep the costs of risk management actions proportionate. Overall, the Government has suggested that there will be the opportunity for significantly more risk management activity to take place if alternative sources of funding can be secured in each area to reflect the local benefits that would be delivered. Any local funding can be used to supplement the amounts available nationally to ensure as many communities as possible can be protected.

7. Delivering Flood Risk Management

7.1 Sustainable Drainage and Planning

Sustainable Drainage Systems (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 preventing local flooding by managing the amount of surface water that is discharged. Additionally, they also provide water quality improvements, open space that can also be used as public amenity and they can provide wildlife habitat.

In December 2014, a Ministerial Statement was released by Government setting out their 'expectation is that sustainable drainage systems will be provided in all new developments wherever this is appropriate.' Schedule 5 of the Town and Country Planning (Development Management Procedure) (England) Order 2015 lists the LLFA as a statutory consultee for major development proposals. This means that the Local Planning Authority (LPA) must consult with the LLFA prior to determining a planning application. As a statutory consultee, the LLFA has a legal duty to provide a substantive response to the LPA providing an informed view on development proposals which have surface water implications within 21 calendar days. The performance of the LLFA is closely monitored by the Secretary of State to whom the LLFA is required to report annually on their performance.

In delivering this role the LLFA must work with the planning framework, notably:

- **National Planning Policy Framework (NPPF)**
- **Planning Practice Guidance (PPG)**

The aim of this planning framework is to reduce inappropriate development in flood risk areas and reinforce the requirement for sustainable surface water management in all new developments.

To support the delivery of this framework, Government have published Non-Statutory Technical Standards for Sustainable Drainage which are to be read alongside the NPPF and PPG and offer further technical guidance on the design standards Government expects to see for SuDS.

At a local level, the LLFA must also have regard to the local planning framework set out by Wirral Council in its Local Plan. The LLFA is working closely with the local planning authority in developing appropriate policies in this capacity to manage flood risk in Wirral.

7.2 Ordinary Watercourse Consent

Under the Land Drainage Act 1991 (as amended by the Flood & Water Management Act 2010), consent is required from Wirral Council as LLFA to build a culvert or structure (such as a weir) or carry out works within the banks of any ordinary

watercourse which may alter or impede the flow of water, regardless of whether the watercourse is culverted or not. Wirral Council as LLFA has responsibilities to maintain ordinary watercourses and land drainage systems where it is the riparian owner.

A policy approach will be developed to support the application of ordinary watercourse consenting powers.

7.3 Ordinary Watercourse Enforcement

Ordinary watercourse enforcement can be used to ensure the proper flow of water in a watercourse and over the floodplain; the control of water levels and the security of existing assets. To achieve these aims, enforcement action can be used to rectify unlawful and damaging or potentially damaging work, using a risk based approach.

A policy approach will be developed to support the application of ordinary watercourse enforcement powers.

7.4 Asset Register

The Flood & Water Management Act 2010 placed a duty on LLFA's to identify and record assets that have the potential to create flooding with significant risk to life and property. As these assets are identified they are added to the assets register and their flood risk status established and if necessary they can be designated, to prevent inappropriate changes.

For example, culverts and debris screens could create a significant risk of flooding depending on their location; critical ones need to be identified and a regular maintenance programme established, however, its frequency will depend as much on resources available as the need.

The flood risk asset register will continue to be developed on the Drainage GIS mapping system and populated as assets are identified. As some asset details are held in other databases only a reference to this will be held in the register.

7.5 Designation of Flood Risk Features

As a LLFA, Wirral Council has the power to formally designate a structure or feature which it believes may have an effect on flood or coastal erosion risk. These legal powers are intended to address the flood risk which could occur if a structure or feature is altered or removed which:

- a) Contributes to flood or coastal erosion risk; and
- b) Is situated on private land

A designation acts as a form of legal protection for structures and features which have been identified as presenting a flood or coastal erosion risk. Schedule 1 of the FWMA, Paragraph 5(1) prohibits any person to: *'alter, remove or replace a designated structure or feature without the consent of the responsible authority.'* When deciding whether or not a structure or feature should be designated, the main consideration should always be the effect the structure or feature has on flood or coastal erosion risk.

7.6 Flood Investigations

Section 19 of the Flood and Water Management Act 2010 places a responsibility on lead local flood authorities to investigate, to the extent that it considers it necessary or appropriate, floods in its area. It should identify which risk management authorities have relevant flood risk management functions and whether they are exercising or proposing to exercise those functions in response to the flood. It must then publish the results of its investigations and notify any relevant risk management authorities.

In response to the legislation Wirral Council has developed a Flood Investigations Policy, which can be found on the Council's website. Flood Investigation Reports carried out under this policy into significant flood events will be made published on the Council's website.

The results of any investigations will be shared with partners and placed on the Drainage GIS mapping system and will be used to develop a programme of remedial works aimed at preventing or reducing the impact of the flooding. In some cases this may involve property level resilience works, particularly if it is unlikely that a solution is possible or too costly.

7.7 Flood Resilience, Response and Recovery

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.

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 LRF 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 Wirral 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 Wirral Council will be able to provide will always be limited by the resources available to it at the time of the incident.

7.8 Communications

Communications will involve both internal and external partners together with local community. The purpose of the communications will be to:

- Ensure understanding of the roles and responsibilities of the various flood risk management authorities and partners;
- Manage expectations and to be clear about what can and cannot be achieved;
- Build a greater awareness of flood risk and ownership of the problems at a local level;

- Generate a culture of personal and community responsibility for being prepared for flooding;
- Make certain that the strategy is understood and is supported by all sections of the community and;
- Guarantee co-ordination with the Council's other plans and strategies: but in particular, the Emergency Plan.

7.9 Community Involvement

Involving and informing the local community concerning flood risk within Wirral is identified as a high priority now and in the future and the necessary resources will need to be identified to support this aim. The Wirral Flood Partnership has produced an information leaflet that gives residents appropriate advice on what to do in the event of a flood, which will be made available, resources permitting, at Wirral Council One-Stop-Shops and Libraries.

In addition, undertaking consultation with the various housing providers in Wirral would enable the flood risk messages to reach a wider audience, increase the understanding of the local flood risk and secure the prioritisation and response that these communities would wish to see in connection with what are often localised problems that directly affect them.

The involvement of local communities in the funding of flood mitigation/prevention works will be necessary in the future due to the limited amount of funding available nationally and locally. In addition, it will not be economically, socially or environmentally feasible to permanently resolve all flooding issues in the Wirral. As part of this Plan it is proposed to develop an investment strategy for how the Council can work with other organisations and communities to raise further funds and prioritise areas for further investigation and/or investment.

8. Investing in Flood Risk Management

8.1 Funding Process

Government support will be prioritised to help those most at risk but least able to afford to protect themselves. The Government has provided a framework within which choices can be made about national and local priorities for expenditure, and how national resources will be targeted

The financial benefits of flood and coastal risk erosion management typically outweigh costs many times over, providing significant gains to land and property owners and others by avoiding future damage to property, safeguarding insurance terms, and preventing the serious trauma and health impacts that flooding and coastal erosion can cause. In addition to the continuing but limited national funding, local areas and partners will be encouraged to financially invest more in flood and coastal erosion risk management. By doing this it should mean that more communities can enjoy the benefits of protection, whilst giving them a bigger say in the action taken. Decisions will be taken locally, and voluntarily, on whether and how to contribute towards schemes.

8.2 Targeting of Government Resources

Flooding and coastal erosion cannot be entirely prevented and the relevant legislation is largely permissive. This means that there is no general right to be protected from flooding and coastal erosion, and no right to be protected to any particular standard where risk management action is taken. Instead, Government promotes nationally consistent approaches to assessing and managing flood and coastal erosion risk.

Government, through national taxation, is also the primary funder of risk management activity, with the majority of funds within the system provided by Defra to the Environment Agency as Flood Defence Grant-in-Aid. This block grant together with centralised delivery allows economies of scale to be exploited and means that uneven investment profiles in each part of the country can be managed.

Government funding and resources are prioritised to achieve the greatest reduction in risk possible, either as a result of direct investment or by facilitating wider sources of funding. Assets and systems are managed to maximise their whole-life value, ensuring an appropriate balance between providing improved levels of protection and maintaining existing systems. As a result, it is estimated that approximately 85 per cent of the potential annual damages from flooding are prevented by the flood risk management assets and systems already in place. However, future annual damages are expected to rise due to climate change, and the natural deterioration in the condition of existing assets. They will also increase if inappropriate new development were to take place. Therefore, overall investment, by the private and

public sectors combined, needs to keep pace with pressures over the medium to long-term to avoid flood risk and rates of coastal erosion increasing over time.

8.3 Capital investment in new and improved assets and systems

In recent years capital investment by Government has been allocated to achieve a range of social, economic and environmental outcome measure targets. Investments that have made the biggest contribution towards the targets, per pound of investment required, have been prioritised. While this approach has been successful in delivering outcomes against Government priorities, overall levels of activity have been constrained by the amount of national funding available. This means that some areas have benefited from good levels of protection for 'free', at the general taxpayers' expense, but similar levels of protection cannot be afforded for everyone.

The current system has also been criticised for being too top-down and lacking in local influence. The predominance of Government funding in the system can also lead communities to assume that their defence project will be funded eventually. In some cases, this is unrealistic and undermines incentives for local action in the meantime.

Therefore, from April 2012 there has been a transition towards a new system of allocating national capital funding to risk management projects. The reforms aim to better protect more communities, deliver more benefits, and help avoid deprivation caused by flooding and coastal erosion, by:

- **encouraging total investment to increase beyond levels affordable to central Government alone.** Additional investment will help offset the twin long-term challenges of climate change and asset deterioration, whilst moving funding arrangements onto a more sustainable footing. Investment in reducing the risk of flooding is also the best way of keeping insurance cover affordable.
- **enabling more local choice, and encouraging innovative, cost-effective options to come forward in which civil society may play a greater role.** Those that live or have an interest in the areas at risk should have a bigger say in what gets done, in return for greater local and private contributions towards the benefits delivered.
- **increasing levels of certainty and transparency over the national funding for individual projects whilst prioritising action for those most at risk and least able to protect or insure themselves.** Introducing more certainty over Government funding for each community will encourage additional investment to come forward, or alternative actions to be taken, if local priorities are unlikely to be entirely met by national budgets alone.

9.4 Maintenance of Existing Flood Defence Asset Systems

The maintenance of asset systems is generally carried out using a risk-based approach and prioritised so that investment is made where activities contribute most towards reducing the risk, the potential for damage, and also where it is economically and environmentally justified. Future investment in maintenance will continue to be prioritised to ensure that the greatest possible outcome is achieved with the available funding. Flood risk and coastal erosion management assets such as coastal flood defences, watercourses, culverts and highway drainage systems work with other assets as part of a system, together providing protection to a defined 'benefit area'. Failure of any one single asset could put the whole system at risk.

Wirral is in the process of developing its Flood Risk Asset Register together with its Highway Asset Management Plan. This will involve the mapping of each asset, cataloguing all assets performing an FCERM function, appraising the benefits of commencing or continuing their maintenance and identify if improvements may be beneficial. The need to ensure value for money in maintenance activities in some systems, may lead to a need for it to be reduced or even cease.

Since a range of factors are relevant when the required level of maintenance for an asset is reviewed, four categories are considered:

1. Assets for which there is an economic case for maintenance to reduce the risk from flooding to people and property;
2. Assets that are required to protect internationally designated environmental features from the damaging effect of flooding;
3. Assets that do not fit categories one and two above, but where work is justified due to legal commitments;
4. Assets that do not fit the above three categories.

Wirral will aim to maintain the assets it is responsible for in the first two categories, or ensure that who ever is responsible is aware of their maintenance responsibilities. It will also consider maintenance of assets in the third category, at least for the immediate future. While current funding levels may be sufficient to achieve this maintenance in the short term, the effects of asset deterioration and climate change could make this more challenging as time progresses. For assets in the last category, Wirral will consult with interested parties and, as soon as is reasonably and practically possible, cease any maintenance it may presently be undertaking to be able to fulfill higher priorities elsewhere.

8.5 Costs and benefits of FCERM measures

In the financial year 2011-2012, Defra spent approximately £521 million on FCERM through the Environment Agency in England. In addition to this, Wirral receives funding from the Department of Communities and Local Government through its

Formula Grant to undertake new roles under the Flood and Water Management Act. This investment in FCERM protects people, property and the environment and by preventing flooding and coastal erosion, physical assets deliver very high economic benefits. In the 2008-2009 to 2010-2011 investment programme every £1 of capital investment in flood and coastal erosion risk management provided an average long-term benefit in reduced damage of approximately £8.

Three benefit aspects of a project will influence the availability of contributions from national funding:

1. The value of benefits for householders as a result of flood or coastal erosion risks being managed, especially in deprived areas and where risks are significant.
2. The value of other benefits achieved, such as the benefits to businesses, agricultural productivity and protection for national and local infrastructure, across the whole-life of the scheme.
3. The environmental benefits of the scheme, needed to maintain healthy ecosystems as well as offset any habitats lost when defences are built to protect people and property.

Shortfalls between the cost of a scheme and the available national funding will need to be met by contributions from others or through auditable cost savings.

Key partners with direct interest in proposed schemes are potential funders or may be able to contribute to schemes in other ways such as coordinating their work to achieve scheme objectives or allowing works to take place on their land. Wirral Council as a scheme promoter is encouraged to look more widely for alternative sources of funds. This might involve contributions from other Wirral Council budget areas if benefits can be shown to accrue to them, grants from the Regional Flood and Coastal Committee local levy, EU grants to Developer contributions. FCERM benefits are likely to feed through to the community in terms of property and land values, insurance costs against flooding and business and agricultural productivity over the long-term and this will need to be reflected in the alternative funding sources.

However, it is likely to need early involvement of Elected Members where those choices may require political support.

8.6 Investment Strategy

Wirral Council will develop an Action Plan identifying those locations with the highest priority flood 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 Action Plan will provide information to enable investment decisions to be made that support this investment strategy

Applications have been submitted to Defra for grant-in-aid funding to investigate flood risk across the Wirral, with initially support from within the Council's budgets. However, it is likely that additional funding will be required to enable these investigations to proceed to scheme identification and development. It is also likely that more substantial funding support may be necessary for any subsequent scheme delivery. Applications are submitted annually and these will be updated as better information concerning the flood risk, solutions, costings and possible funding streams are identified.

The Council will also work with its partners and stakeholders to identify measures that have the potential to attract the most funding / contributions.

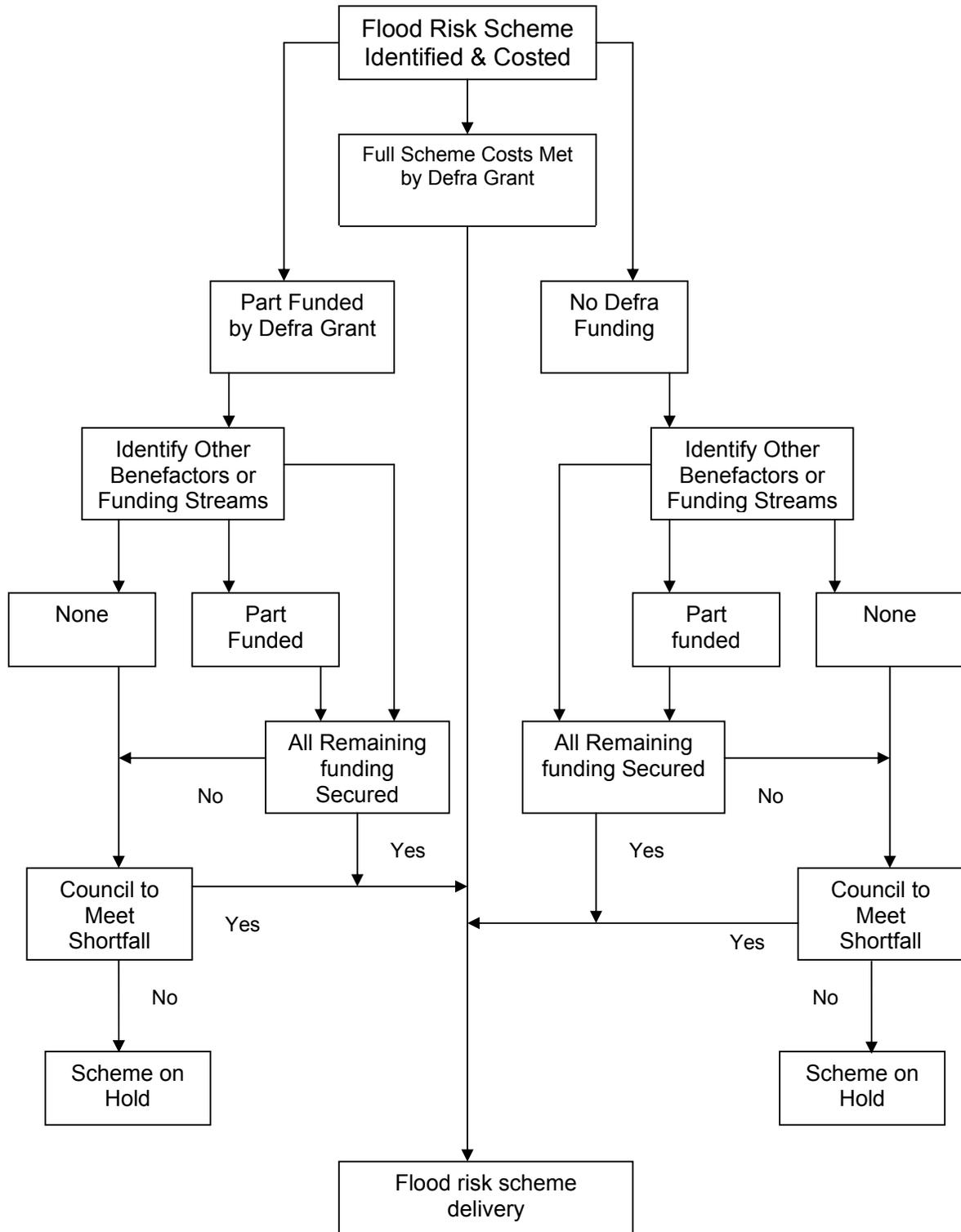


Figure 2: Flood Risk Investment Strategy Flowchart

9. Monitoring Our Progress

9.1 Action Plan

Wirral will develop an Action Plan for each area as details of the existing and future flood risk are identified from its proposed investigations. They will be developed taking account of the available economic, ecological and sustainability guidance and existing strategic studies and management plans. Additionally, any works that are proposed will take account of its contribution to climate change.

Where physical flood prevention measures are not feasible, the Action Plan will identify how we will work with the local community to provide information and advice that will assist and empower them to take responsibility for managing and protecting property and assets from the adverse effects should flooding occur. Amongst other things this could include details of flood resilience measures (and retrofitting where necessary) for the community, economy, natural, historic, built and social environment, flood warning systems / evacuation and emergency procedures, effective land management measures to reduce runoff and those areas that are prone or will be prone to flooding in future.

The Action Plan will provide Information and advice to individuals, businesses and the community that highlights the need to reduce greenhouse gas emissions due to its contribution to climate change and flood risk; and the importance of adaptation measures such as design resilience (retrofitting), land management (SUDS and flood storage), in further managing the risk of flooding. In addition this Information and advice will identify how biodiversity and nature conservation protection and enhancement measures can be incorporated into the management of local flood risk. The opportunity to incorporate biodiversity enhancements within the flood risk management options for areas at risk will be a design consideration. Additionally, the Council's obligations under the Habitats Regulations will require a Habitats Regulations Assessment to be undertaken on any Action Plan works which could affect European protected wildlife sites.

Wirral's geological features will affect what land management options can be employed to manage flood risk. The nature of the underlying geology can restrict infiltration, while the location of major aquifers beneath the Wirral will further restrict infiltration as a flood risk management option. Wirral has a legacy of land contamination arising from industrial development and other related operational practices. The distribution and nature of contamination is not fully known and therefore land owners and businesses who may wish to undertake flood risk management works will be made aware of this potential issue.

In addition, the Action Plan will provide information and advice on the importance of Wirral's designated and non-designated heritage assets in the flood risk area. The

location and presence of these sites will affect what land management options can be employed to manage flood risk. The advice provided in the Action Plan will also highlight the importance of adaptation measures such as design resilience (retrofitting) for historic buildings to prevent future deterioration of heritage assets. Also, identifying that using good design for flood risk management measures, particularly structural defences, river enhancement and other land management options will improve their look and feel and respect the settings of historic buildings.

9.2 Progress and Delivery

Wirral's Operational Flood Group is a partnership between the various risk management authorities at Wirral Council, the Environment Agency and the sewerage undertakers of United Utilities and Dŵr Cymru Welsh Water. This group will oversee the delivery of the Action Plan by the each respective risk management authority.

Progress of the delivery of the Action Plan will be monitored by the Wirral Flood and Water Management Partnership and also subject to scrutiny through Wirral's Environment Policy and Performance Committee.

10. Environmental Appraisal

10.1 Strategic Environmental Assessment (SEA)

A Strategic Environmental Assessment (SEA) is a statutory assessment process, required under the Environmental Assessment of Plans and Programmes Regulations (the SEA Regulations, Statutory Instrument 2004, No 1633) which provide the legislative mechanism for transposing into UK law the European Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment' (the SEA Directive).

The SEA Directive and Regulations requires that an assessment be made of the effects that certain plans and programmes will have on the environment. It contains the links to corresponding legislation and policies, such as Biodiversity. It is a separate document to this Strategy intended to increase the consideration of environmental issues during decision making related to strategic documents.

The SEA identifies the significant environmental effects that are assessed as likely to result from the implementation of the local flood risk management strategy. The findings of the assessment are presented in an environmental report that is consulted upon, with the public, alongside a draft of the plan. Issues raised in the environmental report and in responses to the consultation must be considered by the Council before the Strategy is formally adopted.

SEA can be broken down into distinct stages or steps. The stages below are based on activities set out in the SEA Directive.

- its purpose,
- when it is undertaken,
- what is undertaken,
- what outputs are produced, and
- who may be consulted / involved.

The draft SEA report concluded that none of the measures in the draft LFRMS are likely to have significant negative effects on any of the SEA objectives. This is because of the nature of the LFRMS, which has an underlying aim of environmental protection through flood risk management, meaning that the effects of the strategy are largely positive.

The findings of the draft SEA Report has been taken into account in the preparation of this draft strategy. Following the public consultation between December 2014 and March 2015, a final draft Strategy will be produced and the SEA Report will then be updated to reflect any changes to the measures in this final draft. Once all the necessary changes have been made and the Council completes its formal internal approvals process, the document will be adopted as a Council strategy.

10.2 Habitat Regulations Assessment (HRA)

A Habitats Regulations Assessment (HRA) considers the impacts of plans and proposed development on Natura 2000 sites. Natura 2000 sites are nature conservation sites of European importance and are designated either Special Protection Areas (for birds) or Special Areas of Conservation (for animals and habitats). In addition, Ramsar sites (Internationally Important Wetlands) are treated as if they were Natura 2000 sites in accordance with Government policy.

A HRA for this Local Flood Risk Management Strategy is required under the Conservation of Habitats and Species Regulations 2010.

11. Glossary

Term	Meaning
Annual Event Probability (AEP)	See SoP /Standard of Protection
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 through 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) caused by man or man's activities that is injurious to existing, intended or potential uses of the resource.
Prevention	Site design and management to stop or reduce the occurrence of pollution and to reduce the volume of runoff by reducing impermeable areas.
Probability	The statistical probability of a flooding episode (event) occurring.
Protection	The flood event return period above which significant damage and possible failure of the flood defences could occur.
Public sewer	A sewer that is vested in and maintained by a sewerage undertaker.
Recovery	The process of rebuilding and rehabilitating the community following an emergency.
Reservoir	A natural or artificial lake where water is collected and stored until needed. Reservoirs can be used for irrigation, recreation, providing water supply for municipal needs, hydroelectric power or controlling water flow.
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 and coastal erosion 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	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 in severity (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