

**Local Flood Risk Management Strategy
Non Technical Summary**

City of Cardiff Council

September 2014



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Foreword



The impacts of climate change are visible all around us and flooding is becoming an increasing risk for all of us. We cannot hold back the forces of nature, but we can put in place a strategy to prepare and protect our city.

Our priority is to ensure;

- that the people who live in Cardiff and the businesses that support our city understand the flood risks that face them
- that people are reassured by the work that Cardiff Council are carrying out to reduce and manage the risk of flooding
- Cardiff has a strategy that ensures it becomes the most liveable European capital city
- New development meets the highest standards of sustainable drainage design and management
- our urban coastal environment is enhanced whilst ensuring a robust flood protection

Cardiff Council seeks to go beyond the guidance requirements and truly build a community approach to flood management and resilience. We must ensure a comprehensive and partnership focused approach to the flood and water management in our city by fully understanding our flood and coastline erosion risks.

By working in genuine partnership with other bodies, we believe that Cardiff can be a leading European City in sustainable drainage. Exciting and innovative schemes such as Greener Grangetown illustrate what can be achieved by working with others to deliver pioneering solutions – which deliver multiple benefits for all.

This strategy will form one of the key building blocks to the long term liveability and sustainability of our capital as well as delivering long term benefits to our communities. The management of surface water and our coastline must be key assets in the future economic and sustainable development of our capital city.

Councillor Ramesh Patel

City of Cardiff Council, Cabinet Member for Transport, Planning, & Sustainability

1. Introduction

Our weather is changing and with it our environment. Media headlines relating to flooding in Wales and across the UK are becoming more common.

Many factors contribute to flooding: heavy rainfall, rapid snowmelt, severe winds over water, unusual high tides, storm waves against a coast, failure or blockage of drains and other structures that retain the water. The risks of flooding and coastal erosion cannot be avoided as they are natural processes, but steps can be taken to reduce the likelihood of flooding and the impact of a flood.

Flooding has many impacts; it causes damage to homes and possessions as well as disruption to communications. Extreme floods can put lives at risk and create worry about the safety of homes and businesses long after the floods have gone. This has an impact on livelihoods and the local economy. Income from tourism can be lost and regional reputations damaged. Rapid runoff of surface water causes damage to infrastructure, soil erosion and pollution of waterways. In a city such as Cardiff surface water can delay traffic and disrupt local businesses and services. Floods can interfere with drainage and productive use of lands, such as open spaces, businesses and urban areas. Structural damage can occur in homes and businesses. For local authorities that have seen a significant flood event, the financial losses can run into millions of pounds.

Following the flooding across large areas of the UK in the summer of 2007, the Government commissioned the Pitt Review (Pitt, 2010). It recommended a change in legislation around who is responsible and accountable for managing flood risk in England and Wales. This review resulted in the introduction of the Flood and Water Management Act 2010. This law has placed new responsibilities on Cardiff Council to improve our understanding of the flooding risks in our city and with our Council neighbours to reduce these risks where possible.

Local flooding in Cardiff can include;

- Surface runoff from roads and gardens
- Groundwater
- Streams, culverts and small rivers
- The main rivers (Ely, Taff & Rhymney) – although these are the responsibility of the Environment Agency Wales.

Although Cardiff have not had many significant flooding incidents there are an increasing number of local flooding issues that occur in periods of heavy rainfall. The numbers of localised flooding incidents are growing each year and the Council are taking action now to protect the residents and businesses of Cardiff for the future.

We have developed a Local Flood Risk Management Strategy to understand risk levels of these sources; take steps to reduce these risks and raise awareness across our communities so they can prepare for flooding.

1.1. What do we aim to achieve?

This is not just about meeting our legal requirements. The Council wants to do more and make sure all council teams, neighbouring councils and our key stakeholders work together to reduce the risks of flooding in Cardiff.

By doing more than the law requires, we will:

- Know the risks of flooding in Cardiff
- Have a clear plan to help communities and businesses
- Look at new and clear ways to protect our city from flooding
- Give a joint approach to flood prevention and planning
- Have emergency plans so we can respond to flooding quickly

- Help people understand the risks of flooding and the potential impact
- Help communities to recover more quickly and effectively after incidents

1.2. What we have to do?

The Flood and Water Management Act 2010 sets out what must be covered in a flood strategy.

Cardiff's strategy must:

- List the key organisations that can help minimise flooding in Cardiff, these are called Risk Management Authorities
- Say what the flood and coastal erosion risks are in Cardiff and on our boundaries with neighbouring Councils
- List the roles and responsibilities of who has a part to play in managing flood risk in Cardiff
- Set out what we are planning to do about managing flood risk
- Set out how and when we will make changes
- Include the costs and benefits of our planned changes
- Explore the impact of this strategy on wider environmental and sustainability objectives
- State how and when the strategy will be reviewed by the council.

1.3. Key aims to also consider

- Think about being more sustainable in our decisions
- How we can support a better quality of life for our own and future generations
- The help the individuals, communities and businesses of Cardiff need
- Help Cardiff grow as a city, but minimise the flooding risks
- Promote equality and do not have a negative impact on poverty
- How we will communicate with the residents, key partners and businesses of Cardiff and the wider region impacted
- Understanding all of the risks
- Support good management of our water, land and marine resources
- Prioritise investment, resources and actions
- Maximise ways we can adapt to climate change

1.4. Related Legal Drivers

Flood Risk Management has to work within a range of guidance and legislation that all need to be considered.

Some of these include:

- The Climate Change Act (2008)
- The Conservation of Habitats and Species Regulations (2010)
- The Civil Contingencies Act (2004)
- Strategic Environmental Assessment (SEA) Directive (2001/42/EC)
- The Land Drainage Act (1991)
- The Water Framework Directive (2007)
- The Wildlife and Countryside Act (1981)
- Countryside and Rights of Way (CROW) Act (2000)
- The Public Health Act (1936)

2. Roles and responsibilities

It's important to identify all the key organisations that have a role to play in reducing the risks of flooding in Cardiff. The more formal and legal bodies are called Risk Management Authorities and they have responsibilities to reduce flooding.

Figure 2-1 - sets out the following information on the Risk Management Authorities in the Cardiff area:



The Welsh Government is not a Risk Management Authority, but it does set the legislation, policies and guidance. It does provide funding for helping to manage flood risk so has an important role to play.

2.1. Cardiff Council Departments

The impacts of flooding and managing flood risk can cut across many Council departments, each conduct roles in reducing flooding risk, raising awareness and supporting the response to a flooding event. The following departments all feed into the strategy and future plans;

- Emergency Management Unit – to prepare, plan and respond to flooding events;
- Highways - inspection and maintenance of road surfaces, gullies and drains so that the risks of flooding can be reduced. They also need to be responsive to blocked drains and gully's during a period of heavy rain
- Planning - planning guidance and enforcement, acceptable standards of drainage systems and flood risk consideration for new developments.
- Housing and Neighbourhood Renewal - maintenance and repair to existing properties as well as raising awareness across all Council tenants.
- Schools & Education - There is a duty to ensure our schools and educational facilities are safe and fit for purpose. As well as providing awareness of flooding risks and the impacts on our communities.
- Parks - Maintenance of several areas of open space that are designed to hold flood water back during high rainfall from rivers. Also the importance of tree planting can have a positive or negative impact on surface water run off.
- Waste Management & Street Cleansing - Litter, leaves and grit in gullies and around drains can lead to increased surface water flooding and need to be removed.

- Sustainable Development - Flooding is closely linked to climate change and the increasing number of extreme weather events; heavy and prolonged rainfall, snow and heat. The Council can help with long term actions that can help reduce our impact on the environment and carbon emissions.
- Social Care - There is a duty to ensure our facilities are safe and fit for purpose and raising flooding risks and the impact on our more vulnerable communities.
- The Harbour Authority - Cardiff Bay Barrage now forms a significant section of the Cardiff coastal defence system.

3. Local Flood Risk in Cardiff

3.1. General characteristics of Cardiff

Cardiff covers an area of just under one hundred square miles and has a population of around 346,000 (according to the 2011 Census).

In Cardiff there are estimated to be 148,109 residential properties, 8,011 non-residential properties and 1,341 critical services (hospitals, nursing/care/retirement homes, electricity sub stations, schools, Police, Fire and Ambulance Stations, prisons and sewerage or wastewater treatment works).

3.2. Sources of flood risk

Main rivers

The Environment Agency Wales is responsible for the management of flood risk from main rivers (the Ely, the Taff and the Rhymney) and have plans to minimise flooding.

Coastal erosion

Cardiff has a large coastline that is constantly changing. The weather and tides can erode the natural protection that the coast provides us. At high tides and during storms the risks of flooding and erosion of our coast line are increased.

Groundwater

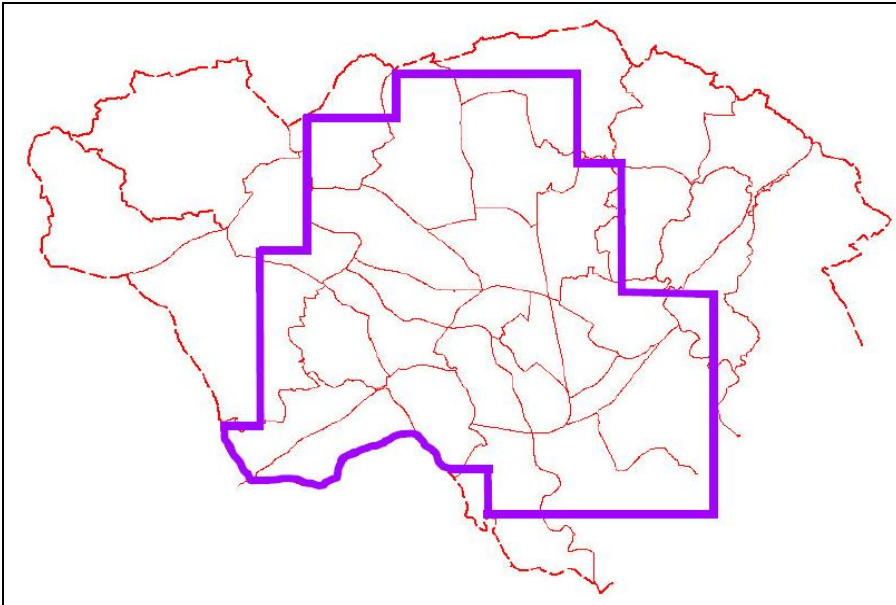
Groundwater flooding occurs when water levels in the ground rise to the surface. Low lying areas are particularly susceptible. This has not been a common issue in Cardiff since the Cardiff Bay Barrage was built.

Surface water

Surface water flooding usually occurs when the surface water runoff rates (due to rainfall) are greater than the drains were designed to handle. This is one of the most common causes of flooding in Cardiff.

The environment agency used rainfall data and also data about drains and rivers to produce a high level map of areas that are likely to flood.

The reported key risk area covers the majority of the county as shown on the following map.



Reservoirs

NRW is responsible for managing the risk of flooding from reservoirs and works closely with the Council's Emergency Management Unit to ensure plans are in place to deal with the unlikely event of a reservoir bursting its banks.

Flooding from sewers and water supply pipes

Dŵr Cymru Welsh Water has two key responsibilities:

- To provide a high quality water supply to customers
- To take away wastewater and return it to the environment safely - problems can arise when sewers are overloaded in heavy rain, from burst pipes and water mains.

Sewers come in three types:

- Foul sewers, which are designed to carry soiled water that has been used for washing and cooking purposes, as well as from toilets and trade effluent
- Surface water sewers, which are designed to carry rainwater runoff from roofs, yards and roads
- Combined sewers, which receive a mixture of foul sewage and surface water.

Flooding from foul sewers is generally caused by blockages or pumps failing and usually affects a limited numbers of properties. Flood water containing foul sewage means that it does cause significant distress to those affected.

3.3. Flood risk assessments

Cardiff must understand the risks of flooding across the city and there are a number of ways of doing this:

- The **Preliminary Flood Risk Assessment** - Cardiff Council carried out technical studies in 2011. It provides a high level overview of flood risk from local flood sources.
- **Historic flood risk data and information** – looking at flood events that have happened in the past.
- **Flood Risk Maps**- these sources of information are in the process of being compiled and have been completed by June 2013.
- **Environment Agency data on surface water flooding** –The EA has developed a number of surface water flooding maps that show possible areas of flooding
- **Local knowledge** – areas that are known to regularly flood or have problems

4. What we currently do

Flood risk management is not new to Cardiff and work has been done for several years to prevent, prepare and reduce the likelihood and consequences of flooding. Reducing the risk of flooding can be done in two ways:

- Structural - infrastructure changes; physical structures; coastal defences that help retain, channel or prevent water movement.
- Non-structural - awareness raising, emergency planning, planning controls, sympathetic landscaping or making use of natural drainage methods.

Both approaches have been used by Cardiff Council

We currently spends approximately £1m every year to reduce the risks of flooding in Cardiff

Typical activities include;

- Culvert / screen clearance
- Highway drainage repairs
- Gully cleansing
- Drainage enforcement
- Land drainage
- investigation of flooding incidents & options for alleviation
- Operational costs of pumping stations and ground water monitoring
- Remedial & reactive works
- Sewer repairs to council owned properties

Cardiff Council contributes to the Caldicot and Wentlooge Drainage Board and pays £700k a year to support its operation in managing land drainage and local flood risk within the drainage board area.

Cardiff Harbour Authority is a part of Cardiff Council, but its budget is provided by the Welsh Government.

In addition the activities that the Emergency Management, Cleansing Services, Housing and , Parks teams all undertake to support the reduction in flooding is not included in these costs, but all play a valuable part in preventing flooding.

4.1 What we do within the Council

Emergency responses

Cardiff Council's Emergency Management Unit has in place a number of emergency plans if a significant flood event was to occur in Cardiff. It tests the Council's resilience for such events as well as helps raise awareness.

Community Awareness

The Environment Agency and the Council's Emergency Management Unit run community workshops and action days to support communities that are at a high risk of flooding. They raise awareness across all communities and businesses of the level of flood risk that a community faces, and identify steps people can take to protect their properties.

Highways Maintenance

The Council Highways Department maintains and repairs the council owned drains, culverts and gullies, through a programme of inspections and cleaning to remove blockage and debris from watercourses as well as maintain grids and trash screens.

Flood alleviation schemes

The waterways in Rhiwbina have a history of flooding, with 10 floods in the past twenty years. The most recent and serious flood occurred in June 2009, inundating properties in Wenallt Road, Heol Uchaf, Pen Y Dre and several other locations in Rhiwbina Village. The flooding caused significant damage to both residential and commercial properties. Funding has been secured and work has started designing the flood defences, with construction due to start in late summer 2014. 216 properties will benefit from the improvements.

Coastline erosion surveys are also underway so we better understand the risks that face our communities that live near the coast.

The Council also continues to work with the Environment Agency to explore new alleviation schemes in high risk areas of the City, such as Penylan, Waterloo gardens area.

Cardiff Bay Barrage

In November 1999 the barrage was completed and the sluice gates closed at high tide to hold water from the Bristol Channel in a 500 acre bay. The Barrage creates a fresh water area and also helps prevent flooding.

Partnership working

Cardiff Council already works with a number of organisations to try and create a better environment for the people of Cardiff. Cardiff Council are members of the following organisations / working groups:

- **Caldicot & Wentloog Levels Internal Drainage Board** is responsible for the day to day management of the drainage system on the Gwent Levels where valuable agricultural, otherwise commercial and residential land would be regularly flooded.
- **South East Wales Flood Risk Management Group** has been set up to share information between local authorities, Internal Drainage Boards, the Environment Agency, the Welsh Local Government Association and Welsh Government.
- **Cardiff Area Flood Group.** The Cardiff Area Flood Group has been set up to ensure a multi-emergency approach to a major flooding incident in Cardiff.
- **Severn Estuary Coastal Group** is a partnership of local authorities and other organisations around the Severn Estuary that looks at protecting our coastline.

4.2 Reports and incidents

Cardiff has not had a significant flooding event for several years and the last flood of note that caused property damage and disruption was in 2009. However, surface water flooding is a growing concern for Cardiff residents and with increased periods of heavy rain the number of reported incidents is growing.

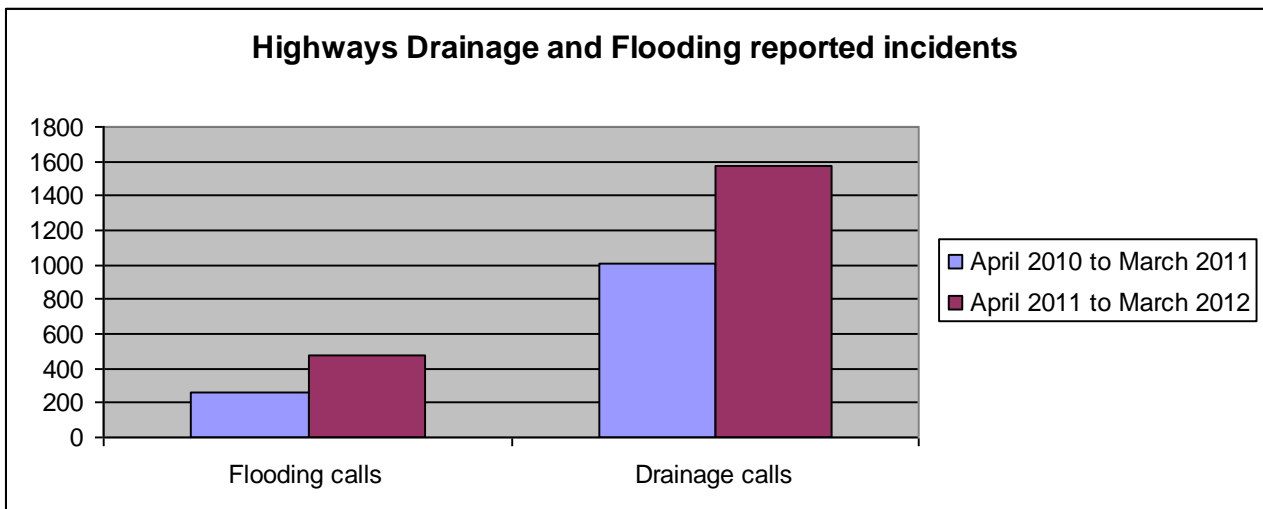


Figure 4-2 - Highways and drainage reported incidents

4.3 Current levels of understanding

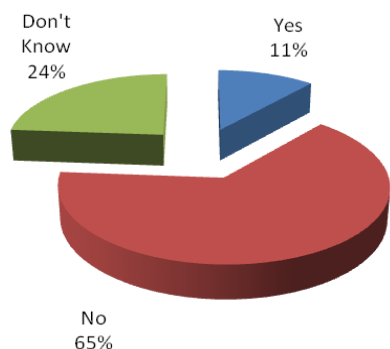
The Council engages with the community through the Ask Cardiff annual survey. A question is included to measure the level of public flood risk awareness.

Results suggest that the level of public awareness is reasonable, but more work needs to be done in targeted areas, particularly for our vulnerable communities and preparing them for a flood.

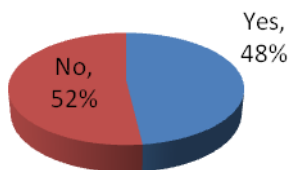
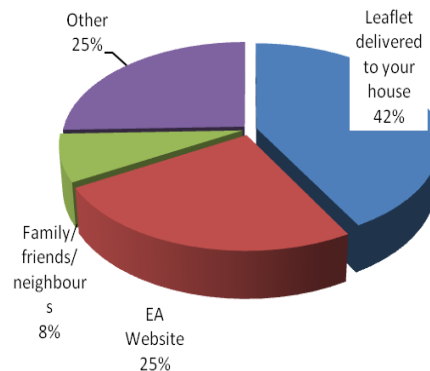
Summary responses to key questions are provided below.

Results: September 2012

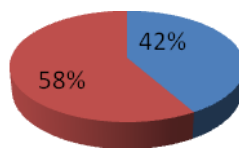
Is your property in a flood risk area?



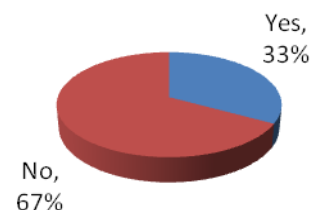
If 'yes' how did you find out?



Would you know how to find out if you live in a flood risk area?



Would you know where to get advice if your property was at risk of flooding?



Would you know what to do if your property became flooded?

4.4 Areas where we can make a difference

The following areas have been identified as needing further development, or giving us an opportunity to go beyond the legal requirements. These will be incorporated in the Council's plans.

- More **partnership working** with neighbouring local authorities and the flood risk authorities such as Dwr Cymru Welsh Water
- **Closer working with other Flood Risk Management Authorities** to deliver schemes with shared benefits.
- Have a clear and robust **Sandbags Provision Policy**
- Help our residents with **community resilience planning**. As **consultation and engagement** is key, we will increase flood risk awareness and the steps people can take to protect their property. We will look into the possibility of offering **reduced cost flood protection devices**.
- More **awareness raising** across all aspects of Cardiff's communities and the business sector.
- Carry out a new **Coastline survey** so we know how our coastline is changing.
- **Communication of changing roles and responsibilities** needs to be delivered to all key stakeholders.
- **Make flooding consideration** a part of all service area decisions and communications.
- Planning consents and **consent enforcement** is required to ensure water courses and structures are protected
- To develop **Specific Planning Guidance (SPG)** in relation to flooding issues to reduce flood risk for future developments.
- To engage and support the Welsh Government in their negotiations with the insurance industry on premiums for properties in high risk areas.

As well as improving existing activity there's more work to do, including:

- Maintain a **register of flood risk assets** that help reduce flooding, for example, garden walls, culverts, streams and buildings.
- To develop a **robust methodology** and priority matrix for the **investigation of flooding** incidents.
- To **designate certain third-party structures** (and so safeguard) that can reduce the impacts on local flood risk.
- **Sustainable Drainage Systems (SuDS)**, for all new developments once further guidance is available, feasibility studies on retrofit options are also underway

5. Cardiff's objectives

The Welsh Government has set the following objectives for all local authorities:

- **Reducing the consequences** of flooding and erosion for individuals, communities, businesses and the environment from flooding and coastal erosion
- **Raising awareness** of and engaging people in the response to flood and coastal erosion risk
- Providing an **effective and sustained response** to flood and coastal erosion events
- **Prioritising investment** in the most at risk communities and seek other funding sources where possible

As well meeting national objectives, the flood strategy should consider the social, economic and environmental impacts of any plans or decisions.

There are numerous actions that the Council can take to reduce flood risks and meet the objectives set by the Welsh Government. It is not all about building new flood defence schemes.

They could include improving emergency response to flood events, providing advice on what to do in the event of flooding and help to recover from an incident or maintenance to ensure that structures that manage the risk of flooding are working properly.

When developing the steps we can take we have also thought about **when** action needs to be taken, **what** is needed, **the benefits** that each action will bring and **what impact will they have on our environment**

Tackling flooding needs short and long term plans, we have set our plans against the following timelines;

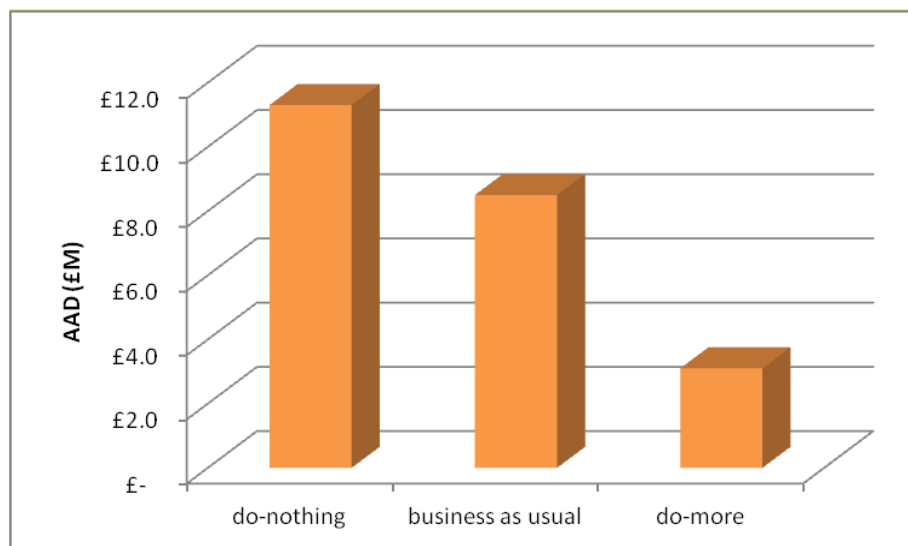
- Short term (0 – 20 years)
 - 1st strategy cycle (up to 2015)
 - 2nd strategy cycle (up to 2020)
 - 3rd strategy cycle (up to 2030)
- Medium term (20 – 50 years)
- Long term (50 – 100 years)

5.1 Future approaches

Three approaches have been considered as part of developing this Strategy

- Do-Nothing – this would mean stop the current maintenance, preventative schemes and awareness raising work
- Business as usual – carry on with the current maintenance, preventative schemes and awareness raising work
- Do-more – improve on our maintenance, preventative schemes and awareness raising work and deliver the key objectives identified in the strategy.

A simple model can be used to estimate how much flooding could cost the city for each of these options.



Estimated Annual Average Damage that flooding could cause

It is estimated that each year the cost of flooding could cost the Council £8.5m in property and road damage, loss of income to businesses and also other things like loss of tourism. If we stopped doing all the good work this could rise to over £11m. **The Council want to take the “do more” options to reduce the likelihood of flooding events and subsequent damage to communities and cost.** However it should be noted that the “do more” approach needs to be balanced with what

can be afforded. The Council has to be realistic and do what can be afforded and that provides the best benefits to the most people and businesses.

Flood prevention schemes can cost millions of pounds and Cardiff Council may not be able to afford all the plans to reduce flooding. So the Council has to look for additional money from other sources, such as:

- Welsh Government funding through Flood Defence Grants
- European Funding – see if we can get financial help from European Government
- Planning Levies - developers help fund schemes
- Partnerships Fundraising – find partners to help share the costs

5.2 Action we are taking

The steps we are keeping and proposing are listed in the following table

Table 1 - Priority actions

	Activity	What we can do	Cardiff Council Proposed Action	Timescale
Flood Forecasting & Response	Flood Awareness	Identification of at risk groups within communities, including vulnerable individuals.	Raise awareness through emergency planning and communications	Ongoing
	Emergency Response Plans	Complete emergency plans for all types of flood risk. Test our plans. Early and the right response to all emergency events. Have effective evacuation protocols for emergency events Identification and provision of suitable respite accommodation for incidents.	Already in place. Review within 12 months We will continue to test and review our plans,	Ongoing In place and subject to ongoing review Review Nov 2015
	Community Flood Plans	Development of community level emergency plans with our communities	Continue working with the EA on the development of community level emergency plans	Ongoing
Asset Management & Maintenance	Asset Management Plans	Development of a register of natural and manmade structures or features likely to have an effect on flood risk by 2015. Establishment of a programme of regular and appropriate maintenance for flood and coastal erosion risk management.	Develop initial register Know our coastal and how well it protects us Know what other authorities are doing and how this can impact on Cardiff. Review options and include within future Plans / Spatial reviews "Highway Drainage - review how works are planned and what their Planned Outcome is Land Drainage - determine level of service and necessary maintenance Culvert clearance is carried out at priority sites, Coastal - review potential risk from erosion	Start April 2014

	Activity	What we can do	Cardiff Council Proposed Action	Timescale
			<p>Support schemes such as the Greener Grangetown Project</p> <p>Ensure environmental issues are taken into account in the design / construction of new defences. Ensure any works adhere to agreed working practices e.g. to prevent disturbance to birds</p>	
	Defence / Structure Management	<p>Designation of natural and manmade structures or features likely to have an effect on flood or coastal erosion risk over the life of the Strategy.</p> <p>Development of repair schedules including provision for the installation of resilient measures by 2015.</p>	<p>Currently planning how the register will be developed working in partnership with other South East Wales Local Authorities. We will need to budget for ongoing inspection and updating of the register</p> <p>Development of repair schedules including provision for the installation of resilient measures by 2015.</p> <p>Undertake a coastline survey to assess erosion risks to our coastline communities.</p> <p>Explore defence schemes for the Penylan, Waterloo Gardens area of the City with the Environment Agency.</p>	Commence April 2014/15
	Channel Maintenance	Development of procedures for the effective clearance of debris.	Development of procedures	In place and subject to ongoing review
	Culvert Maintenance	Establishment of a programme of regular and appropriate maintenance for flood and coastal erosion risk management assets.	culvert clearance is carried out at priority sites, review system to assess if this can be updated	Ongoing review
High Level Awareness & Engagement	Partnership Working	<p>Make sure we meet our legal duties</p> <p>Link with wider work undertaken with regards making Cardiff a more resilient and sustainable area to live</p>	<p>Identify the key risk areas.</p> <p>Ensure all council functions consider flooding in their decisions.</p>	<p>Flood Hazard Maps by Dec 2013</p> <p>Local Flood Risk Management Plans by Dec 2015</p>

	Activity	What we can do	Cardiff Council Proposed Action	Timescale
		<p>Programme of community based awareness and engagement activities, utilising the Flood Risk Management Community Engagement Toolkit.</p> <p>Raise awareness internally with regards impact of flood risk on normal operations and post event situations</p> <p>Contribution funding from third-parties / non-public sources</p>	<p>Support the Environment Agency and canvas awareness and feedback from residents that they are aware through the "Ask Cardiff" annual questionnaire</p> <p>Develop Policy to get funding contributions either directly via Community Infrastructure Levy , or from developers</p>	<p>Ongoing</p> <p>commence April 2014/15</p>

6. Protecting our environment

With the flood strategy work it is important that we also think about how our action can impact on the environment, our wildlife and the areas they live, plus the quality of our water in Cardiff.

6.1 Protecting the environment (Strategic Environmental Assessment)

It is important that we think about the built, natural and historic environments so any decision we make does not damage them. As part of the strategy we have considered the impacts on the following:

- ✓ Population and Human Health - our strategy will have a positive benefit on health by raising awareness of flooding to reduce peoples worries and concerns.
- ✓ Biodiversity, plants and animals – our flood prevention projects cannot harm the wildlife in our city
- ✓ Water Environment – our strategy should improve the water quality of our waterways and coast
- ✓ Historic Environment - by reducing the risk of flooding we will be protecting our cultural and historical sites
- ✓ Air and Climate - this strategy will help us deal with the changing climate by taking steps to reduce flooding and be prepared for future weather changes
- ✓ Landscape - our flood prevention projects cannot harm the landscape of our city

6.2 Water Quality (Water Framework Directive Assessment)

The quality of our water in the rivers, waterways and coast line are important and we aim to achieve the European standard of 'good' by 2015. We will work with the Environment Agency and key partners to consider how we impact on the waterways and what we can do to improve them. For all our plans to prevent flooding we will consider if they have a positive or a negative effect on our water quality, obviously avoiding as many changes as possible that will have a negative impact. Currently all our plans to prevent flood risks in Cardiff either have no impact or have a positive impact on our water quality.

6.3 Protecting the wildlife (Habitats Regulations Assessment)

It is important that any flood prevention work does not have a negative impact on our birds, wildlife and the land that support them. We will work with the Countryside Council for Wales and key partners to consider how we impact on the local wildlife and what we can do to improve them. Our actions to prevent flooding should not have a harmful impact on our wildlife.

7. Monitoring and Review

This is the beginning of a new stage in flood risk management for Cardiff and across Wales. New ideas in the funding, design of flood prevention schemes, planning controls and improvements in the knowledge of where the greatest local flood risks will also grow.

With all this change it makes sense to review the strategy on a regular basis. The first review will be in 2015 and then every six year until 2021.

When we review the strategy we will also consider how the changes have impacted on the environment, water quality and also the general habitats of Cardiff.

Full technical details are available in the full technical – local flood risk strategy documents and appendices.