

# Local Flood Risk Management Strategy & Action Plan

## Local Flood Risk Strategy

CARDIFF COUNCIL 2024

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## Document Approval

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## Foreword

The Welsh Government's National Strategy for Flood and Coastal Erosion Risk Management (FCERM) highlights the scale of flood risk facing Wales. More than 245,000 properties are at risk from rivers, the sea and surface water, with almost 400 more vulnerable to coastal erosion. As our climate continues to warm, these pressures will increase. Wales is already experiencing more intense and frequent rainfall events, rising sea levels and faster coastal erosion, all of which place growing strain on communities and infrastructure.

Flooding is one of the most significant climate-related risks facing communities across Cardiff. Managing flood risk is therefore a key strategic priority for the Council. The climate emergency is not an abstract future challenge - it is already reshaping the way we must plan, build and protect our city. Every year, we see more evidence that climate change is accelerating the drivers of flood risk, from extreme weather events to long-term changes in rainfall patterns.

This Local Flood Risk Strategy sets out how we will respond to these challenges. The objectives, measures and actions contained in this document will help us reduce flood risk where possible, while ensuring our communities, homes and infrastructure are better prepared and more resilient when flooding does occur. Adaptation is essential: alongside reducing emissions, we must reshape our city so that it can withstand the realities of a changing climate.

The strategy aligns closely with the Council's wider commitments and ambitions. Cardiff Council declared a climate emergency in March 2019, recognising our responsibility to protect and enhance the environment and the urgent need to act. Through our One Planet Cardiff vision, we are committed to becoming a carbon-neutral organisation and city by 2030. Our Corporate Plan, *Delivering a Stronger, Fairer, Greener Cardiff*, embeds these commitments across all areas of our work.

This strategy is therefore more than a technical document - it is a central part of our response to climate change and a key step in building a safer, more resilient future for Cardiff and its communities.

Cabinet Member for Climate Change – Councillor De'Ath



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## 2. Introduction

### 2.1 The Need for a Local Strategy

The Welsh Government's National Strategy for Flood and Coastal Erosion Risk Management (FCERM) in Wales (National Strategy) sets out that over 245,000 properties across Wales are at risk of flooding from rivers, the sea and surface water, with almost 400 properties also at risk from coastal erosion. The National Strategy explains that, as the climate changes, we can expect those risks to increase, with more frequent and severe floods, rising sea levels and faster rates of erosion of the coast.

The National Strategy sets out the legislative context to FCERM activities in Wales. In certain cases, Local Authorities are also required to produce Flood Risk Management Plans (FRMP), under the 2009 Flood Risk Regulations. A summary of the legislative context to FCERM activities in Wales is provided in Appendix B – legislative context.

Flooding is one of the key risks to communities across Cardiff and has been recognised by Cardiff Council as a key strategic priority for the authority.

Cardiff Council has been designated as the Lead Local Flood Authority (LLFA) under the Flood and Water Management Act 2010 (FWMA) and consequently has several statutory duties. One such duty of the LLFA is to develop and adopt a Local Flood Risk Management Strategy, ensuring the application and monitoring of the strategy throughout its life cycle.

Local flood risk is defined as the risk of flooding from:

- Surface Water Runoff
- Groundwater, and
- Ordinary Watercourses

This Local Strategy focuses on these local sources of flood risk but acknowledges and considers other sources of flood risk (including the sea, larger watercourses and sewers) and associated risk management authorities (RMA's).

### 2.2 The Purpose of the Local Strategy

Cardiff Council published the first Local Strategy in 2014, setting out our overarching approach to managing local flood risk. Alongside our Local Strategy, we published a FRMP. Our FRMP

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expanded on the objectives and high-level actions outlined in our Local Strategy into a more detailed plan for managing flooding in our communities.

This document is our second Local Strategy. Whilst we previously published our Local Strategy and FRMP separately, this new Local Strategy integrates the two documents into one. This reduces complexity and enables us to communicate and manage local flood risk more effectively.

In this document we explain how flooding will be managed across our Local Authority area, consistent with the objectives, measures, related policies and legislation set out in the National Strategy. This Strategy published on **XXXX 2025** will be reviewed every 2 years.

## 2.3 Structure of this Local Strategy

The Structure of this Strategy is as follows:

**Chapter 1** is the foreword from Councillor De’Ath the cabinet member for Climate Change

**Chapter 2** is the introduction to the Local Flood Risk Strategy

**Chapter 3** provides an overview of the impact of climate change on local flood risk and how the strategy plans to address the impacts

**Chapter 4** defines the roles and responsibilities for the management and mitigation of flood risk

**Chapter 5** presents an assessment of the risk of flooding across our Local Authority

**Chapter 6** describes our strategic Objectives or ambitions for managing flood risk in the coming years, and how these align with the objectives set out in the National Strategy

**Chapter 7** sets out our flood risk management Measures. These are broad activities and ways of working which help us to meet our strategic objectives

**Chapter 8** sets out our flood risk management Action Plan. This is a focused plan, detailing specific actions required to meet our measures

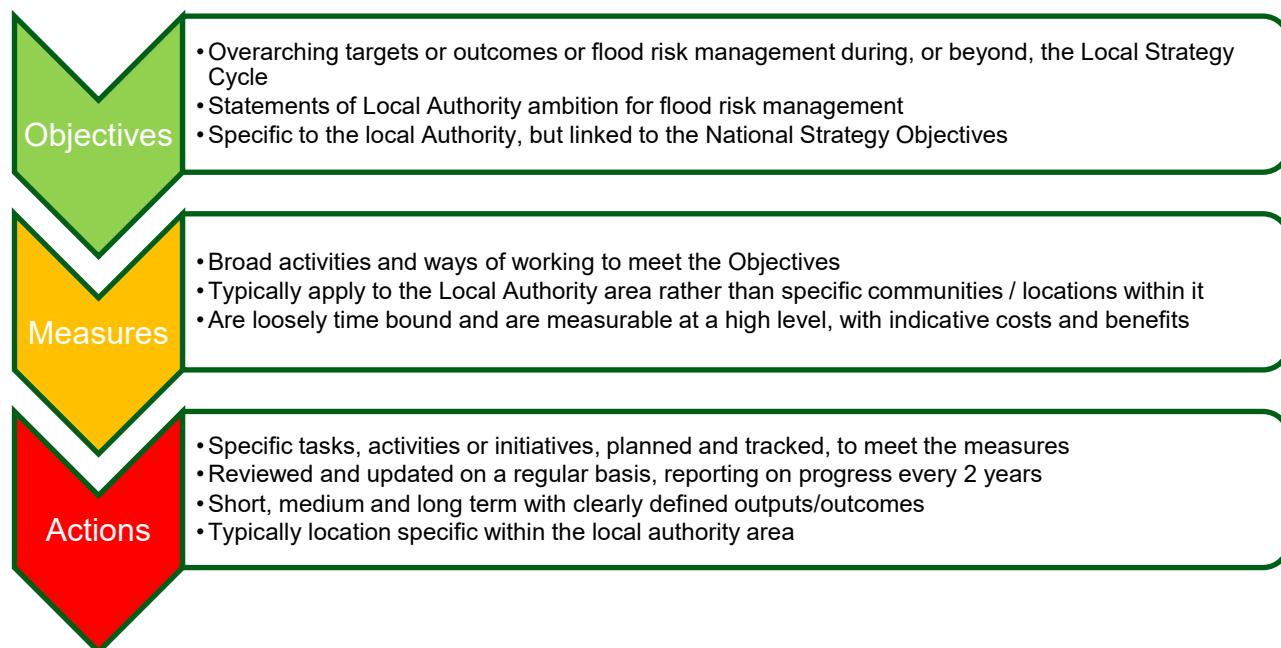
**Chapter 9** summarises the different ways in which flood risk management activities can be funded, as well as how we prioritise these activities

**Chapter 10** sets out the relevant further assessments required

**Chapter 11** describes how we will measure and monitor our progress in delivering the objectives, measures and actions set out in this Local Strategy

## 2.4 Targets within the Local Strategy – Objectives, Measures and Actions

This Local Strategy sets out our flood risk management Objectives, Measures and Actions. These three groupings provide different levels of detail on how flood risk will be managed. The meaning of each is summarised below:



**Figure 1 - Definitions of the Objectives, Measures and Actions for delivering Cardiff Local Strategy**

### 3. How this strategy responds to climate change

#### 3.1 Climate change risk in our area

The Senedd was the first Parliament in the world to declare a climate emergency. Climate change is widely considered as likely to increase the risk of flooding across Wales, not only through sea level rise but also from more frequent and intense storms, flash flooding and storm surges.

Cardiff Council declared a climate emergency in March 2019, acknowledging its role and responsibility for the protection and enhancement of the environment. Cardiff Council is committed to working towards becoming a carbon neutral organisation and city by 2030, as stated in the Council's One Planet Cardiff Vision.

This Local Flood Risk Strategy will help to manage some of the effects of climate change in our area. The objectives, measures and actions it identifies will help us to reduce the risk of flooding where we can, as well as adapt our communities and infrastructure to become more resilient to flooding when it occurs.

#### 3.2 How our strategy addresses these risks

This strategy has been developed with a long term strategic view, incorporating the impact of climate change on flood risk throughout the City of Cardiff.

Cardiff Council has incorporated the impact of climate change on long term flood risk throughout its One Planet Cardiff Strategy. Table 1 below sets out Cardiff Council's One Planet Climate Change Flood Risk Commitments.

Commitment	Action
Net Zero Council and Cardiff	<ul style="list-style-type: none"> <li>-Develop large scale renewable energy generation projects such as the solar farm at Lamby Way.</li> <li>-Lead a public engagement programme to understand the barriers to behaviour change and design innovative approaches to support people to reduce their carbon footprint.</li> </ul>
Enhance the City's Green Spaces	-Deliver the council's green infrastructure plan, ensuring our approach to green infrastructure and biodiversity responds to the One Planet

	Cardiff Strategy and the nature emergency. -Improve the city’s green space and resilience to flooding via the installation of SuDS both retrospectively and within new developments
Upgrade the city’s flood defences	-Invest in further, local drainage schemes to protect our communities from extreme weather events and flash flooding -Strengthen the city’s coastal defences in line with our Shoreline Management Plan (SMP)

**Table 1. Cardiff Councils flood risk commitments within One Planet Cardiff**

Along with the One Planet Cardiff Strategy, there are a number of national and local strategies, plans and guidance that Cardiff Council have incorporated into the development of this strategy’s objectives, measures and actions. Further detail can be found in table 2 below.

<b>Strategic Policy, Plan or Guidance</b>	<b>How this addresses climate change</b>
Cardiff Councils Corporate Plan “Delivering a Stronger, Fairer, Greener Cardiff”	Embeds the ambitions of the Councils One Planet Cardiff Programme within everything we do
Cardiff Councils Local Development Plan	Ensures that development is undertaken sustainably allowing future developers, the public and other key stakeholders to have confidence that climate change has been considered throughout.
Cardiff Council Clean Air Report	Detailed study into air quality throughout the city and developing solutions to improve air quality as the impacts of climate change continue
Cardiff Council Shoreline Management Plan	Sets out the strategic approach for the management of the city’s coastline from erosion risks, coastal flooding and the impacts of climate change.
Technical Advice Note 15 (TAN15): development, flooding and coastal erosion	The guidance note advises how the planning process can assist communities with the mitigation of flood risk
Natural Resources Wales (NRW) Flood Map for Planning	Provides modelling outputs and mapping to allow the local planning authority (LPA) to make informed decisions around the impact of flood risk on proposed developments and local communities. This mapping takes into

	consideration future impacts of climate change
Welsh Government Guidance on Adapting to Climate Change with climate change allowances for FCERM scheme designs	Provides climate change allowances for the development of Flood Alleviation Schemes (FAS). Climate change is considered from the first stage along the process.

**Table 2. How other strategies, plans and guidance address the impact of climate change on flood risk within Cardiff**

## 4. Roles and responsibilities for managing flood risk in our area

### 4.1 Sources of flooding and key points of contact

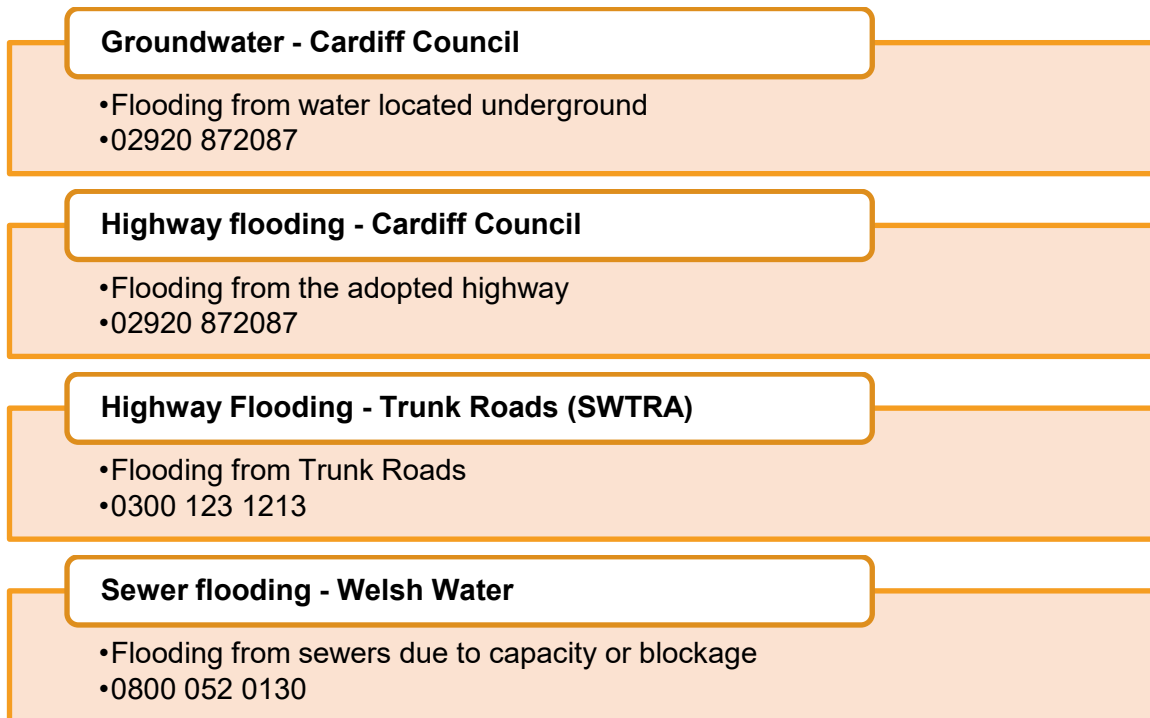
In Wales the management of flood risk is a devolved matter with the strategic oversight being afforded to The Welsh Government and NRW.

At a more local level there are numerous RMA's that are required to fulfil a number of statutory duties as defined in The Flood and Water Management Act 2010 (FWMA 2010).

These RMA's include the 22 local authorities (Cardiff Council), NRW, Water Companies (Dwr Cymru, Welsh Water) and The Welsh Government as the highway authority for trunk roads (SWTRA – South Wales Trunk Road Agency).

Figure 2 below summarises which RMA's are responsible for the mitigation of flood risk from their differing sources , it also provides contact details to report flooding.

<p><b>Main River - NRW</b></p> <ul style="list-style-type: none"> <li>•Flooding from watercourses designated as main river</li> <li>•0300 065 3000</li> </ul>
<p><b>Coastal Flooding - NRW</b></p> <ul style="list-style-type: none"> <li>•Flooding from the sea</li> <li>•0300 065 3000</li> </ul>
<p><b>Reservoirs- NRW</b></p> <ul style="list-style-type: none"> <li>•Flooding from above ground storage due to capacity or breach</li> <li>•0300 065 3000</li> </ul>
<p><b>Ordinary Watercourses - Cardiff Council</b></p> <ul style="list-style-type: none"> <li>•Flooding from watercourses designated as non main river</li> <li>•02920 872087</li> </ul>
<p><b>Surface Water - Cardiff Council</b></p> <ul style="list-style-type: none"> <li>•Flooding caused by rainfall</li> <li>•02920 872087</li> </ul>



**Figure 2 – Responsibility of RMA's and contact details**

## 4.2 Cardiff Council and our responsibilities

The FWMA 2010 designated Cardiff Council as a Lead Local Flood Authority (LLFA) responsible for managing 'local flood risk'. Local flood risk is determined as the risk of flooding from ordinary watercourses, surface water and groundwater.

As a result of being designated the LLFA, Cardiff council has several statutory duties including:

- A duty to develop, adopt and maintain a strategy for local flood risk management
- A duty to comply with the national strategy
- A duty to co-operate with RMA's and other authorities, including the sharing of data
- A duty to investigate flooding where it is deemed appropriate or necessary. The trigger for Cardiff Council to undertake and publish a formal investigation is 20 internally flooded properties (residential and non residential) from the same source. These investigations are also known as Section 19 reports (as required by Section 19 of FWMA 2010).
- A duty to maintain a register of structures that are likely to affect flood risk. This register is available to other RMA's and other organisations such as utility companies and development as well as members of the public.

The FWMA 2010 also provides permissive powers to LLFA's allowing them to undertake actions if they deem it necessary.

These powers include:

- Powers to request information in connection with the LLFA flood risk management functions
- Powers to designate structures / features that will affect flood risk
- Powers to undertake works to mitigate against flood risk including upon 3<sup>rd</sup> party land

On the 7<sup>th</sup> January 2019 Schedule 3 of FWMA 2010 was enacted, designating Cardiff Council as the SuDS approval body. Cardiff Council have a duty to ensure the effective management of surface water within new developments ensuring they are built in line with the mandatory National Standards for Sustainable Drainage Systems.

#### **4.2.1 Surface Water**

Surface water is defined as water that is located on top of land, the vast majority of which is produced by rainfall. The term surface water can also be used to describe the drainage systems used to manage the impacts of rainfall.

Surface water flooding occurs when the amount of rainfall exceeds the capacity of the drainage networks resulting in water remaining above ground flowing across the land to low level locations. Cardiff Council will respond to reports of surface water flooding and assist where possible including but not limited to:

- Flooding investigations
- Remedial works to drainage systems
- Providing assistance to residents regarding “clean up” after flood events
- Offering guidance to residents for flood prevention measures
- Assisting other RMA’s during and post flood events

#### **4.2.2 Ground Water**

Water that has travelled through the soil and surface and collected within the sediments and rock underground is known as groundwater. Groundwater is stored within all the empty spaces below ground within a ‘saturated zone’ also known as the water table and flows through bodies of rock and sediment, called aquifers.

Existing groundwater can discharge through springs, lakes, rivers, streams and also manmade extraction points for irrigation or sources of drinking water. The groundwater is then recharged (refilled) by rainfall or water seepage from other sources such as leaks in water supply systems.

Flooding from groundwater can occur anywhere and is often difficult to pinpoint. The mitigation of groundwater flood risk is the responsibility of the land owner. However, Cardiff Council, where reasonably practicable, will assist landowners in the mitigation of groundwater flood risk.

#### 4.2.3 Ordinary Watercourses

Flooding from an Ordinary Watercourse occurs as a result of the capacity of a watercourse being exceeded, a blockage as a result of debris or a collapse resulting in a breach or overtopping of embankments. Ordinary watercourses can be culverted (the flow of the watercourse passed through a structure such as a pipe).

Under The Land Drainage Act 1991 (LDA) Cardiff Council has permissive powers afforded to it to allow the regulation of ordinary watercourses (Culverted and non-Culverted). This includes the issuing of consents for construction and maintenance of features within a watercourse, along with enforcement powers, ensuring effective management of ordinary watercourses.

Although these permissive powers lie with Cardiff Council the maintenance of watercourses falls to the landowner, who is designated the riparian owner. Further information on this is detailed in Section 4.3 below.

Cardiff Council is deemed the riparian owner of approximately 110 culverts that run through its land and as such is responsible for the ongoing inspection, maintenance and repair of these assets. Of these 110 culverts 15 are designated as “Critical Culverts” inspected weekly during winter months and monthly in the summer.

Should a notification of a weather event or likely flooding event be received from organisations such as The Met Office, NRW or The Flood Forecasting Centre, then an inspection is completed with maintenance and remedial actions undertaken if necessary.

Eight of the aforementioned critical culverts have ‘live’ telemetry installed on their inlets offering real time level monitoring and imagery, providing instant data to aid decision making for both ‘in hours’ and ‘out of hours’ services. The locations of these telemetry systems are detailed in table 3 below.

Location	CaRR Location	Grid Reference	Telemetry Type
All Saints - <i>Rhiwbina</i>	Whitchurch	ST 16055 81394	Camera and Logger
Heol Gabriel - <i>Whitchurch</i>	Whitchurch	ST 15894 79231	Camera and Logger
Heol Y Deri - <i>Rhiwbina</i>	Whitchurch	ST 16021 81090	Camera and Logger

Llanon Road - <i>Llanishen</i>	Llanishen	ST 17266 82480	Camera and Logger
Nant – Y – Garth – <i>Gwaelod Y Garth</i>	Gwaelod Y Garth	ST 11901 83047	Camera and Logger
Pen Y Dre - <i>Rhiwbina</i>	Whitchurch	ST 15999 81028	Camera and Logger
Merthyr Road - <i>Tongwynlais</i>	Tongwynlais	ST 13288 82215	Camera and Logger
Wenallt Road - <i>Rhiwbina</i>	Whitchurch	ST 15641 81879	Camera and Logger

**Table 3 Locations of telemetry systems on critical culverts**

There are a number of Reens within the Gwent levels that are categorised as Ordinary Watercourses and the responsibility for the mitigation of flood risk and maintenance of these rains are detailed in table 4 below.

Name of Reen	Responsible Risk Management Authority
Back Ditch Running to Tabbs Gout	NRW
Barcroft Reen	Cardiff Council
Blanchmoor Reen	Cardiff Council
Faendre Reen	Cardiff Council
Green Lane Branch	Cardiff Council
Green lane Reen	Cardiff Council
Hendre Reen	Cardiff Council
Longcross reen	Cardiff Council
Longcross Reen Diversion	Cardiff Council
Newlands Reen	Cardiff Council
Pil Du Reen	Cardiff Council
Pil Melyn Reen	Cardiff Council
Railway Reen	Cardiff Council
Rhosog Fawr Branch Reen	Cardiff Council
Rhosog Fach Reen East	Cardiff Council
Rhosog Fach Reen North	Cardiff Council
Rhosog Fach Reen South	Cardiff Council
Rhosog Fach Reen West	Cardiff Council
St Mellons Reen	Cardiff Council
Tarwick Reen	NRW
Ty Du Reen	Cardiff Council
Ty – Ffynon Reen	Cardiff Council
Walwyn Place Reen	Cardiff Council

**Table 4 Risk management authority responsibility in the Gwent Levels**

#### **4.2.4 Adopted Highway Drainage**

Cardiff Council has been designated as the Highways Authority under The Highways Act 1980 and as such has a statutory duty to ensure the adopted highway is free from flooding as far as

reasonably practical. Highway flooding occurs when water remains on the surface due to a blockage being present or the amount of surface water exceeding the capacity of the highway drainage system. Highway flooding can also occur through design, where water is directed onto the highway away from critical infrastructure such as residential properties and critical infrastructure.

Cardiff Council has approximately 80,000 highway gullies (the grids on the side of the highway) and 40km of carrier pipe and ditches to maintain as part of the highway drainage network. Scheduled maintenance is undertaken throughout the year prioritising known “hotspot” areas that are prone to flooding whilst responding to reports of blocked drainage assets from residents and other stakeholders such as businesses and elected members.

#### 4.2.5 Disused Spoil Tips

Coal and non-coal tips are a legacy of Wales’ mining history. Coal tip safety is a devolved matter being managed by The Welsh Government Authority and other RMA’s such as local authorities. The law relating to coal tips is The Mines and Quarries (Tips) Act 1969 which dates from a time where there was an active coal industry, not only in Wales but throughout The United Kingdom.

Following a landslip at a coal tip in Tylorstown (Rhondda Cynon Taf) as a result of extensive poor weather, The Welsh Government commenced a programme of work on improving the monitoring and management of coal tips throughout Wales.

As part of this programme of work The Welsh Government are intending to introduce a bill on Disused Tip Safety. However, in the interim, the disused coal tips in Cardiff underwent a categorisation exercise and are detailed in table 5 below.

Category	Cardiff Council Owned	Privately owned (Including NRW)	Total	Inspection Frequency
D – Potential to severely impact public safety	1	0	1	Twice a year
C – Potential to impact public safety	0	1	1	Once a year
B – Unlikely potential to impact public safety	0	14	14	Once every 2 years
A – Very Unlikely to impact public safety	0	8	8	Once every 2 years
R – Potentially removed or built over	0	0	0	N/A

## **Table 5 Categorisation of coal tips in Cardiff**

Often the biggest risk to coal tip stability is effective drainage and surface water run-off and as such Cardiff Councils Flood and Coastal Risk Management Team undertake the management and inspection of coal tips within our ownership. Although the category C tip in Table 5 is under the ownership of a Community Council, Cardiff Council assist them in the inspection and management of said tip.

### **4.3 Other risk management authorities and their functions**

As detailed above there are sources of flood risk that Cardiff Council are not responsible for, however we actively collaborate with the RMA's responsible for the management of these sources of flood risk and details of the other responsible RMA's are outlined in the sections below.

#### **4.3.1 The Welsh Government**

The responsibility and legislative powers of the management of flooding and coastal erosion has been devolved to The Welsh Government. Thus enabling them to have a strategic oversight of flood risk management from all sources throughout Wales.

The Welsh Government has overarching responsibility for the management of the FCERM programmes allocating budgets to LLFA's, NRW and other RMA's for the management and mitigation of flood risk through capital and revenue funded activities.

The Welsh Government have a responsibility for the maintenance and operation of the trunk roads however this is undertaken by SWTRA on behalf of The Welsh Government and is further detailed in Section 4.3.5

#### **4.3.2 Natural Resources Wales (NRW)**

NRW are the responsible RMA for the mitigation of flood risk from main rivers, reservoirs and coastal sources.

Main Rivers are usually larger rivers and streams designated as such on NRW's flood mapping system. Within Cardiff there are 3 main rivers, a number of larger watercourses and a number of reens (as detailed above) that are the responsibility of NRW.

Nant Glandulais – Large watercourse that discharges into The River Rhymney west of the A48 at Llanederyn

Nant Pontprennau – Large Watercourse that discharges into The River Rhymney east of Ysgol Glan-yr-Afon in Llanrumney

River Ely – Large river approximately 39km long from its source at Tonyrefail to its discharge point in Cardiff Bay

River Rhymney – Large river approximately 48km long from its source in the Rhymney valley to its discharge point in the Severn Estuary. The tidal boundary of influence on the river extends to the area east of Began Golf Range.

River Taff – Large River approximately 64km long from its source within the Brecon Beacons to its discharge point in Cardiff Bay

Roath Brook – Large Watercourse that discharges into The River Rhymney at Rumney Bridge and South of the London Main Railway line

Flooding from the sea is a result of inundation from waves and tides overtopping coastal defences with recent climate change projections predicting sea level rise for all emission scenarios at all locations around the UK.

Three communities in Cardiff are within the top 10 across Wales that are among the greatest risk of flooding from the sea. Cardiff Council therefore work closely with NRW to monitor and mitigate against this risk whilst ensuring all requirements of our shoreline management plan are adhered to. Further detail on flood risk within Cardiff is captured within section 5 of this strategy.

The Reservoir Act 1975, as amended by FWMA 2010, categorises any body of water that can store over 10,000m<sup>3</sup> as a reservoir. The overall responsibility of managing the risk of flooding from reservoirs lies with NRW, however, the reservoir owner will also have statutory duties and a level of responsibility.

Further information on NRW's Flood Risk Management Plan can be obtained on their website.

#### **4.3.3 Dwr Cymru, Welsh Water**

Dwr Cymru Welsh Water (DCWW) are the water and sewerage organisation for our area and as such are responsible for the maintenance and management of the mains potable water and sewerage networks.

Sewers can generally be categorised into 3 differing systems:

- *Foul Sewer* – Pipes and assets that take foul water from properties. Namely water from toilets, sinks, washing machines etc. These are often shown as brown on Welsh Water plans
- *Surface Water sewer* – Pipes and assets that take surface water from properties. Namely water from guttering, drains in gardens etc. Highway drainage gullies may also connect to these systems. These are often shown as green on Welsh Water plans.
- *Combined Sewer* – Pipes and assets that take a combination of foul and surface water. These are often shown as red on Welsh Water plans.

Further information on how DCWW manage the flood risk posed by the sewerage network can be obtained within Welsh Water Drainage and Wastewater Management Plan 2024 which is available on their website.

#### ***4.3.4 Network Rail (NR) and Transport for Wales (TfW)***

NR and TfW are responsible for the management of the railway and associated assets in Wales, including drainage and the resultant flood risk from their assets. Further information on how they mitigate against flood risk to and from the railway can be obtained from their website.

#### ***4.3.5 South Wales Trunk Road Agency (SWTRA)***

SWTRA operate as the highway authority for motorways and trunk roads on behalf of The Welsh Government.

Within the Cardiff area SWTRA are responsible for the M4 between Junctions 29 and 33. The A470 north of Junction 32 of the M4. The A4232 link road from junction 33 of the M4 to the Culverhouse Cross roundabout, including the northern on and off slip roads.

#### ***4.3.6 Developers***

Development organisations have a duty and responsibility to manage construction sites safely ensuring there is no exacerbation of flood risk or impact on the water environment.

National and local planning policies dictates flood risk related to development, determining what can be built and where, where flooding is acceptable and what flood risk mitigation measures are required.

On the 7<sup>th</sup> January 2019 Schedule 3 of the FWMA 2010 was enacted in Wales (as detailed above) ensuring developments over 100m<sup>2</sup> manage surface water in a sustainable way, mirroring the natural environment as much as possible.

### **4.3.7 Riparian Owners**

Under common law if a stream, river or ditch (ordinary watercourse) is on or adjacent to your land you are designated a “Riparian Owner” and have a number of rights and responsibilities.

If both sides of a watercourse run upon or under your land, you have full responsibility for the management and maintenance of the watercourse.

Should a watercourse run be located adjacent to your land and there is no other landowner between your land and the watercourse, then you will be designated the riparian owner to the centre line of the watercourse. The landowner on the other side of the watercourse will be responsible for the other section of the watercourse, up to the centre line.

As a riparian owner you must:

- Pass on the flow of water without obstruction, pollution or diversion affecting the rights of others.
- Accept flood flows from the watercourse, even if this is caused by inadequate capacity downstream. There is no duty or responsibility upon a landowner to improve a watercourse.
- Maintain the banks and bed of the watercourse (including any trees or shrubs growing on the banks) and clearing any debris.
- Not cause any obstruction to the free passage of fish.
- Ensure any structure they own such as a culvert, trash screen or weir, is clear of any debris.

The FWMA 2010 determines that any works relating to culverting or flood relief undertaken on an ordinary watercourse, requires consent from the LLFA under The Land Drainage Act 1991.

## 5. What is the risk of flooding in our area?

### 5.1 How we assess flood risk

As detailed in Section 4, there are a number of different sources of flood risk managed by different RMA's and a range of different sources of data and methods to assess the flood risk posed to communities.

#### ***5.1.1 Flood Risk Assessment Wales (FRAW) and Flood Maps for Planning (FMP)***

The FRAW has been developed and is maintained by The Welsh Government to depict detailed mapping of existing flood risk from rivers, the sea (coastal), small watercourses and surface water. This mapping considers defended and non-defended areas and categorises possible risk into Low, Medium and High for all sources.

The definitions of low, medium and high are as follows:

High– These areas have a chance of flooding greater than a 1 in 30 year storm (3.3% of flooding annually)

Medium – These areas have a chance of flooding between a 1 in 30 year storm (3.3%) and 1 in 100 year storm (0.1% of flooding annually)

Low - These areas have a chance of flooding between a 1 in 100 year storm (1%) and 1 in 1000 year storm (0.1%of flooding annually)

The FMP depicts how climate change will affect flood risk over the next century. This map shows the potential extent of flooding assuming there are no defences in place. The map has two available datasets, basic which provides high level details and detailed, which provides the extra detail that can be used in Flood Consequence Assessments (FCA). The flood map for planning sits alongside The Welsh Government technical advice note on flooding (TAN 15) which is due for an update in early 2025.

#### ***5.1.2 Communities at Risk Register (CaRR)***

The communities at risk register has been produced by NRW on behalf of The Welsh Government as a method of identifying flood risk across Wales at a community level. The CaRR allows the prioritisation of flood risk management activities and funding through the ranking of individual communities for natural (undefended) and mitigated (defended) scenarios.

The CaRR boundaries across Wales are shown in figure 3 below and within Cardiff there are 25 CaRR communities which are further detailed in Section 5.3 below. The CaRR will be utilised throughout the management of flood risk within Cardiff, including within the application for external funding as detailed in Section 9

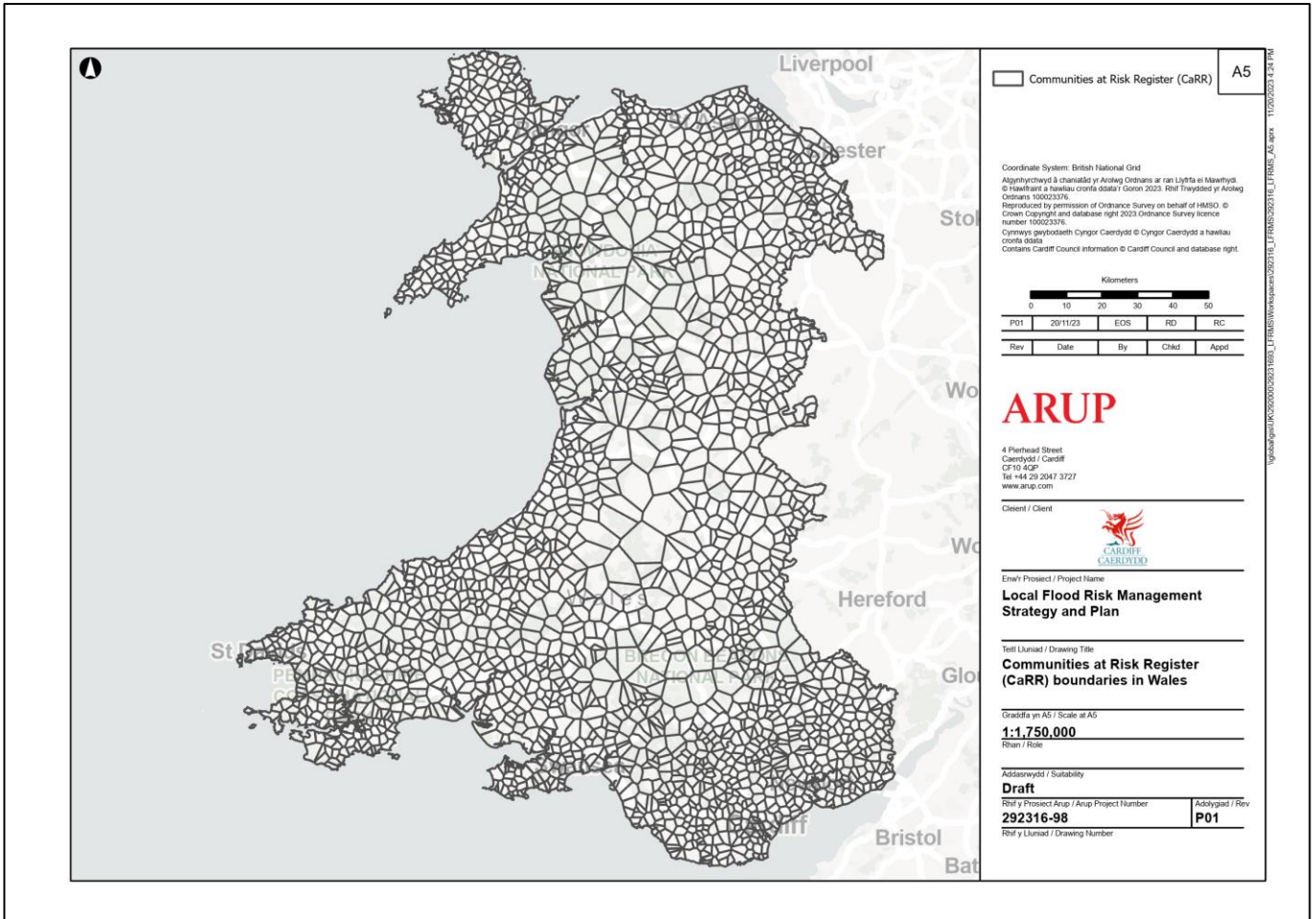


Figure 3. CaRR boundaries in Wales

**5.1.3 Historic Flood Incidents**

Historical flood incidents information will be utilised within this flood risk strategy and throughout the process of local flood risk management within Cardiff.

All reported flood incidents are recorded on AMX, the councils asset management database. This information has been utilised for the development of the objectives, measures and actions within this strategy and for the applications of external funding.

**5.1.4 Other RMA's**

As detailed in Section 4, other RMA's that operate within and adjacent to the City of Cardiff have a duty to exchange data, this includes flood incident information. The Council have regular

collaboration meetings with DCWW, NRW and neighbouring authorities. All data gathered has been utilised for the development of this strategy.

## 5.2 Overview of flood risk in our area

Cardiff is located in South East Wales (figure 4 below) and is a city dominated by its 3 main rivers and coastline. It consists of an area of approximately 158SqKM with an estimated population of 362,300 (Office for national statistics 2021 census).

Within Cardiff there is an estimated 150,000 residential properties, 8500 non residential properties and 1400 critical services (hospitals, nursing / care / retirement homes, electricity sub stations, schools, Police, Fire, Ambulance Stations, prisons and sewerage/wastewater treatment works).

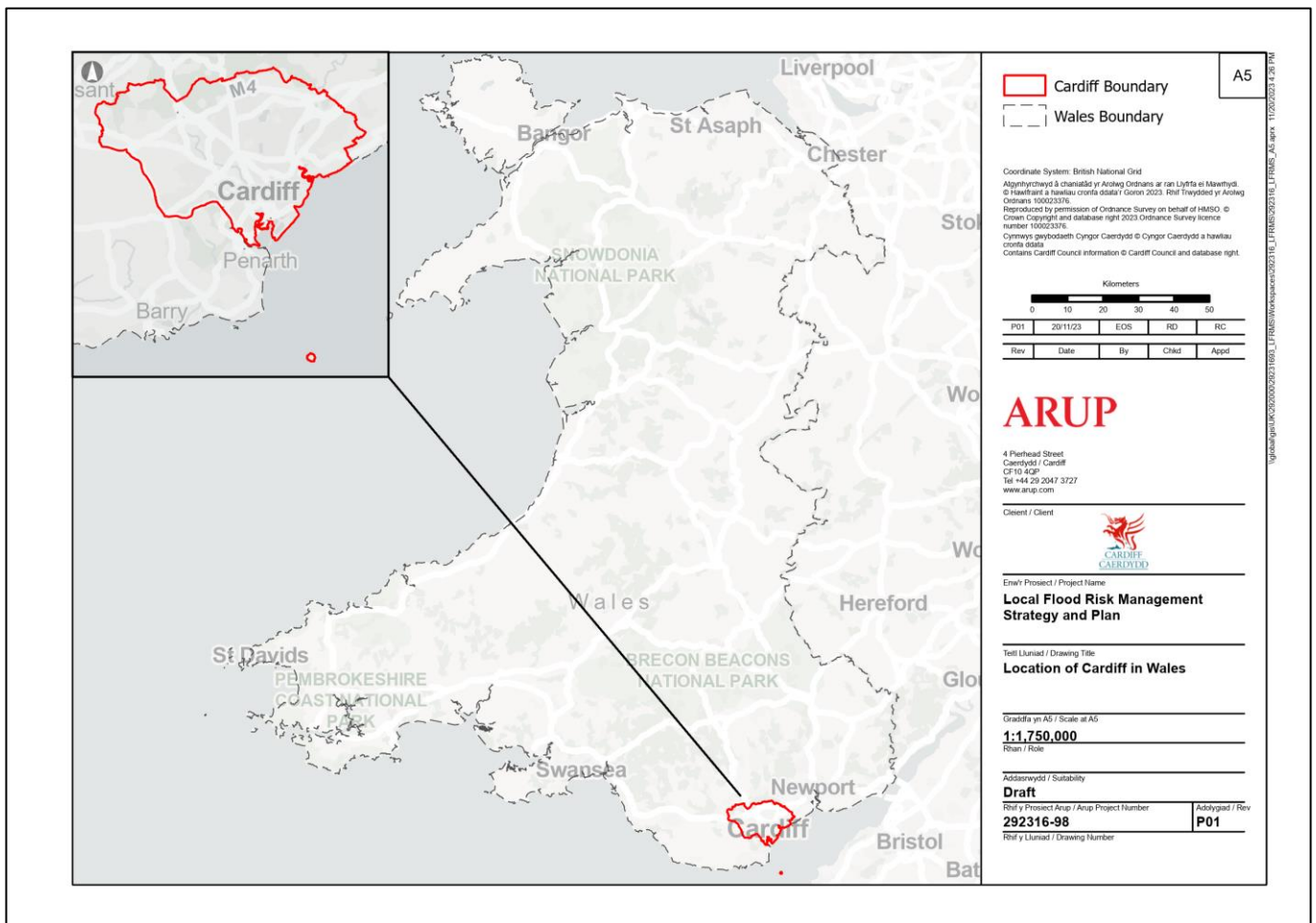


Figure 4. Location of Cardiff within Wales

### 5.2.1 Main River flood risk

The mitigation of flood risk from the 3 main rivers within Cardiff is the responsibility of NRW as described in section 4.3.2

### **5.2.2 Coastal flood risk**

The management policy of Cardiff's coastline is set out in the Severn Estuary Shoreline Management Plan 2 (SMP2). The SMP2 is a non-statutory document, containing policies proposing how the shoreline around the Severn Estuary should be managed over the next 100 years. It provides a large-scale assessment of the risks (to people, property, the natural and historic environment) associated with coastal erosion and flooding along the coast in the long term.

The SMP2 updates an earlier SMP1 (2000) for the Severn Estuary and aims to provide more certainty for landowners, residents and businesses, to know how the coast will be managed by the regulatory authorities for the next 100 years. This will allow them to plan ahead and make decisions about investments, homes, development and management of their own resources.

The study area for of the SMP2 follows the shoreline from Lavernock Point, near Penarth in Wales, to Anchor Head, just north of Weston Bay in England. The upstream boundary is at Haw Bridge, near Gloucester, which is just below the current tidal limit and still influenced by the sea. It also includes the islands of Flat Holm and Steep Holm.

Coastal and tidal processes can affect local flood risk indirectly. During storm events the water level in the estuary can rise significantly, causing a storm surge resulting in a greater "tide lock" of the Cardiff Bay Barrage, preventing rivers and drainage systems discharging freely into the sea.

### **5.2.3 Local flood risk**

As described in Section 4 there are a wide range of flood risk sources across Cardiff which the relevant RMA's are responsible for. Cardiff Council, as the LLFA is responsible for the mitigation and management of local flood risk sources.

Local sources of flood risk is defined as the risk from ordinary watercourses, surface water and groundwater sources. This is also sometimes known as pluvial flood risk with this reference being utilised in the assessment methods described in section 5.1.

### **5.2.4 Groundwater flood risk**

The geology differs across the city making groundwater flood risk (further described in section 4.2.2) difficult to assess and mitigate against. However, the "groundwater table" has been impacted throughout the city due to abstractions, development and the construction of the Cardiff Bay Barrage.

The Cardiff Bay Barrage (commenced in 1994 and operational in 2001) is a 1.10km dam/tidal barrier impounding approximately 200 ha of fresh water originating from the River Taff and River Ely, that includes 3 locks, a sluice gate and a fish pass.

The Cardiff Bay Barrage Act 1993 also set out provisions for groundwater monitoring and control pre and post construction as a result of resident and elected member concerns. The act also set out provisions for a protected property area for south Cardiff for 20 years once the compoundment was complete.

After completion of the barrage, 263 boreholes were drilled to monitor groundwater levels and flood risk within the protected property area. The borehole number was reduced to 179 in November 2019. At its peak, the monitoring system covered approximately 15SqKM.

Since the expiry of the provisions of the Cardiff Bay Barrage Act 1993 the number of monitoring boreholes has been decreased to 20, located in the areas of highest risk.

2 pumped groundwater control systems are still operational in the Grangetown area of the city located in Merches Gardens and The Principality Stadium, with regular inspections and level monitoring still taking place.

### **5.2.5 Surface Water flood risk**

Table 6 below provides a summary of the flood risk from surface water to a range of receptors on a city-wide scale.

The definitions of high, medium and low are as follows:

**High**– These areas have a chance of flooding greater than a 1 in 30 year storm (3.3% of flooding annually)

**Medium** – These areas have a chance of flooding between a 1 in 30 year storm (3.3% of flooding annually) and 1 in 100 year storm (0.1% of flooding annually)

**Low** - These areas have a chance of flooding between a 1 in 100 year storm (1% of flooding annually) and 1 in 1000 year storm (0.1% of flooding annually)

<b>Risk Receptor</b>	<b>High Risk</b>	<b>Medium Risk</b>	<b>Low Risk</b>
Residential Properties (n)	365	688	5695
Non-Residential Properties (n)	147	313	1496

Essential Services (n)	4	14	70
Primary / Trunk Roads (km)	5	8	9
Main Line Railways (Km)	31.23	39.74	46.76
Agricultural Land – Grades 1, 2, 3 (ha)	142	366	1122
Special Areas of Conservation (SAC) (ha)	0.01	0.03	0.27
Special Protection Areas (SPA) (ha)	0	0.01	0.14
Ramsar Sites (ha)	0	0.01	0.14
Sites of Specific Scientific Interest (SSSI) (ha)	550	926	940
Sites of Interest for nature Conservation (SINC)	0	0	0
Registered Parks and Gardens (ha)	4	20	53.9
Scheduled Ancient Monuments (SAM) (ha)	0	0	1
Listed Buildings (n)	6	19	42

**Table 6 Summary of surface water flood risk to sensitive receptors across Cardiff**

Further detail and CaRR ranking of the pluvial flood risk of communities across Cardiff is described in section 5.3 below.

### 5.3 Flood risk in your community

As described in Section 4.2 Cardiff Council acting as the LLFA have a statutory duty to adopt and maintain a Local Flood Risk Strategy and as explained above, Local Flood Risk sources are defined as risk from ordinary watercourses, groundwater and surface water.

As the city of Cardiff is dominated by the three rivers that flow through it and for ease of understanding, this strategy will be utilising the CaRR communities within the boundaries of the River Ely, River Taff and River Rumney catchments.

This will allow for easy comparison between the national strategy, NRW's main river flood risk strategy and also this local flood risk strategy whilst allowing for effective collaborative working with NRW.

The location of the catchments are shown in figure 5 below.

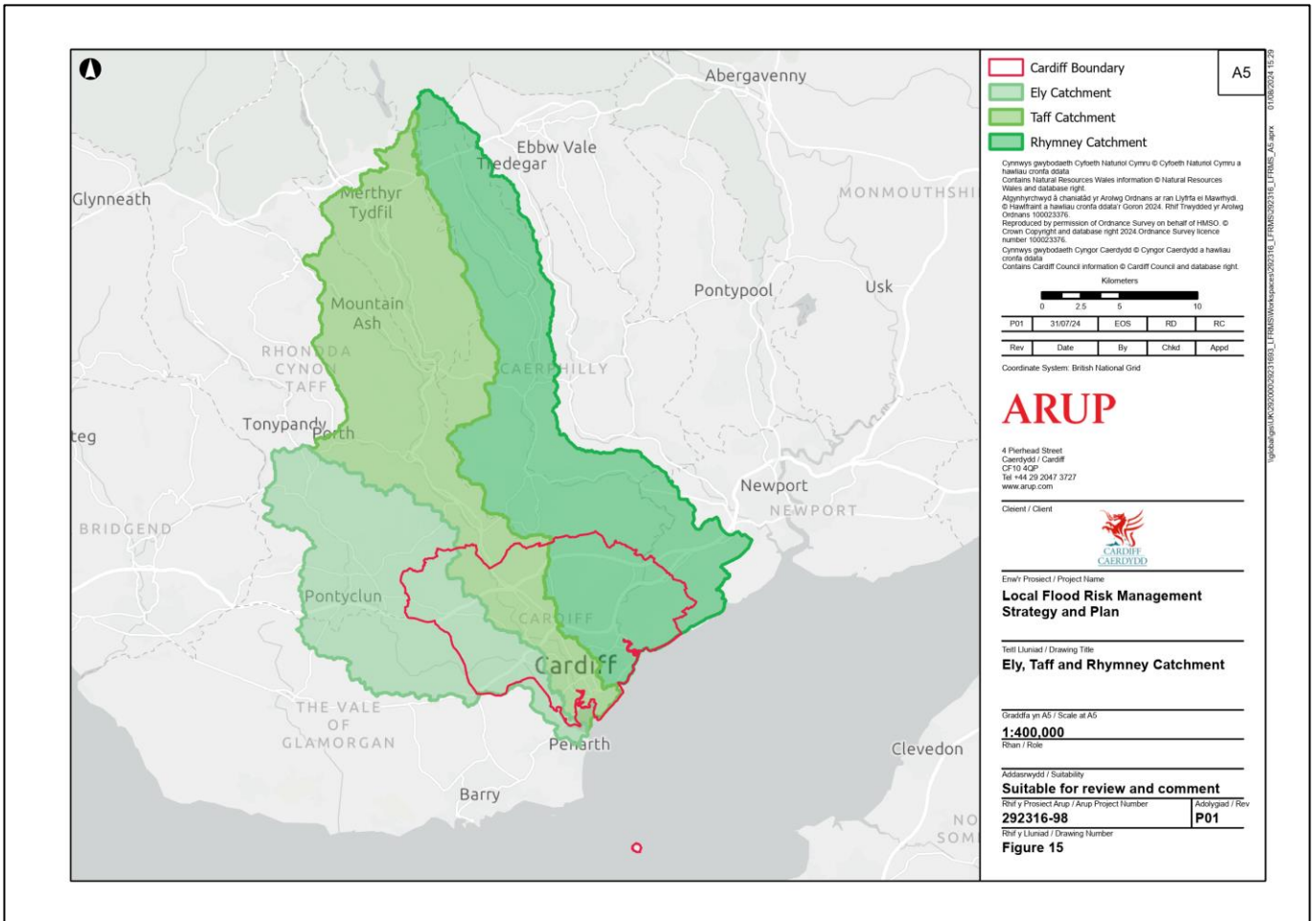
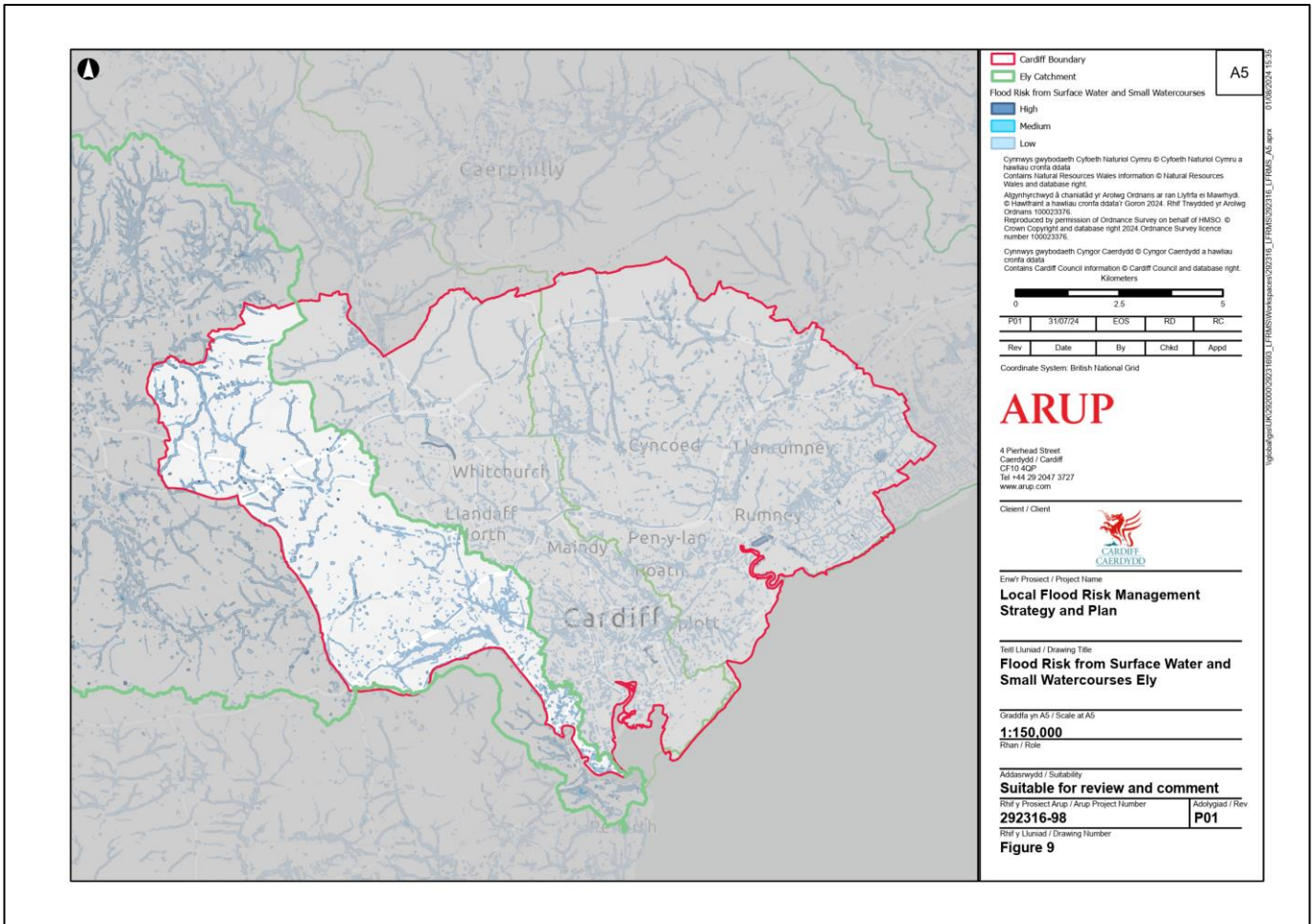


Figure 5 Location of River Ely, River Taff and River Rumney Catchments

### 5.3.1 River Ely Catchment

The River Ely catchment dominates the east of the city with several large watercourses and tributaries causing frequent highway flooding events. The River Ely catchment is influenced by the Cardiff Bay Barrage. Figure 6 below shows low, medium and high flood risk from surface water and small watercourses.

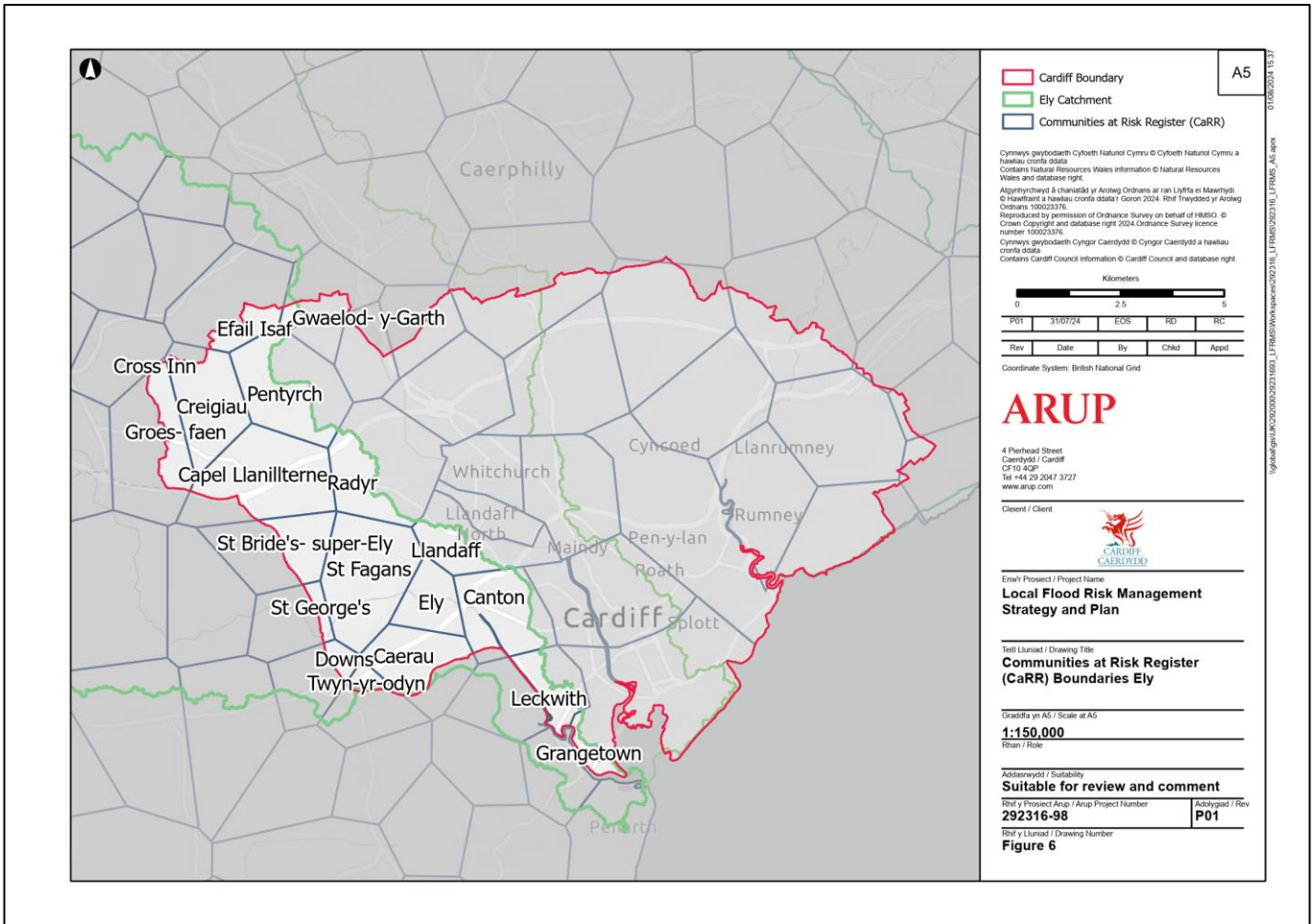


**Figure 6 Flood Risk from Surface Water and Small Watercourses in the River Ely catchment**

The CaRR communities within the River Ely catchment are detailed in table 7 and figure 7 below.

Community at Risk Name	CaRR Wales Surface Water Ranking
Caerau	116
Capel Llaniltern	666
Creigiau	705
Ely	232
Pentyrch	815
St Fagans	529

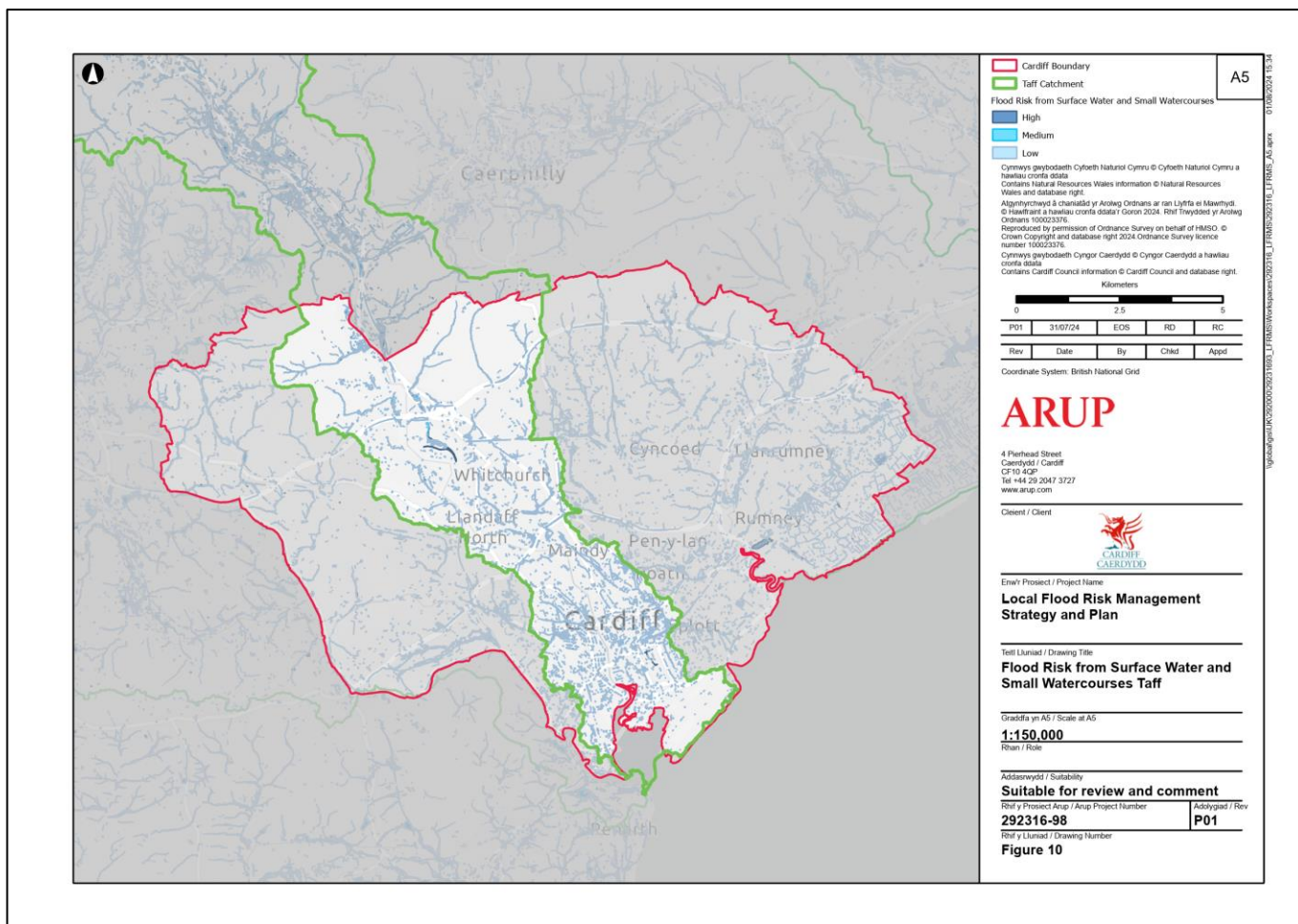
**Table 7 CaRR Communities and their ranking within the River Ely catchment**



**Figure 7 CaRR communities within the River Ely catchment**

**5.3.2 River Taff Catchment**

The River Taff catchment runs north to south through the centre of the city, with a large percentage of the catchment being hard standing. The River Taff catchment is very flashy and river levels respond rapidly to rainfall events. This catchment has a very large area outside of the Cardiff boundary which was evident during Storms Dennis, Ciara and Jorge in 2020, where multiple flooding incidents were recorded in this catchment. The River Taff Catchment is influenced by the Cardiff Bay Barrage. Figure 8 below shows low, medium and high flood risk from surface water and small watercourses.



**Figure 8 Flood Risk from Surface Water and Small Watercourses in the River Taff Catchment**

The CaRR communities within the River Taff catchment are detailed in table 8 and figure 9 below.

Community at Risk Name	CaRR Wales Surface Water Ranking
Butetown	65
Canton	204
Grangetown	267
Gwaelod-Y-Garth	646
Heath	220
Llandaff	103
Llandaff North	515
Radyr	427
Riverside	265
Tongwynlais	220
Whitchurch	567

**Table 8 CaRR Communities and their ranking within the River Taff catchment**

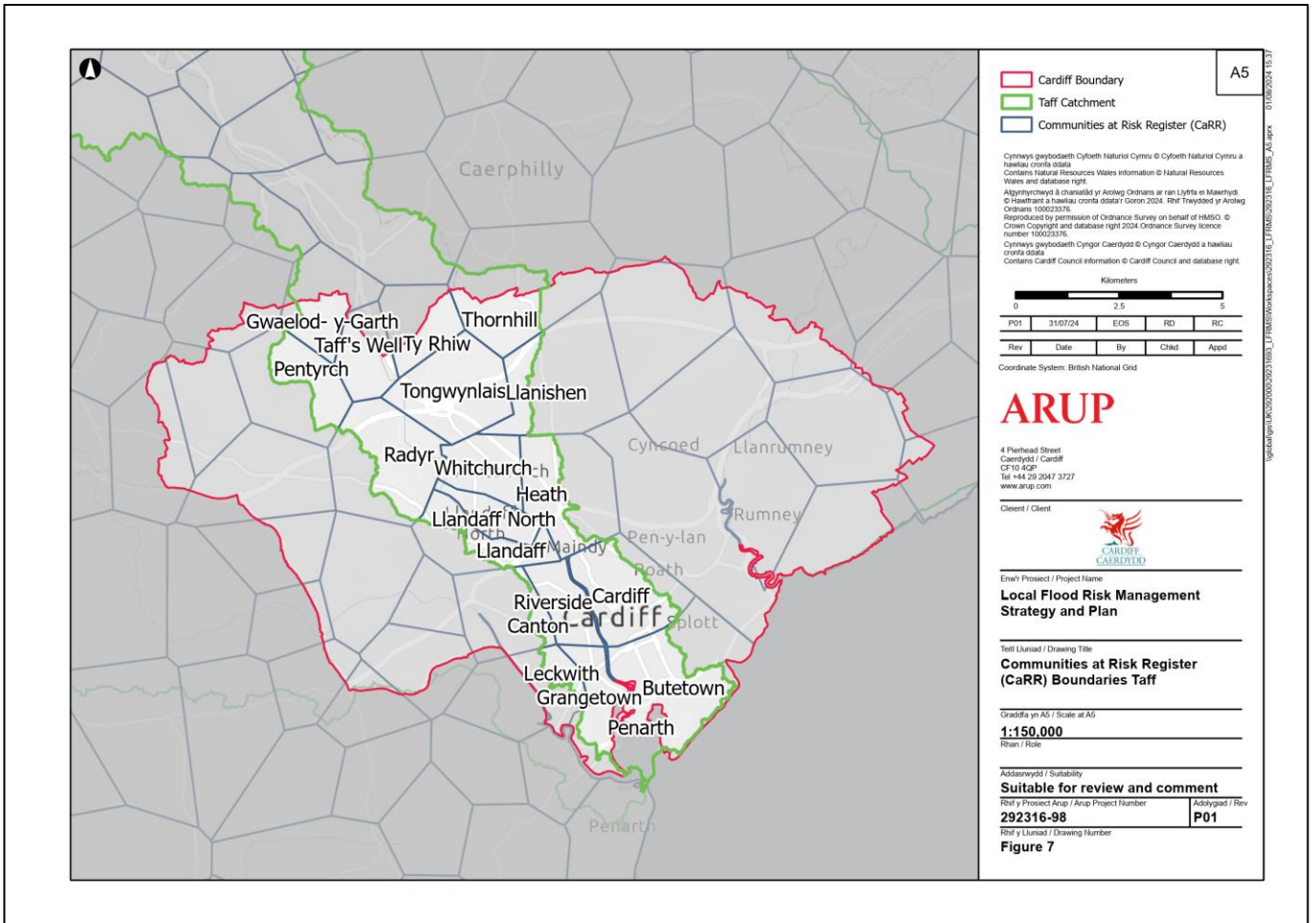
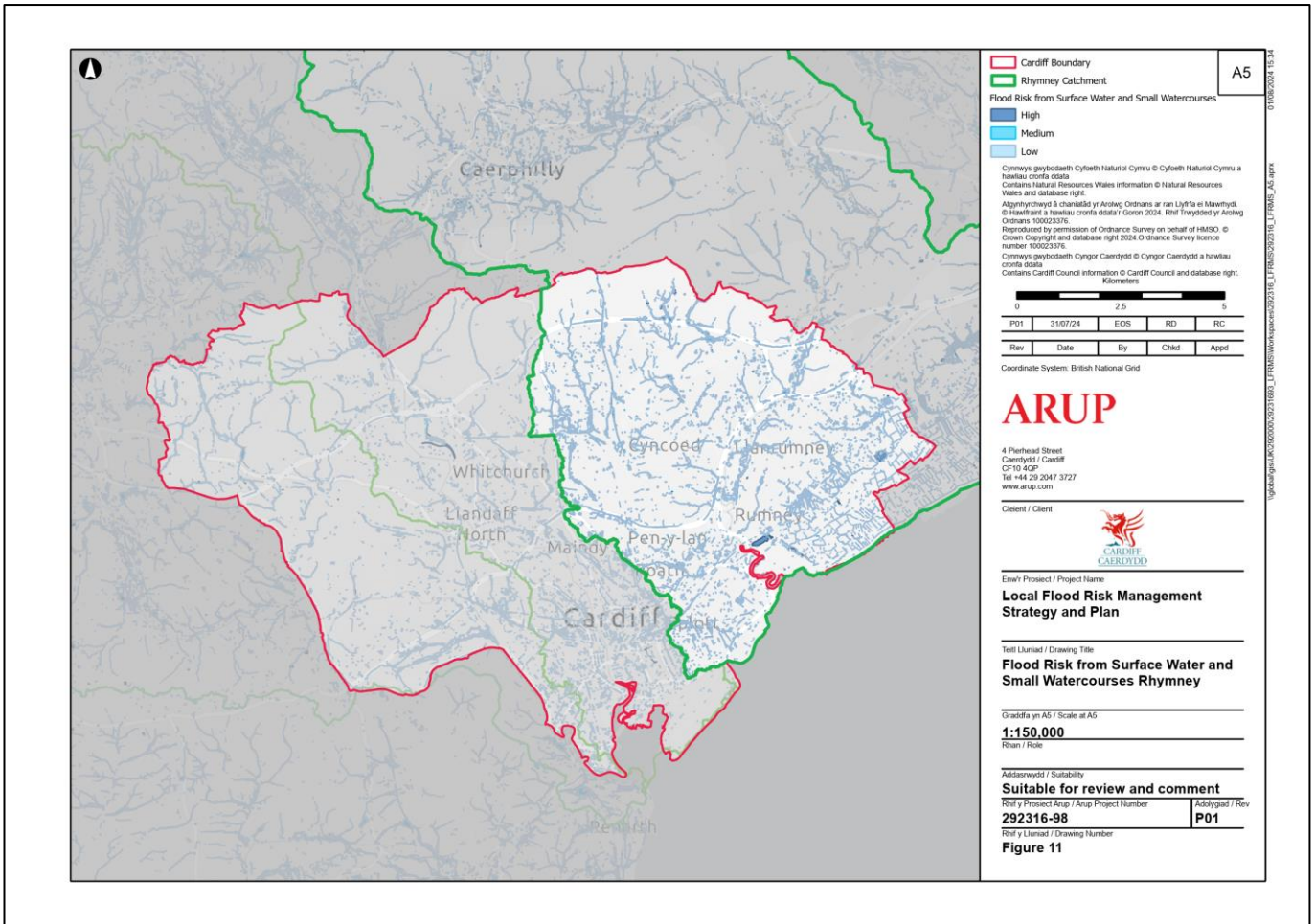


Figure 9 CaRR communities within the River Taff Catchment

### 5.3.3 River Rumney Catchment

The River Rumney catchment is the only area within Cardiff that is directly influenced by the Severn estuary tidal range, with its limits extended to the M4. Figure 10 below shows low, medium and high flood risk from surface water and small watercourses.

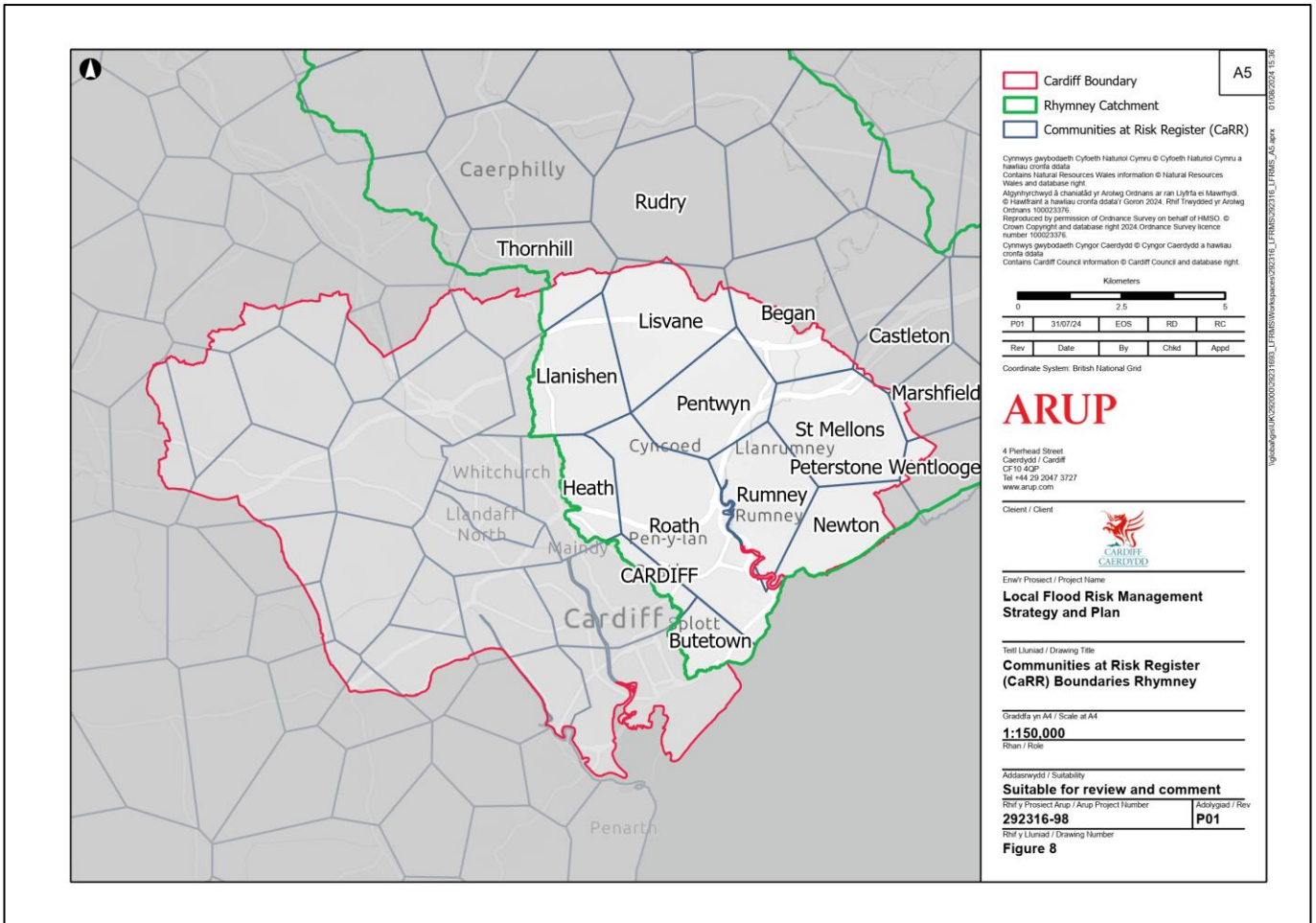


**Figure 10 . Flood Risk from Surface Water and Small Watercourses in the River Rumney Catchment**

The CaRR communities within the River Rumney catchment are detailed in table 9 and figure 11 below.

Community at Risk Name	CaRR Wales Surface Water Ranking
Lisvane	543
Llanishen	81
Newton	1722
Pentwyn	285
Roath	74
Rumney	181
St Mellons	119

**Table 9 CaRR Communities and their ranking within the River Rumney Catchment**



**Figure 11 CaRR communities within the River Rumney Catchment**

Further analysis of the 3 catchments has taken place and are shown in tables 10, 11 and 12 below. The tables show the total number of risk receptors at risk of flooding from local sources at low, medium and high levels.

**High Risk**

Risk Receptor	Ely Catchment	Taff Catchment	Rumney Catchment
Residential Properties (n)	98	146	121
Non Residential Properties (n)	16	57	74
Essential Services (n)	0	3	1
Primary / Trunk Roads (km)	1	3	1
Main Line Railways (Km)	4.29	20.44	6.5
Agricultural Land – Grades 1, 2, 3 (ha)	35	42	65

Special Areas of Conservation (SAC) (ha)	0.01	0	0
Special Protection Areas (SPA) (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
Sites of Specific Scientific Interest (SSSI) (ha)	77	10	463
Sites of Interest for nature Conservation (SINC)	0	0	0
Registered Parks and Gardens (ha)	0	2	2
Scheduled Ancient Monuments (SAM) (ha)	0	0	0
Listed Buildings (n)	1	5	0

**Table 10 Total number of receptors at High risk of flooding from local sources within each catchment**

### Medium Risk

<b>Risk Receptor</b>	<b>Ely Catchment</b>	<b>Taff Catchment</b>	<b>Rumney Catchment</b>
Residential Properties (n)	121	337	230
Non Residential Properties (n)	24	193	96
Essential Services (n)	1	11	2
Primary / Trunk Roads (km)	2	3	3
Main Line Railways (Km)	4.29	25.92	9.53
Agricultural Land – Grades 1, 2, 3 (ha)	70	137	159
Special Areas of Conservation (SAC) (ha)	0.02	0	0.01

Special Protection Areas (SPA) (ha)	0	0	0.01
Ramsar Sites (ha)	0	0	0.01
Sites of Specific Scientific Interest (SSSI) (ha)	77	10	839
Sites of Interest for nature Conservation (SINC)	0	0	0
Registered Parks and Gardens (ha)	0	10	10
Scheduled Ancient Monuments (SAM) (ha)	0	0	0
Listed Buildings (n)	2	13	4

**Table 11 Total number of receptors at Medium risk of flooding from local sources within each catchment**

### Low Risk

Risk Receptor	Ely Catchment	Taff Catchment	Rumney Catchment
Residential Properties (n)	561	3358	1776
Non Residential Properties (n)	79	1080	337
Essential Services (n)	12	43	15
Primary / Trunk Roads (km)	3	3	3
Main Line Railways (Km)	4.29	29.49	12.98
Agricultural Land – Grades 1, 2, 3 (ha)	188	440	494
Special Areas of Conservation (SAC) (ha)	0.13	0	0.14
Special Protection Areas (SPA) (ha)	0	0	0.14
Ramsar Sites (ha)	0	0	0.14

Sites of Specific Scientific Interest (SSSI) (ha)	81	10	849
Sites of Interest of nature Conservation (SINC)	0	0	0
Registered Parks and Gardens (ha)	0	35	18.9
Scheduled Ancient Monuments (SAM) (ha)	1	0	0
Listed Buildings (n)	4	36	2

**Table 12 Total number of receptors at Low risk of flooding from local sources within each catchment**

As previously described this strategy has utilised the 3 river basin catchments throughout the city, however, within the action plan in Section 8 and Appendix A, there is also an action plan for Flat Holm Island.

Flat Holm Island lies approximately 8km off the coast of the Cardiff and has several environmental designations bestowed upon it, such as a Local Nature Reserve, Special Protection Area and a Site of Specific Scientific Interest.

Although there is no local flood risk present on the island, there is a strategic navigational aid (the lighthouse) that has been allocated within the councils shoreline management plan. Therefore, the island has been included within this local flood risk strategy.

## 6. Our Strategic Objectives

### 6.1 National Strategy Objectives

The Welsh Government adopted flood risk strategy sets the national aims and objectives to reduce the flood risk to people and communities from all sources of flood risk and coastal erosion. The 5 objectives identified to reach these aims are detailed in figure 12 below.



Figure 12 National flood risk objectives

### 6.2 Objectives in our area

For this local strategy, a number of high level strategic objectives have been developed. They describe how Cardiff Council plans to manage flood risk throughout the lifetime of this strategy, along with their alignment to the national objectives.

Objectives	How it meets the national objectives				
	A	B	C	D	E
1. Reduce the risk and impact of flooding to communities, commercial enterprises and critical infrastructure	X	X	X	X	X
2. Work with local communities to improve knowledge of flood risk and to improve community resilience	X	X	X	X	X

3. Improve Water Quality		X	X		
4. Work and co-operate with internal departments	X	X	X	X	X
5. Work and co-operate with other RMA's such as DCWW and NRW	X	X	X	X	X
6. Ensure Capital and Revenue funding is allocated effectively, ensuring all environmental and socio – economic impacts / benefits are considered		X	X	X	
7. Enhance the Natural environment		X	X		
8. Ensure sustainable and effective flood risk management through all aspects of development		X	X	X	
9. Assist in the development of resource within the flood risk management industry	X	X			

**Table 13 Strategic objectives alignment with national objectives**

## 7. Flood Measures

### 7.1 Introduction to flood measures

To achieve our strategic outcomes, a wide range of measures require implementation and are detailed in section 7.2 below.

The measures have been categorised in the following three groupings:

- Development, Regeneration and Policy
- Prevention, Protection and Response
- Community, Stakeholder and Collaboration

Indicative timescale and costs are explained below in tables 14 and 15. An explanation of possible funding opportunities is detailed in section 9.

#### Timescales:

Value	Indicative Timescale
Ongoing	Currently underway and through lifecycle of the strategy
Short	Current – 2 years
Medium	3 – 5 years
Long	6 years +

**Table 14 Explanation of indicative timescales for measures**

#### Costs:

Value	Indicative Cost
Current Resources	Current council resources
Low	Up to £100k
Medium	Up to £1 million
High	Over £1 Million

**Table 15 Explanation of indicative costs for measures**

## 7.2 Our Measures

### Development, regeneration and policy Measures

<b>Measure 1</b>	<b>Ensure Climate Change Projections are Included in all Aspects of Development and Flood Risk Management</b>
Description	<p>The LLFA will ensure the impacts of climate change are included in all aspects of flood risk management and development.</p> <p>An uplift factor of 40% will be included in all designs, modelling and assessments of surface water drainage systems, Sustainable drainage systems and flood alleviation schemes.</p>
Benefits	<p>This will also allow an accurate assessment of flood risk in the future and to ensure effecting resilience within communities.</p> <p>This will abide by Cardiff Councils declaration of a climate emergency and assure the impact of climate change is incorporated into all flood risk decision making.</p>
Timescale	Ongoing
Link to Strategic Objectives	1, 2, 5, 8
Cost	Current Resources
Funding Options	Revenue , External
Delivery Partners	LPA, Other RMA;s , Consultants, Developers
Type of flood management	Prevention
<b>Measure 2</b>	<b>Consultee to the Planning Authority and Building Control</b>
Description	<p>The LLFA will assist the LPA in ensuring that the flood risk of existing communities is not exacerbated by new development.</p> <p>The LLFA will also assist the LPA in ensuring all local, regional and national flood risk policies and guidance (such as TAN 15 and the LDP) are adhered to in regard to any development.</p>

Benefits	Ensuring sustainable and appropriate development. Ensuring no exacerbation of flood risk. Opportunities to lower existing flood risk to communities.
Timescale	Ongoing
Link to Strategic Objectives	1, 4, 7, 8
Cost	Current resources
Funding Options	Revenue
Delivery Partners	LPA
Type of flood management	Prevention

<b>Measure 3</b>	<b>SuDS Approval Body (SAB)</b>
Description	<p>The enacting of Schedule 3 of FWMA 2010 by The Welsh Government on the 7<sup>th</sup> January 2019 appoints CCC as the SuDS Approval Body (SAB).</p> <p>Schedule 3 assigns several statutory responsibilities to CCC including the assessment and adoption of drainage designs and related enforcement powers.</p> <p>CC also have the ability to adopt non mandatory drainage systems which could include those only serving one property or systems approved and construction before the implementation of Schedule 3.</p>
Benefits	<p>Ensuring sustainable and appropriate development.</p> <p>Ensuring no exacerbation of flood risk.</p> <p>Opportunities to lower existing flood risk to communities.</p> <p>Encouraging the improvement in water quality through the use of well designed and constructed SuDS features.</p> <p>Enhancing the biodiversity and amenity of local areas through well thought out SuDS design, both in new development and retro fit areas.</p>
Timescale	Ongoing
Link to Strategic Objectives	1, 3, 5, 7, 8
Cost	Current Resources
Funding Options	Revenue

Delivery Partners	LPA
Type of flood management	Prevention

<b>Measure 4</b>	<b>Local Flood Risk Strategy</b>
Description	Prepare and adopt a strategy for the management of flood risk from local sources.
Benefits	<p>The local flood risk strategy will set out objectives, measures and actions to manage local flood risk throughout Cardiff.</p> <p>The implementation of the strategy will allow increased understanding and cohesion throughout local communities regarding local flood risk and its management.</p> <p>The strategy will allow communities to input into the management of local flood risk thus ensuring that local issues are considered in all decision making and improve the communities resilience.</p> <p>The strategy will enhance the local environment improving biodiversity, amenity and water quality.</p>
Timescale	Ongoing and Short (every 2 years)
Link to Strategic Objectives	1, 2, 3, 6, 7
Cost	Medium
Funding Options	Revenue, Capital, External
Delivery Partners	Local communities
Type of flood management	Prevention, preparedness, Review

<b>Measure 5</b>	<b>Surface Water Strategy</b>
Description	CCC intends to develop a specific Surface Water Management Strategy in line with Section 8 of Tan 15.
Benefits	<p>Ensure that all aspects of surface water management within the city aligns with this strategy and other policies and guidance such as The Culverting Policy and SuDS guidance.</p> <p>This Strategy will assist all developers in ensuring they abide by local and national requirements for the management of surface water throughout the life of a development.</p>

Timescale	Medium
Link to Strategic Objectives	1, 3, 5, 7, 8
Cost	Low
Funding Options	Revenue, External
Delivery Partners	N/A
Type of flood management	Prevention

<b>Measure 6</b>	<b>Ensure Compliance with Strategic Policies</b>
Description	This strategy will ensure all decisions regarding the management of local flood risk comply with all local and national strategic policies.
Benefits	Ensure joined up thinking ensuring effective use of resources
Timescale	Ongoing
Link to Strategic Objectives	1, 4, 5
Cost	Current Resources
Funding Options	Revenue
Delivery Partners	N/A
Type of flood management	Prevention, Review

<b>Measure 7</b>	<b>Review and Update Culverting Policy</b>
Description	<p>A culvert is the covering of a watercourse with a pipe or similar structure to allow a watercourse to flow underground.</p> <p>At present CCC culverting policy only allows the culverting of a watercourse for access and amenity purposes.</p> <p>The updated culverting policy will make CCC position on culverting clearer and encourage the “daylighting” (removing of culverts) of watercourses.</p>
Benefits	<p>The updated policy will provide clear requirements and understanding for proposed culverting of a watercourse.</p> <p>The daylighting of culverts will provide an improvement to the biodiversity of Cardiff’s watercourses, providing improved habitats to plants and animals.</p>
Timescale	Short
Link to Strategic Objectives	1, 3, 7
Cost	Low
Funding Options	Revenue
Delivery Partners	N/A

Type of flood management	Prevention
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<b>Measure 8</b>	<b>Flood Risk Asset Register</b>
Description	Section 21 of FWMA 2010 places a statutory duty on Cardiff Council to maintain a register of flood risk assets such as defences and debris screens etc.
Benefits	<p>The register allows the regular review of the level of defences and operation provided by critical assets.</p> <p>The register will allow the effective planning and use of resources in the mitigation of flood risk throughout the city.</p> <p>The use of AMX software will allow effective transfer of data on critical assets to NRW.</p>
Timescale	Ongoing
Link to Strategic Objectives	1, 6
Cost	Low
Funding Options	Revenue
Delivery Partners	N/A
Type of flood management	Prevention, Protection and Review

<b>Measure 9</b>	<b>Land Drainage Act 1991 Duties</b>
Description	The LDA 1991 places statutory duties on Cardiff Council as The LLFA, including permitting and enforcement powers.
Benefits	<p>The effective management of ordinary watercourses throughout the city will improve the biodiversity and amenity that watercourses offer.</p> <p>The flood risk posed from watercourses in poor or unmaintained condition will be improved with effective management</p>
Timescale	Medium
Link to Strategic Objectives	1, 3, 7
Cost	Low
Funding Options	Revenue
Delivery Partners	Landowners
Type of flood management	Prevention

<b>Measure 10</b>	<b>Assist in the Development of the SFCA</b>
Description	A strategic Flood Consequences Assessment (SFCA) is required to provide evidence to inform policies and

	<p>site selection for Strategic and Local Development Plans.</p> <p>As sources of flood risk are not bound by authority boundaries, SFCA's are often undertaken on a regional level by the associated LPA's.</p>
Benefits	<p>By Assisting the LPA in the creation of the updated SFCA, the LLFA can ensure that that any planning policies such as the LDP have the most up to date information.</p> <p>This will also ensure that flood risk from all sources is a key element of consideration throughout the life of a development.</p>
Timescale	Medium
Link to Strategic Objectives	1, 4, 8
Cost	Low
Funding Options	Revenue
Delivery Partners	LPA
Type of flood management	Prevention, Review

<b>Measure 11</b>	<b>SuDS Guidance</b>
Description	Develop a guidance for developers, residents and local groups to ensure effective design, management and maintenance.
Benefits	<p>This guidance will assist developers and other stakeholders in the design, construction and maintenance of SuDS features.</p> <p>This will lower local flood risk through effective design of storage features and controlling rainfall at source whilst encouraging the enhancement of local amenity and biodiversity.</p> <p>The guidance will assist local flood and community groups in applying for grant funding to construct SuDS within their local area.</p> <p>It will also link to other guidance and policies such as the CIRIA SuDS manual.</p>
Timescale	Medium
Link to Strategic Objectives	1, 2, 3, 7, 8

Cost	Low
Funding Options	Revenue
Delivery Partners	N/A
Type of flood management	Prevention

<b>Measure 12</b>	<b>OWC Guidance</b>
Description	Develop a Guidance for developers and riparian owners for the management and maintenance of ordinary watercourses.
Benefits	<p>Inform landowners of their duties and responsibilities as a designated “riparian owner”.</p> <p>Encourage and assist riparian owners to improve the biodiversity and amenity of their ordinary watercourse through the implementation of ecological enhancements and natural flood management (NFM).</p> <p>Encourage riparian owners to work with Cardiff Council and NRW to improve the water quality within the watercourse.</p> <p>This guidance will also benefit developers advising on the requirements managing ordinary watercourse throughout the lifetime of a development including but not limited to culverting, pollution and maintenance.</p>
Timescale	Medium
Link to Strategic Objectives	1, 2, 3, 7, 8
Cost	Low
Funding Options	Revenue
Delivery Partners	N/A
Type of flood management	Prevention

### **Prevention, Protection and Response Measures**

<b>Measure 13</b>	<b>Response to Flooding</b>
Description	Cardiff Council response to flood events both during and after the event
Benefits	<p>Improvement in the use of council resources in responding to flooding.</p> <p>Improvement in the understanding of flooding across the city.</p>

	Improving relationships with communities by offering assistance after flood events through clean up and advice of possible flood mitigation measures.
Timescale	Short
Link to Strategic Objectives	1 , 2
Cost	Medium
Funding Options	Revenue
Delivery Partners	Internal Cardiff Council departments, Residents
Type of flood management	Prevention, Preparedness, Recovery

<b>Measure 14</b>	<b>Investigate all Flooding Incidents</b>
Description	<p>Cardiff Council will investigate all reported flood incidents impacting any flooding receptor.</p> <p>Should 20 or more properties suffer internal flooding from a single source then CC will undertake and write a Section 19 (FWMA 2010) report and publish on our website.</p>
Benefits	<p>Providing residents confidence that Cardiff Council will investigate and assist during, as far as is reasonably practicable, and post flooding event.</p> <p>This will assist Cardiff Council in understanding the causes of flooding across the city and also help residents understand why they have been impacted by a flood event.</p> <p>The improved understanding will assist Cardiff Council in decision making and response to flooding as described in Measure 13 above.</p> <p>The improved understanding and decision making will feed into any updates to the Local Flood Risk Strategy, ensuring a more robust and effective strategy and associated action plan.</p> <p>Flood incident investigations will assist in applications for internal and external funding.</p>
Timescale	Ongoing

Link to Strategic Objectives	1, 2
Cost	Low
Funding Options	Revenue
Delivery Partners	Residents
Type of flood management	Prevention, Review

<b>Measure 15</b>	<b>Flood Alleviation Scheme Development</b>
Description	<p>There is a need for a long term pipe line of flood alleviation schemes (FAS) to mitigate flood risk from local sources across the city.</p> <p>The national flood risk strategy provides guidance on how FCERM investment should be utilised and is supported by recent Business Case Guidance.</p> <p>This guidance utilises the use of the 5 business case model within FAS development, as adopted by The Welsh Government and HM Treasury.</p> <p>Cardiff Council will deliver FAS from the long-term pipeline in line with the business case guidance utilising the following projects:</p> <ul style="list-style-type: none"> <li>- Strategic Outline Business Case (SOC)</li> <li>- Business Justification Case (BJC) or Outline Business Case (OBC)</li> <li>- Full Business Case (FBC) / Detailed Design</li> </ul> <p>Decisions on locations for possible FAS will be determined through a number of factors including: current flood risk, CARR, climate change projections and historical flood incidents.</p>
Benefits	<p>Efficient investment into existing and new flood risk assets.</p> <p>Lowering of flood risk to effected communities.</p> <p>The consideration of wider Socio, economic, environmental and ecological impacts and benefits of FAS.</p> <p>Assist in the understanding of further funding requirements.</p>

Timescale	Ongoing
Link to Strategic Objectives	1, 4, 5, 6
Cost	High
Funding Options	Capital, External
Delivery Partners	Welsh Government, DCWW, NRW
Type of flood management	Prevention , Protection

<b>Measure 16</b>	<b>Critical Culvert Maintenance and Telemetry</b>
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Description	<p>Cardiff Council has a number of critical culvert assets as described in Section 4.2.3.</p> <p>These assets have a CCTV camera and level logger that provides up to date water levels and images that inform Cardiff Council response to flood events and inclement weather.</p> <p>Improvements to the ongoing maintenance of these assets is critical to the mitigation of flood risk whilst ensuring the longevity of the assets.</p>
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Benefits	<p>Lower the flood risk posed by the critical culvert assets.</p> <p>Inform effective debris screen design for future FAS if required.</p> <p>Inform the improvements to Cardiff Council flooding response.</p>
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Timescale	Ongoing
Link to Strategic Objectives	1, 2, 4
Cost	Medium
Funding Options	Revenue
Delivery Partners	CCC Internal Departments, External
Type of flood management	Prevention, Protection

<b>Measure 17</b>	<b>Internal Staff Training</b>
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Description	<p>The LLFA will provide training to Cardiff Council call centre staff (C2C) and other internal departments to ensure effective advice is given to someone reporting flooding.</p> <p>Training will be provided to other Cardiff Council departments, such as Waste Management, to ensure all Cardiff Council resources are utilised, as far as is</p>
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	reasonably practicable, in any response to flooding, as per Measure 13.
Benefits	<p>Effective and usable advice provided to reporters at source, allowing a quick response to flooding.</p> <p>Wider workforce and increased resources to respond to any flooding events, thus improving relationships and confidence of residents.</p>
Timescale	Short
Link to Strategic Objectives	1 , 4
Cost	Low
Funding Options	Revenue
Delivery Partners	CCC internal departments
Type of flood management	Prevention, Preparedness, Recovery

<b>Measure 18</b>	<b>Consultee to Cardiff Councils Resilience Management Unit</b>
Description	<p>Cardiff Councils Resilience Unit has a statutory duty under the Civil Contingencies Act 2004 to adopt and maintain plans to respond to flooding emergencies.</p> <p>The LLFA will assist the Resilience Unit in the update of these plans and work with them during a major flooding event.</p> <p>Effective response plans will involve the community throughout the process, ensuring community engagement pre, during and post flood event.</p>
Benefits	Offer a more effective response to flood events.
Timescale	Ongoing
Link to Strategic Objectives	1, 2, 4
Cost	Current resources
Funding Options	Revenue
Delivery Partners	Resilience Unit
Type of flood management	Prevention, Recovery, Review

<b>Measure 19</b>	<b>Sharing of Surface Water Modelling</b>
Description	<p>The LLFA will share any surface water modelling undertaken as part of FAS as described in measure 15.</p> <p>The resultant modelling will be shared with The Welsh Government and NRW to inform</p>

	the latest round of flood risk mapping, as described in section 5.
Benefits	Accurate flood modelling to be provided to ensure that flood risk mapping is accurate, and communities are aware of their flood risk.
Timescale	Medium
Link to Strategic Objectives	1, 2, 5
Cost	Medium
Funding Options	Capital
Delivery Partners	The Welsh Government, NRW
Type of flood management	Prevention, Protection

### **Community, Stakeholder and Collaboration Measures**

<b>Measure 20</b>	<b>Engagement with Local Communities Before, During and After Flood Events</b>
Description	<p>Cardiff Council will engage with communities before during and after a flood event, ensuring that communities have increased resilience to flooding.</p> <p>Cardiff Council will engage with communities advising them of their current flood risk and encouraging the installation of flood mitigation measures such as property level flood protection (PFR). Cardiff Council will work with any communities that wish to install PFR to ensure effective measures are put in place.</p> <p>Post flooding event, Cardiff Council will, as far as is reasonably practicable, assist communities in their response to flooding events, for example, by offering disposal of damaged items, providing any other assistance where practicable, such as LLFA flooding statements for insurance claims.</p>
Benefits	<p>Communities feel that Cardiff Council is there to assist them in the recovery from a flood event.</p> <p>Installation of PFR can mitigate against the risk of internal flooding.</p> <p>Ensuring communities are aware of solutions and actions for the management of their own flood risk.</p>

Timescale	Ongoing
Link to Strategic Objectives	1 , 2
Cost	Medium
Funding Options	Revenue
Delivery Partners	Cardiff Council Waste Department
Type of flood management	Prevention, Protection, Preparedness, Recovery

<b>Measure 21</b>	<b>Assist Communities with the Creation and Operation of Community Flood Groups</b>
Description	<p>Cardiff Council cannot remove all flood risk, but local communities that are well prepared for flooding can increase their resilience dramatically.</p> <p>Cardiff Council will work with communities to develop their own flood risk group and management plan.</p> <p>Local communities will know their area well and CC will work with them to develop flood plans for before, during and after a flood event.</p> <p>Cardiff Council will have actions within the plan, such as collecting leaf litter or assisting in recovery. We will also assist the communities in updating their plan as and when required.</p>
Benefits	<p>A community based culture of flood risk resilience and responsibility.</p> <p>Community based resilience and response will ensure Cardiff Council can allocate resources and respond effectively during a flood event.</p>
Timescale	Short
Link to Strategic Objectives	1, 2
Cost	Low
Funding Options	Revenue
Delivery Partners	Local Communities'
Type of flood management	Prevention, Protection, Preparedness, Recovery

<b>Measure 22</b>	<b>Collaborate with Other RMA's and Organisations to Lower Flood Risk</b>
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Description	<p>All RMA's such as DCWW and NRW have a requirement under relevant legislation to adopt their own Flood Risk strategies.</p> <p>Cardiff Council will collaborate with these RMA's to lower flood risk across Cardiff from all relevant sources.</p> <p>Cardiff Council currently meet with DCWW on a monthly basis to discuss flooding incidents and FAS that are relevant for both organisations, and will work to include further RMA's in the discussions.</p> <p>Cardiff Council shares a border with Caerphilly County Borough Council, Newport City Council, Rhondda Cynon Taf Council and The Vale of Glamorgan Council. Cardiff Council will liaise directly with these authorities, acting as the LLFA, to discuss cross border flooding incidents and schemes, whilst also working together with them to lower flood risk to communities on the authority borders.</p>
Benefits	<p>Pooling of resources to investigate flooding from multiple sources.</p> <p>Community confidence from Joint RMA investigation and alleviation / remediation solutions.</p> <p>Sharing of data and knowledge / expertise allows for a better experience for communities that have experienced flooding.</p>
Timescale	Ongoing / Short
Link to Strategic Objectives	1 , 5
Cost	Low
Funding Options	Revenue, External
Delivery Partners	Other RMA's
Type of flood management	Prevention, Protection, Preparedness, Recovery

<b>Measure 23</b>	<b>Collaborate with NRW and DCWW Regarding Pollution Incidents</b>
Description	Incidents of pollution are present throughout Cardiff contributing to the

	<p>poor WFD status of watercourses across Cardiff.</p> <p>Cardiff Council liaise directly and meet regularly with NRW and DCWW to discuss instances of pollution across the city from residential and commercial properties and also from both consented and unconsented CSO's.</p> <p>Should the pollution be because of a misconnection, DCWW and NRW investigate the misconnection, however, the enforcement powers lie with Cardiff Council under The Building Act 1984.</p> <p>If the pollution has entered an ordinary watercourse from uncontrolled surface water runoff, from a development site for example, Cardiff Council will collaborate with NRW to investigate and utilise its enforcement powers under The LDA 1991 if required.</p>
Benefits	<p>Improvement in Water quality within watercourses across Cardiff.</p> <p>Collaboration and pooling of resources to ensure an effective process.</p>
Timescale	Ongoing
Link to Strategic Objectives	1, 3, 5
Cost	Medium
Funding Options	Revenue, External
Delivery Partners	NRW, DCWW
Type of flood management	Prevention, Recovery

<b>Measure 24</b>	<b>School Flooding and Water Safety Talks</b>
Description	<p>Cardiff Council Flood Risk Management Team undertake flooding and water safety talks in primary and secondary schools.</p> <p><u>Flooding talks</u>: Presentation showing all aspects of flooding including resilience and recovery. The impacts of climate change are a key aspect of the talk, ensuring it complies with the new curriculum.</p>

	<p><u>Water Safety Talks</u>: Cardiff Council have worked with Atlantic Crest, a specialist water safety company to develop water safety presentations aimed at the relevant age groups.</p> <p>The talk includes what to do during an emergency involving water, what to do during a flood and also key life skills such as speaking to the emergency services and international lifeguard signals.</p>
Benefits	<p>Ensuring children are aware of the risks and dangers of flood water.</p> <p>Ensuring children are aware what to do in an emergency involving water.</p> <p>Ensuring children are aware what to do during a flood and can advise their friends and family what they have learnt.</p> <p>Assisting schools with the new curriculum.</p>
Timescale	Ongoing
Link to Strategic Objectives	1, 2, 9
Cost	Low
Funding Options	Current resources
Delivery Partners	Schools
Type of flood management	Prevention, Preparedness, Recovery

<b>Measure 25</b>	<b>Collaboration with Academia</b>
Description	<p>There is an emerging issue within the flood risk industry regarding the availability of resource and engineers to allow the industry to grow.</p> <p>The introduction of Schedule 3 of FWMA 2010 has emphasised the need for graduates to enter the flood risk industry and RMA's have a key role to play in this.</p> <p>Cardiff Council have developed important relationships with The University of Bath, Cardiff University and the University of South Wales, which has resulted in collaboration on a number of levels.</p> <p>This ranges from students undertaking work-based learning placements and</p>

	dissertations to collaborating with university professors on published journal articles.
Benefits	<p>Grow the resource within the flood risk industry.</p> <p>Develop relationships with academia from primary schools to universities.</p> <p>Create opportunities for graduates to gain experience within all aspects of flood risk management.</p>
Timescale	Ongoing
Link to Strategic Objectives	1, 9
Cost	Low
Funding Options	Revenue, External
Delivery Partners	Schools, colleges and universities
Type of flood management	Prevention, protection, preparedness, recovery, review

<b>Measure 26</b>	<b>Riparian Owners</b>
Description	<p>As described in 4.3.7, riparian owners have a number of duties and responsibilities for ordinary watercourses that flow through their land.</p> <p>Along with the guidance described in measure 12, Cardiff Council will work with riparian owners to ensure effective management and maintenance of ordinary watercourse throughout the city.</p>
Benefits	Effective and sustainable management of ordinary watercourses will ensure no exacerbation of flood risk downstream and enhancement of the biodiversity and amenity surrounding the watercourse environment.
Timescale	Short
Link to Strategic Objectives	1, 2, 3
Cost	Low
Funding Options	Revenue
Delivery Partners	Riparian Owners
Type of flood management	Prevention, protection

## 8. Flood Actions

### 8.1 Introduction to Flood Actions

With the introduction of the flood risk regulations 2009, a duty was placed onto LLFA's to produce and adopt a local flood risk management plan (FRMP) in areas where a significant flood risk has been identified. The national flood risk areas where a FRMP is required is designated by NRW's flood maps. None were identified within Cardiff.

However, the national flood risk strategy places an expectation on all LLFA's to create and adopt a FRMP, regardless of any legislative duty. Previously the strategy and management plan were two separate documents. However, for ease of use they have been combined within this strategy and action plan.

### 8.2 Cardiff Council Flood Action Plan

As explained in section 5, Cardiff Council has utilised a catchment based approach adopting the catchments of the three main rivers that flow through the city, namely the Ely, Taff and Rumney. This is for ease of understanding and also for collaboration with NRW, allowing for the intergration of flood risk management throughout the city.

There are five flood actions plans to accompany this strategy which can be viewed within Appendix A.

The catchments are as follows:

- City Wide
- Flatholm Island
- River Ely
- River Taff
- River Rumney

All actions have measurable attributes against them, including indicitive costs and time scales.

## 9. Funding and Prioritisation

The following section will explain the funding mechanisms that are available to fund the objectives, measures and actions of this strategy, followed by how we are planning to prioritise our measures and actions.

### 9.1 Funding options

Available funding is generally provided from three sources:

- Internal budgets (Cardiff Council)
- Welsh Government Funding
- External funding opportunities ( Welsh Water, NRW, Universities etc)

#### 9.1.1 Internal budgets

Cardiff Council internal flood risk budgets are split into two categories, Capital and Revenue. The capital budgets are utilised for large scale projects to minimise flood risk to local communities. The councils flood risk revenue budget is utilised to maintain our flood risk assets such as highway gullies, debris screens and pumping stations.

#### 9.1.2 Welsh government funding

It is widely recognised amongst RMA's and Welsh Government that forward planning and delivery of key programmed activities is key to managing flood risk across Wales.

The Welsh Government have committed to working with RMA's over the next 5 to 10 year period to develop a FCERM investment programme, delivered through capital schemes which are in accordance with the FCERM Business Case Guidance.

FCERM Capital Funding: This funding supports the design and construction of new flood alleviation schemes as well as large scale replacement (i.e. asset replacement) throughout the business case process.

Small Scale Works Grant: The small scale works grant was introduced by The Welsh Government in 2016 to support LLFA's in carrying out smaller flood alleviation works. To date, Welsh

Government have generally funded design work at 100% and construction work at 85% of the overall cost

Natural Flood Management (NFM) Accelerator Grant: This funding stream was introduced as a pilot in 2020, with full roll out in 2023. This funding is intended to assist LLFA's to design, develop and construct flood alleviation schemes utilising natural flood management techniques.

Emergency Funding: On occasion, during large scale flood events such as after Storm Ciara, Dennis and Jorge in 2022, the Welsh Government have made funding available to support emergency works and response.

Coal Tip Funding: As detailed in Section 4, there are a number of coal tips that Cardiff Council are responsible for. The Welsh Government have made funding available for the management, maintenance and remediation of Coal tips, of which some actions will be related to flood risk and its mitigation.

### **9.1.3 External funding opportunities**

External funding can come in a wide range of forms and from differing organisations such as NRW, DCWW or Developers.

Section 106 – Developer Contributions : The local planning authority under Section 106 of The Town and Country Planning Act 1990 can request that developers carry out works on site (including FCERM works).

Community Infrastructure Levy (CIL) : The CIL affords the opportunity to the local planning authority to raise funds from certain types of development to facilitate the construction of strategic infrastructure required to support the LDP. Strategic infrastructure can range from but not limited to transport, schools and flood alleviation structures.

DCWW Funding: DCWW operate a funding opportunity to fund flood alleviation development, design and construction where the flood is caused by or interacts with their assets.

## **9.2 How we prioritise flood measures and actions**

With the ever changing funding opportunity availability, The Welsh Government have confirmed that any future funding for Flood Risk Management activities may require to be prioritised. An approved methodology for prioritising funding was approved in 2018 after a rigorous consultation, utilising a scoring system with a total of 100 points available. The criteria for the prioritisation methodology is as follows:

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Communities at Risk Register (CaRR): As described in Section 5, the communities at risk register has been produced by NRW on behalf of The Welsh Government, as a method of identifying flood risk across Wales at a community level. The CaRR allows the prioritisation of flood risk management activities and funding through the ranking of individual communities for natural (undefended) and mitigated (defended) scenarios.

Previous Flooding Events: Previous evidence of internal flooding to effected residential properties is a key aspect of the prioritisation. All flood events are recorded on the councils AMX database.

Number of Properties Benefiting : As previously described The Welsh Government prioritises schemes that lower flood risk to residential properties. Commercial and other properties are also considered, however, they are given a lesser priority.

Cost Per Home : The costs and benefits to properties from the implementation of flood alleviation schemes. This will consider the whole life of any scheme.

Wider Benefit Opportunities : To ensure abidance with the FCERM business case guidance and The Wellbeing of Future Generations Act 2015, wider benefits will be a key consideration whilst delivering the measures and actions within this strategy.

Partnership Funding Opportunities : Where possible Cardiff Council will apply for funding from other organisations where mutual benefits are available.

To ensure alignment with The Welsh Government national strategy, Cardiff Council will utilise the same prioritisation method for the flood measures and actions of this strategy.

## 10. Environmental Assessments

The implementation of the objectives, measures and actions of this strategy will along with reducing local flood risk provide an opportunity to improve the natural environment.

Strategic assessments have been undertaken alongside this local flood risk strategy to ensure any decisions and actions take account of any impact on the natural, rural and built environment.

All of the assessments can be viewed in Appendix F however a summary of each assessment is detailed below.

### 10.1 Habitats regulations assessment (HRA)

The requirement for HRA is established by the Habitats Directive (Council Directive 92/43/EEC on the conservation of natural habitats and of wild fauna and flora), which is transposed into UK law by The Conservation of Habitats and Species Regulations 2017 (as amended by the EU Exit Regulations 2019) (hereafter referred to as the ‘Habitats Regulations’).

A Screening and Appropriate Assessment Report has been prepared by Ove Arup & Partners Limited to support the Cardiff Local Flood Risk Management Strategy and Action Plan, on behalf of the City of Cardiff Council, as the first two stages of a Habitats Regulations Assessment (HRA).

Stage 1 of an HRA looks to determine whether there are likely significant effects on any designated sites within the zone of influence of the plan and stage 2 assesses whether there are adverse impacts to integrity of the designated sites.

In this instance, four designated sites were scoped in for consideration, as follows:

- Severn Estuary Special Area of Conservation (SAC);
- Severn Estuary Special Protection Area (SPA);
- Severn Estuary Ramsar site; and
- Cardiff Beech Woods SAC.

The screening assessment has concluded that likely significant effects of the plan could not be ruled out, associated with actions Taf4 and Taf5 that propose repairs to the flood defences along the River Taff, and actions Rhy3 and Rhy4 that propose measures to mitigate surface water flooding within the Rhymney River catchment. These actions are screened in to the appropriate assessment due to the potential for construction work to give rise to an adverse effect on site integrity and undermine the conservation objectives for Severn Estuary SAC, SPA and Ramsar site. In the absence of mitigation and/or avoidance measures, there is potential for disturbance

and harm to qualifying fish species during the works and measures that could impact fish migration.

Furthermore, there is potential for water pollution and the release of invasive species. There are no pathways for impact to Cardiff Beech Woods SAC associated with any elements of the plan and therefore this site was screened out at stage 1.

General best practice measures are identified, with the subsequent appropriate assessment undertaken on the basis that these measures would be incorporated and implemented during the construction works proposed by the plan.

The appropriate assessment identified implications for the conservation objectives for the Severn Estuary SAC and Ramsar sites relating to harm and disturbance to fish, associated with the proposed construction activities along the River Taff and within the Rhymney River catchment.

Mitigation measures are described to alleviate these risks. This includes conducting all works within functionally linked watercourses (the River Taff and northern brook) between May 15<sup>th</sup> and October 15<sup>th</sup> to avoid disturbing spawning salmonids and ensuring construction activities occur during daylight hours to minimize impacts on nocturnal migration patterns of river and sea lamprey.

Pollution prevention protocols would be strictly adhered to, with measures such as silt fences, sediment basins, and emergency spill kits in place to prevent contaminants from entering the water. Additionally, any tree clearance would be carefully managed to prevent sediment runoff. With these mitigation strategies, the plan is concluded to be unlikely to adversely impact the integrity of the Severn Estuary designated sites in combination with other plans and projects.

## **10.2 Strategic environmental assessment (SEA)**

Strategic Environment Assessment (SEA) is the term used to describe environmental assessment as applied to plans and programmes in accordance with the European Council Directive 2001/42/EC 'on the assessment of the effects of certain plans and programmes on the environment'. EC Directive 2001/42/EC (known as the SEA Directive) is enacted in England and Wales through the 'Environmental Assessment of Plans and Programmes Regulations' (SI 2004/1633) (SEA Regulations).

It is a legal requirement for responsible authorities to undertake an SEA of plans and programmes that are subject to preparation and/or adoption by an authority at a local, regional or national level and which are required by legislative, regulatory or administrative provisions. The Directive therefore applies to a variety of plans and programmes including the draft Plan.

The purpose of an SEA is to ensure that potential significant environmental effects that could occur as a result of an environmental plan or programme's implementation are identified and mitigated.

The objective of SEA, according to Article 1 of the SEA Directive, is 'to provide for a high level of protection of the environment and to contribute to the integration of environmental considerations into the preparation and adoption of plans with a view to promoting sustainable development. In order to do this, the SEA Directive requires plans and programmes to undergo an environmental assessment to determine the likely significant effects on topics such as biodiversity, climatic factors, human health, population, cultural heritage (including archaeology), landscape and water and the interrelationship between these factors.

Following the assessment of the draft Plan a number of recommendations were identified in the individual assessments throughout the thorough SEA process, these recommendations are presented against each measure action where relevant.

It is therefore considered that the measures in the draft Plan taken together will result in the reduction in local flood risk over the strategy period and are generally considered to offer positive effects overall (some potentially significant) against the SEA Objectives, in particular improving health and wellbeing, minimising the risk of and from flooding, biodiversity gain, protecting soil and improving water quantity, quality and flow.

### **10.3 Water framework directive assessment (WFD)**

The Water Environment (Water Framework Directive) (England and Wales) Regulations (amended 2017) is currently the largest and most influential piece of UK legislation for the water environment and transposes the Water Framework Directive into English and Welsh law. NRW is the competent authority responsible for delivering the requirements of the WER in Wales.

The legislation takes an integrated approach to the sustainable management of water by considering the interactions between surface water, groundwater and water-dependent ecosystems.

Under the WER, 'water bodies' are the basic management units and are defined as all or part of a river system or aquifer. These water bodies form part of a larger River Basin District (RBD), for which RBMPs are developed and environmental objectives are set. These RBMPs are produced every six years, in accordance with the river basin management planning cycle.

The WER requires classification of the current condition or ‘status or potential’ of surface water and groundwater bodies and to set a series of objectives for maintaining or improving conditions so that water bodies reach and / or maintain ‘good status or potential’. These overall Environmental Objectives are to:

- Prevent the deterioration of (and where possible enhance) the status of surface water bodies, ground water bodies and their ecosystems;
- Aim to achieve at least ‘Good’ status for all water bodies by 2015. Where this is not possible and subject to the criteria set out in the Directive, aim to achieve Good status by 2021 or 2027;
- Meet the requirements of Water Framework Directive Protected Areas;
- Promote sustainable use of water as a natural resource;
- Conserve habitats and species that depend directly on water;
- Progressively reduce or phase out the release of individual pollutants or groups of pollutants that present a significant threat to surface water (particularly the aquatic environment);
- Progressively reduce the pollution of groundwater and prevent or limit the entry of pollutants; and,
- Contribute to mitigating the effects of floods and droughts.

All new (and current on-going) activities in the water environment need to be guided by the requirements of the WER. This includes ensuring that no changes occur that cause a deterioration of current status of a water body or prevents the achievement of the future status objectives of a water body. This principle is now integrated into the planning permission application process for proposed schemes.

LFRMS Actions have been screened for compliance with WFD objectives. Many have been screened out as they will not impact on the WFD Status of water bodies in the CC administrative area.

The following actions have been screened in:

- CDFA2 - Develop and adopt a surface water management policy in line with Tan 15 guidance
- CDFA13 - Update Cardiff Council Culverting policy
- CDFA16 - Assist in the development and maintenance of Cardiff Council Green Infrastructure Plan
- CDFA17 - Review adopted Flood Risk strategy and associated action plans every 2 years

- CDFA18 - Assist Cardiff Council Planning Authority in the development of the SFCA and replacement LDP
- CDFA19 - Maintain Cardiff Councils Shoreline Management Plan
- CDFA20 - Ensure the adopted shoreline policy of "hold the line" is adhered to
- Rhy3 - Greener Rumney FBC
- Rhy4 - Greener Rumney Construction
- Taf1 - Partake in the River Taff Catchment Masterplan alongside NRW and other RMA's
- Taf2 - Greener Whitchurch Full Business Case / Detailed Design
- Taf3 - Greener Whitchurch Construction
- Taf4 - Radyr Court Road BJC
- Taf5 - Radyr Court Road Construction
- Taf6 - Nant Y Wedal OBC
- Taf7 - Nant Y Wedal FBC
- Taf8 - Nant Y Wedal Construction

Due to the nature of the Strategy, most of the actions screened in require future actions or project-level assessment to understand the impact upon WFD objectives.

The LFRMS has the potential to be detrimental or beneficial to implementing WFD mitigation measures. Opportunities to have a beneficial impact have been highlighted at a strategic level.

## **11. Monitoring Progress**

### **11.1 How will we monitor progress**

This strategy has been developed so that its progress and success can be easily and accurately measured through the completion of the flood actions. This in turn will ensure the strategy objectives and measures are achieved as they will be present within all of the flood actions.

The national strategy is formally reviewed on a six yearly cycle in line with the flood risk regulations 2009 requirements. To align with the national strategy, this local strategy will be formally reviewed every six years by Cardiff Councils Cabinet and Environmental Scrutiny committees.

The Action Plan in Appendix A will be reviewed on an annual basis by the relevant Council departments, with an update provided to Cardiff Councils Cabinet every two years.

All updates will be communicated to the public via the Councils stakeholder engagement channels through a revised flood action plan, with all superseded plans being available on the Councils website.

## **Appendix A Cardiff Council Flood Action Plan**

Please see separate document

## **Appendix B Legislative Context**

Please see separate document

## **Appendix C Public Consultation Outcomes**

The public consultation outcomes will be provided once the consultation has been completed

## **Appendix D Glossary of terms used within this local strategy**

Please see separate document

## **Appendix E Flood Risk Maps**

Please see separate document

## **Appendix F Environmental Assessments**

Please see separate document