Flood and Water Management Act 2010

Local Flood Risk Management Strategy and Action Plan

March 2024

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RHONDDA CYNON TAF

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FOREWORD

Our climate is changing, and forecasts suggest that we will see higher sea levels, increases in the intensity of rainfall and more frequent flooding in years to come. The National Flood Risk Management Strategy indicates that 1 in 8 properties are at risk of flooding in Wales and the same statistics indicate that 1 in 5 properties are at risk of flooding in Rhondda Cynon Taf. This means that as a Council we must continue to invest in strategic flood alleviation measures, to mitigate the impact of flooding from local sources brought about by climate change to our residents and communities. This continued to be one of the Council's main priorities.

The Local Flood Risk Management Strategy and Action Plan is a key policy underpinning these priorities and demonstrated the Council's major investment into flood alleviation measures over recent years. The Council has a requirement to monitor and revise our Strategy and Action Plan to ensure it aligns with national policy. Therefore, this is Rhondda Cynon Taf County Borough Council's second Local Flood Risk Management Strategy, which sets out the overarching approach to managing flood risk in RCT. This strategy has built upon the lessons learnt from the 2013 Strategy and replaced it. However, the focus remains on local flood risk, defined as flooding caused by surface runoff, groundwater, and ordinary watercourses, and it also continues to recognise how this interacts with other sources of flood risk including from main rivers and sewers.

Since the publication of our previous strategy, we have witnessed first-hand the devastation flooding can bring to the communities of Rhondda Cynon Taf through the frequent storm events of 2020. These were the most destructive weather events RCT had experienced in over 40 years, and the impact of Storm Dennis in-particular was detrimental to our infrastructure, economy, and the environment. Despite this, during this time we also saw the remarkable generosity, resilience, and strength of our communities across the County Borough, who worked collaboratively to repair the significant damage caused. This collective responsibility, and the significance of multi-agency collaborative work between residents, risk management authorities, stakeholders, and all those involved, is encouraged widely throughout this new Strategy.

We know that, for all the will in the world, we cannot stop all flooding from happening, but mitigating its impact where possible and building resilience remains a priority for this

Council. It is vital that we are as prepared and ready to respond to severe weather events, and the Council has developed robust plans and procedures for such instances, including the proactive inspection of culverts and drafting in of additional extra resources as precautionary measures. Key culverts are also monitored throughout Warnings from our Emergency Control Room.

Following these extreme weather events, the Council has invested heavily in flood alleviation measures using Council and Welsh Government funding and has made remarkable progress on over 100 targeted flood alleviation schemes across our County Borough. All Section 19 Flood Reports for 19 communities affected in Storm Dennis have been completed to gain a better understanding of what happened, to inform future policy, and to note how flooding could be alleviated in the future. Significant lessons were learned regarding the need for this Council to reinforce our strategic priorities through our Local Flood Risk Management Strategy and Action Plan, to manage the impacts and consequences of flooding, enhance community resilience through raising awareness and building preparedness, and climate adaptation.

The new Strategy incorporates the Council's 2015 Flood Risk Management Plan, into a Flood Action Plan, which develops the objectives and high-level measures outlined in the Strategy into a more detailed plan for how the Council will manage the risk of flooding from local sources in our communities over the next 6 years. These objectives, measures, and actions are reflective of the current challenges facing RCT, including the rising effects of climate change, budget pressures, and growing development needs. They are also consistent with the objectives, related policies and legislation set out in the National Strategy for Flood and Coastal Erosion Risk Management in Wales, published by Welsh Government in October 2020.

RCTCBC will continue to enhance its emergency response plan and procedures to provide a comprehensive response that meets the communities' needs. Extensive consultations have taken place with residents, RCT employees, risk partners, and neighbouring authorities to help inform this new Strategy. Therefore, this Local Flood Risk Management Strategy presents Rhondda Cynon Taf County Borough Council's preferred strategy for managing flood risk.

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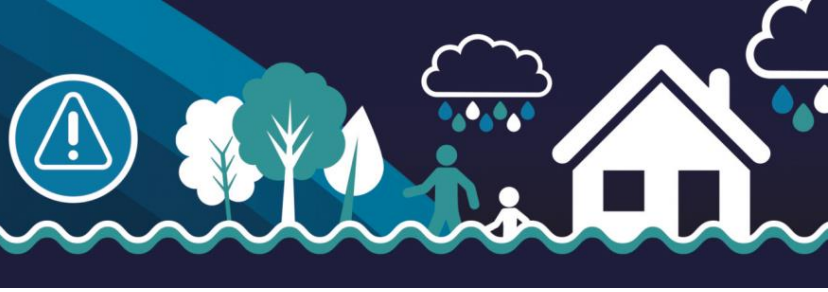
Councillor Andrew Morgan OBE
Leader of the Council



CONTENTS

TABLES AND FIGURES

1. INTRODUCTION

1.1. THE NEED FOR A LOCAL STRATEGY

The Welsh Government's National Strategy for Flood and Coastal Erosion Risk Management (FCERM) in Wales (National Strategy) [1] identifies 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 stipulates 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 meaning more communities will be affected by flooding, including some that are not currently considered to be at risk.

Flooding remains a key threat to communities across Rhondda Cynon Taf (RCT). The storm events of 2020 have emphasised the need to reinforce Rhondda Cynon Taf County Borough Council's (RCTCBC) strategic priorities for managing local flood risk, improving resilience and climate adaptation.

Under the Flood and Water Management Act 2010 (FWMA), RCTCBC has been established as the Lead Local Flood Authority (LLFA) for its administrative area. Under this legislation, RCTCBC is required to develop, maintain, apply and monitor a strategy for local flood risk management, i.e., a Local Flood Risk Management Strategy (Local Strategy).

'Local flood risk' is defined as flood risk from:

- Surface water runoff
- Groundwater; and
- Ordinary watercourses

This Local Strategy encompasses the administrative area of RCTCBC and forms the framework within which communities have a greater say in local flood risk management decisions.

[1] National Strategy for Flood and Coastal Erosion Risk Management in Wales, October 2020

This Local Strategy focuses on these local sources of flood risk but acknowledges and considers other sources of flood risk (including main rivers and sewers) and associated Risk Management Authorities (RMAs) responsible.

A summary of the legislative context to FCERM activities in Wales is provided in Appendix B – legislative context.

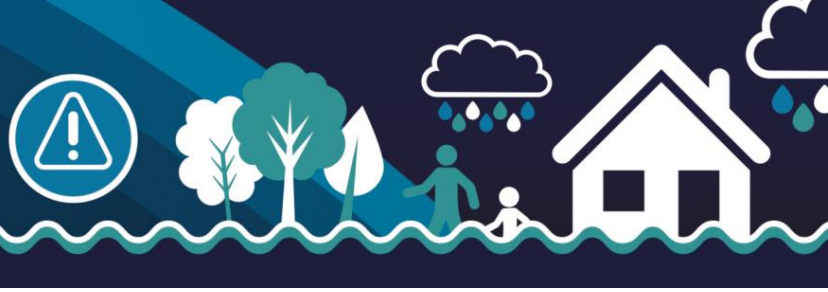
1.2. Purpose of This Local Strategy

RCTCBC published our first Local Strategy in 2013[2], setting out our overarching approach to managing local flood risk. Alongside our Local Strategy, RCTCBC published a Flood Risk Management Plan (FRMP)[3], as required under the 2009 Flood Risk Regulations. The FRMP developed the objectives and high-level measures outlined in the Local Strategy into a more detailed plan for managing the risk of flooding from local sources in our communities, over the next 6 years.

The publication of the second iteration of the National Strategy in Wales in October 2020 triggered the requirements under Section 10 (5) of the FWMA for the LLFA to review its current Local Strategy and publish a revised version within the timeframe stipulated by the Welsh Government. This document is RCTCBC's second Local Strategy. Whilst the Council previously published the Local Strategy and FRMP separately, this new Local Strategy integrates the two documents into one. This reduces complexity and enables the Council to communicate and manage local flood risk more effectively. The FRMP is referred to as the Flood Action Plan within this Local Strategy.

This Local Strategy will build upon the lessons learnt from the first Strategy and sets out how flooding from local sources will be managed across RCT, consistent with the objectives, measures and related policies and legislation set out in the National Strategy. This Strategy will be reviewed within 2 years of the publication of the next National Strategy approximately every 6 years, and the Flood Action Plan will be reviewed and updated every 2 years.

[2] RCT Local Flood Risk Management Strategy, 2013
[3] RCT Flood Risk Management Plan, 2015



1.3. Structure of this Local Strategy

This document is structured as follows:

Chapter 1 introduces the background and purpose of the Local Strategy.

Chapter 2 provides an overview of the legislative context which has informed the development of this Local Strategy. It also summarises how this Local Strategy aligns with other Council strategic plans and how the Local Strategy has been developed in coordination with other stakeholder plans.

Chapter 3 gives an overview of the different sources of flooding and presents an assessment of the risk of flooding across RCTCBC.

Chapter 4 provides an overview of climate change in the context of flood risk and outlines how this Local Strategy seeks to address these risks in RCT.

Chapter 5 sets out the roles and responsibilities for managing flood risk in RCT.

Chapter 6 describes the strategic Objectives 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 the flood risk management Measures. These are broad activities and ways of working which help us to meet our strategic objectives.

Chapter 8 introduces the flood risk management Action Plan. This is a focused plan, detailing specific deliverable actions required to meet the measures. The Flood Action Plan is included in Appendix A.

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

Chapter 10 outlines how this Local Strategy will contribute to wider environmental objectives.

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

1.4. Objectives, Measures and Actions

This Local Strategy sets out RCTCBC's flood risk management Objectives, Measures and Actions to outline how RCTCBC intends to manage local flood risk within the life of this strategy.

These three groupings provide different levels of detail on how flood risk will be managed. A summary of each grouping is provided in Figure 1.

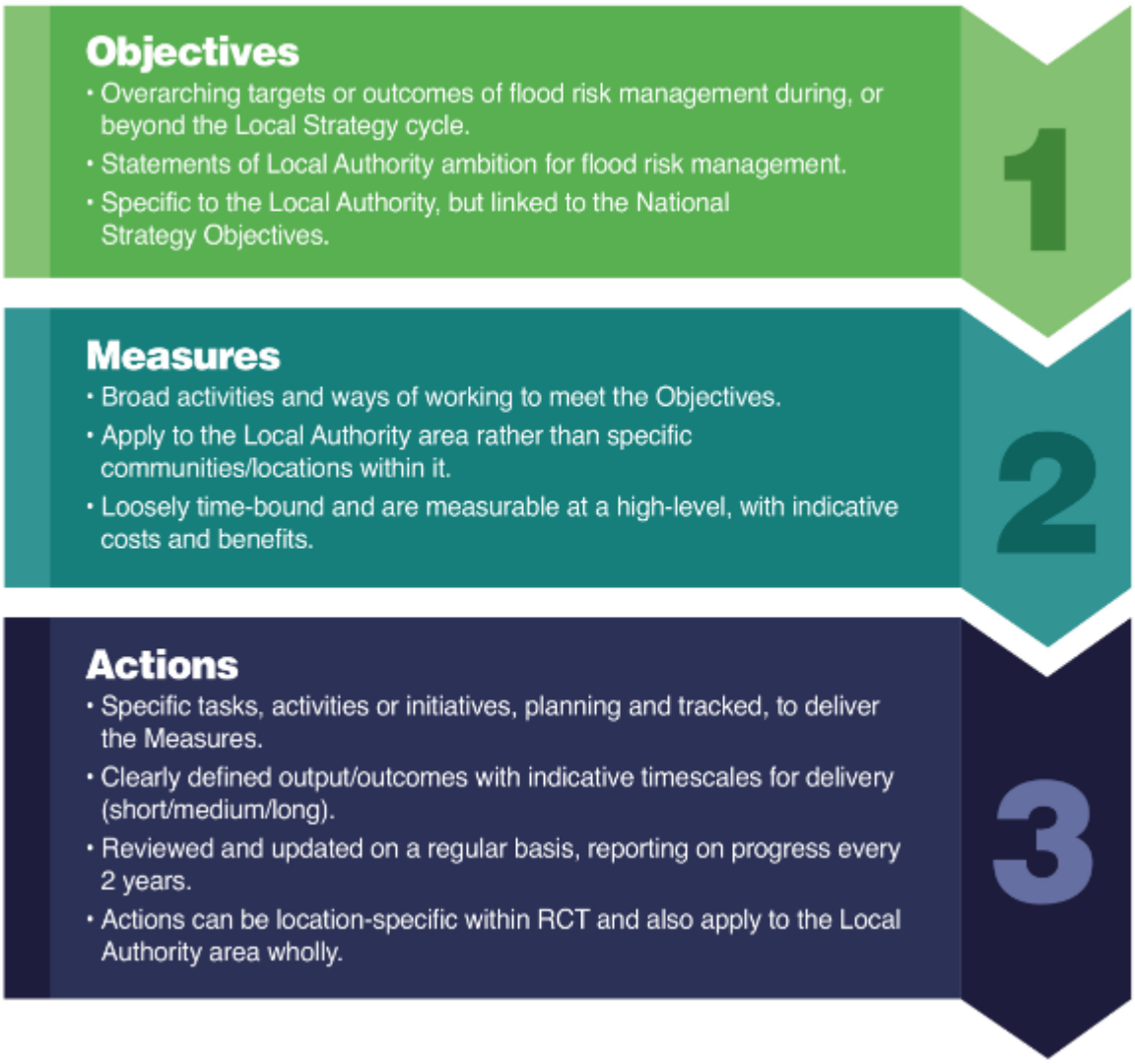


Figure 1: Definition of the Objectives, Measures and Actions for delivering RCTCBC's Local Strategy

2. Coordination of Flood Risk Management

2.1. Legislative Context

The management of local flood risk in RCTCBC is informed by the requirements and evidence within a number of relevant European, national and local legislation, policies and plans, concerning flood and water management. The most significant of which are outlined in Figure 2 and detailed, along with other relevant legislation, in Appendix B.

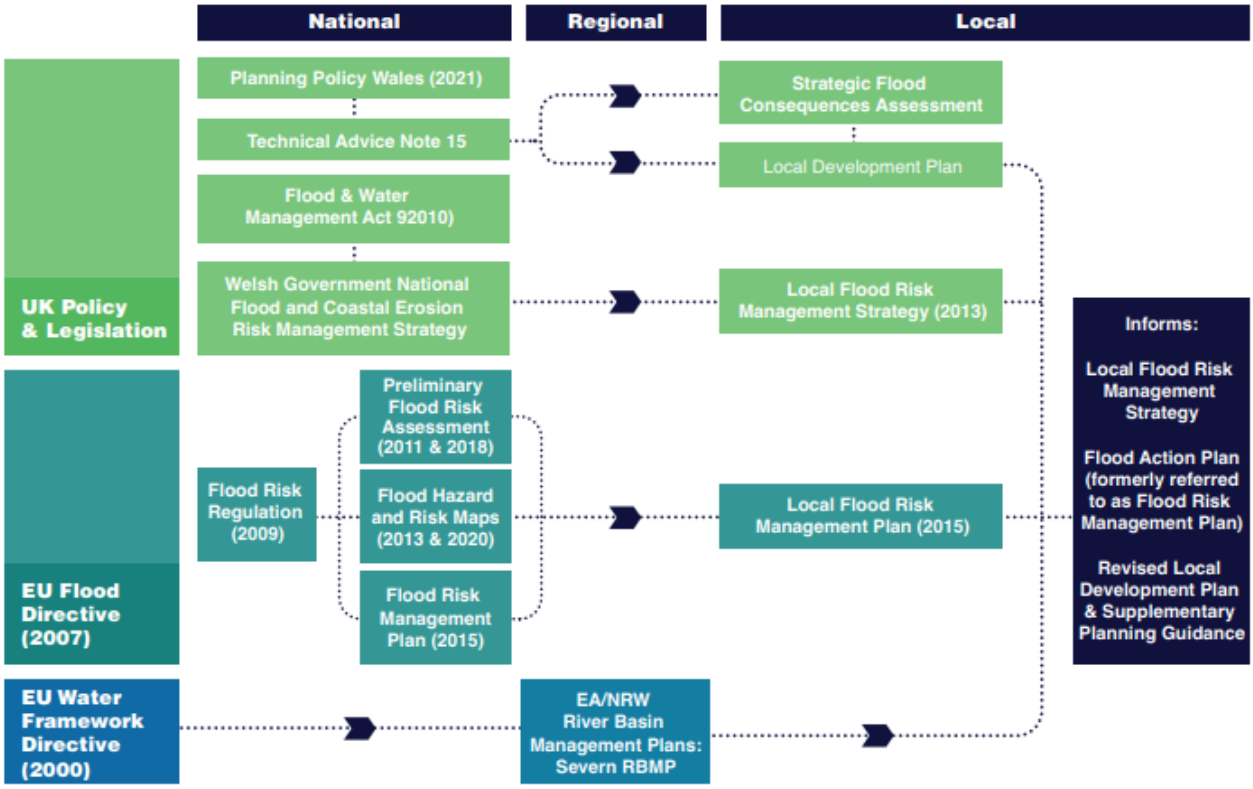


Figure 2: Overview of current flood risk management drivers and legislation which inform the development of this Local Strategy

Whilst the requirements for preparing a Local Strategy and FRMP stems from the FWMA 2010 and the FRR 2009, policy guidance associated with flood risk and development is also contained within Planning Policy Wales (PPW) and Technical Advice Note 15 (TAN 15). The production of the Severn RBMP also informs the production of RCTCBC's Local Strategy to ensure it compliments and contributes to the continued improvement of the water environment. Although PPW, TAN 15 and the Severn RBMP do not dictate the requirements for, or provide any guidance on, preparing a strategy, the Local Strategy is consistent with the requirements of these documents.

The publication of the Welsh Government's National Strategy sets the direction for local flood risk management strategies and plans. There are also various sub-national or local strategies and plans that are relevant to this Local Strategy, addressing challenges such as new development, local economic growth, climate change and enhancing the natural environment. The key local strategies and plans that influence how flood risk is managed in RCT are discussed below.

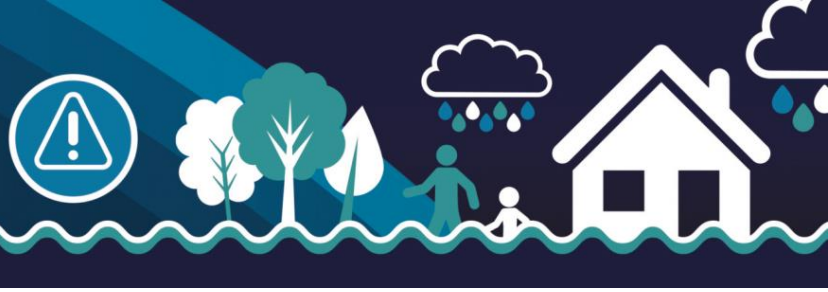
2.2. How this Strategy aligns with RCTCBC's other Strategic Plans

The Local Strategy is one of several strategic documents that influence how local flood risk is managed in RCT, from national policy and guidance through to local strategies and plans. Some of the key local strategies and plans that have informed the development of the Local Strategy have been listed below:

- **RCTCBC's Corporate Plan 2020-2024, 'Making a Difference'**[4]: Sets out the Authority's priorities, directs what they do and how they use their resources so that RCTCBC is better able to meet future challenges. The plan's vision is *'for RCT to be the best place in Wales to live, work and play, where people and businesses are independent, healthy and prosperous'*. This Local Strategy's objectives, measures and actions align with the principal vision and priorities outlined within the Corporate Plan.

- **RCTCBC's Climate Change Strategy, 'Think Climate Change'**[5]: Provides a framework to meet corporate targets and commitments to reduce carbon emissions within RCT through the delivery of Climate Commitments. Managing

[4] RCTCBC Making a Difference: Corporate Plan 2020-24
[5] RCTCBC Think Climate RCT



flood risk is identified as one of RCTCBC's Climate Commitments and several plans and processes to manage flood risk and deliver against the Climate Change Strategy are outlined within the document. These have been detailed further in Section 4.

- **RCTCBC's Local Development Plan (LDP)[6]:** Provides a long term plan for development in RCT, primarily used to support investment decisions and determine planning applications. The LDP includes specific policies which set out how all development proposals should be considered in relation to flood risk. The current LDP has a plan period of 2006-2021. This LDP will remain in force until it is replaced by the Revised LDP for the plan period 2022-2037, which is being prepared at the time of preparing this Local Strategy. It is expected that the Revised LDP will be adopted in early 2026. This Local Strategy supports the delivery of RCT's LDP, in addition to key national policy and guidance in relation to flooding and development. Conversely, this Local Strategy will help prepare appropriate flood risk planning policy in the Revised LDP up to 2037.

- **RCT Local Nature Partnership - 'Action for Nature' Plan[7]:** A nature recovery action plan for RCT which focuses on actions needed to help wildlife to thrive in RCT. Biodiversity has been an integral consideration in the development of this Local Strategy's objectives, measures and actions.

- **RCTCBC's Local Flood Risk Management Strategy 2013 and Flood Risk Management Plan 2015:** The Authority's previous Local Strategy was published in 2013 following the publication of the Welsh Government's initial National Strategy in 2011. RCT's initial Flood Risk Management Plan was published in 2015 and outlined how the Authority intended to achieve the Local Strategy's objectives and measures through the delivery of actions. The development of this Local Strategy and Action Plan builds upon the original objectives, measures and actions to manage local flood risk in RCT, however improvements in national flood risk mapping/datasets, together with recent flood events have allowed RCTCBC to enhance its Local Strategy and Action Plan to reflect these improvements in knowledge and understanding.

[6] RCT Local Development Plan, March 2011
[7] RCT Local Nature Partnership: RCT Action for Nature Plan

2.3. Coordination with Others

RCTCBC are committed to working in partnership with RMAs, other stakeholders and local communities to achieve the flood risk objectives, measures and actions in this Local Strategy.

RCTCBC is adopting a catchment-based approach to managing flood risk in RCT, which promotes collaborative working and forward planning with other stakeholders to reduce the risk of flooding in RCT whilst also delivering wider social, economic and environmental benefits. Exploring opportunities for catchment-scale interventions, including the implementation of Natural Flood Management (NFM) measures, will form a large part of RCTCBC's commitment to working closely with partner organisations.

The Local Strategy has been developed in coordination with the strategic planning processes and plans of other Risk Management Authorities (RMAs). A summary of which has been detailed below:

- **Severn River Basin Management Plan (RBMP)**[8]: The production of the Severn RBMP, produced by NRW and the Environment Agency (EA), is applicable to the administrative boundary of RCTCBC and is a requirement of the Water Framework Directive 2000 (WFD). The management plan outlines the measures that NRW/EA are likely to implement to meet the requirements of the Directive which involve improving water quality, promoting sustainable use of water as a natural resource, and habitats and species conservation. In the development of this Local Strategy's objectives, measures and actions, RCTCBC have considered how the Strategy can assist, and benefit from, the delivery of the WFD objectives, particularly through the use of catchment interventions.

- **NRW's updated FRMP**: Under the FRR, NRW is required to produce a FRMP for main river and coastal flood risk. The FRMP sets out NRW's objectives and managing flood risk from these sources. RCTCBC have and will continue to engage with NRW in the development and delivery of its Local Strategy and Action Plan to identify potential opportunities for partnership working and collaboration.

[8] Welsh part of the Severn River Basin Management Plan (2021-2027), NRW December 2022

- **Water Resource Management Plan (WRMP)**: WRMP are a statutory requirement under the Water Industry Act 1991 for water companies to produce once every 5 years, and which play a crucial role in securing the public water supply for the region. Dŵr Cymru Welsh Water (DCWW) is the regional water and sewerage treatment company serving RCT. The WG Guiding Principles for Developing WRMPs 2022 stipulate that water companies should consider nature-based solution to increase ecosystem and water supply resilience, deliver local benefits and contribute to regional water resource needs. The promotion of nature-based solutions in the development of WRMP aligns closely with that of the National Strategy and therefore RCTCBC's Local Strategy will also reflect this commitment.

- **Drainage and Wastewater Management Plan (DWMP)**: DWMP is a long-term planning study which looks at drainage and sewerage needs over the next 25 years, produced by DCWW. They embed an approach of working together with others, including RCTCBC as the LLFA, to investigate options for sustainable management of DCWW's wastewater services, giving consideration to reducing the risk of sewer flooding to communities.

The LLFA will continue to coordinate the delivery of its objectives, measures and actions through future consultation and engagement activities with RMAs, particularly in the development of its updated flood and water management related plans.

The LLFA also recognise the importance of coordinating its Local Strategy with the public. As such, RCTCBC have undertaken public engagement and consultation activities in the development of this Local Strategy. The details and outcomes of both engagement and consultation activities are discussed in Appendix C.

3. Flood Risk in RCT

Flooding is a hazard as it has the potential to cause harm to human health and life and effect the natural and built environment. Flooding is often caused by natural weather events such as prolonged, extensive rainfall and heavy rainfall and thunderstorms over a short period.

The term 'risk' acknowledges the actual harm caused and is different to hazard. Flood risk is a combination of the likelihood (or probability) of a flood event occurring and the severity of its impacts.

Flooding remains a key threat to communities across RCT, and this is evidenced by the impact of recent storm events such as the devasting consequences of Storm Dennis in February 2020 where approximately 1,600 properties were internally flooded.

This Section summarises the different sources of flooding in RCT and provides an overview of these flood risks, focusing on the risk from local sources. The risk from other sources of flooding in RCT will also be touched upon in this section.

The assessment of flood risk in RCT draws upon data that currently provides the best understanding and evidence base. The approach to the assessment is further explained in Section 3.2 and the results of the assessment in terms of receptors at risk is included in Section 3.4.

3.1. Sources of Flooding in RCT

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

Figure 3 summarises the different types of flooding in RCT and outlines the key points of contact in each case.

Figure 3: Sources of flooding in RCT and who to contact in each case

3.2. How RCTCBC Assess Flood Risk

The LLFA's assessment of local flood risk in RCT is critical to managing and reducing the risk of flooding. Since the publication of the Authority's first Local Strategy in 2013, and its FRMP in 2015, improvements in available mapping and datasets, together with improved asset data, has provided the LLFA with a much more enhanced and accurate understanding of local flood risk in RCT.

The LLFA have utilised the best available datasets and tools to accurately assess local flood risk in RCT, giving consideration to our ability to update our assessments where required, i.e., when new data is updated in line with the schedule set out in the National Strategy. These datasets include NRW's development of the Flood Risk Assessment Wales (FRAW) map and production of the Communities at Risk Register. Both have been described in further detail below.

The datasets, paired with geographical knowledge of the catchment drainage basins in RCT and local flood history to provide local context, have been used to develop 12 assessment boundaries for assessing flood in RCT. These 12 assessment boundaries are referred to as Strategic Flood Risk Areas (SFRAs) and have been depicted in Figure 4 and listed in Table 1 along with the communities that fall within each SFRA, as per the Communities at Risk Register (CaRR). Of those SFRAs shown in Figure 4, 4 fall within the Rhondda valley; 4 in the Cynon valley and 4 in the Taf valley.

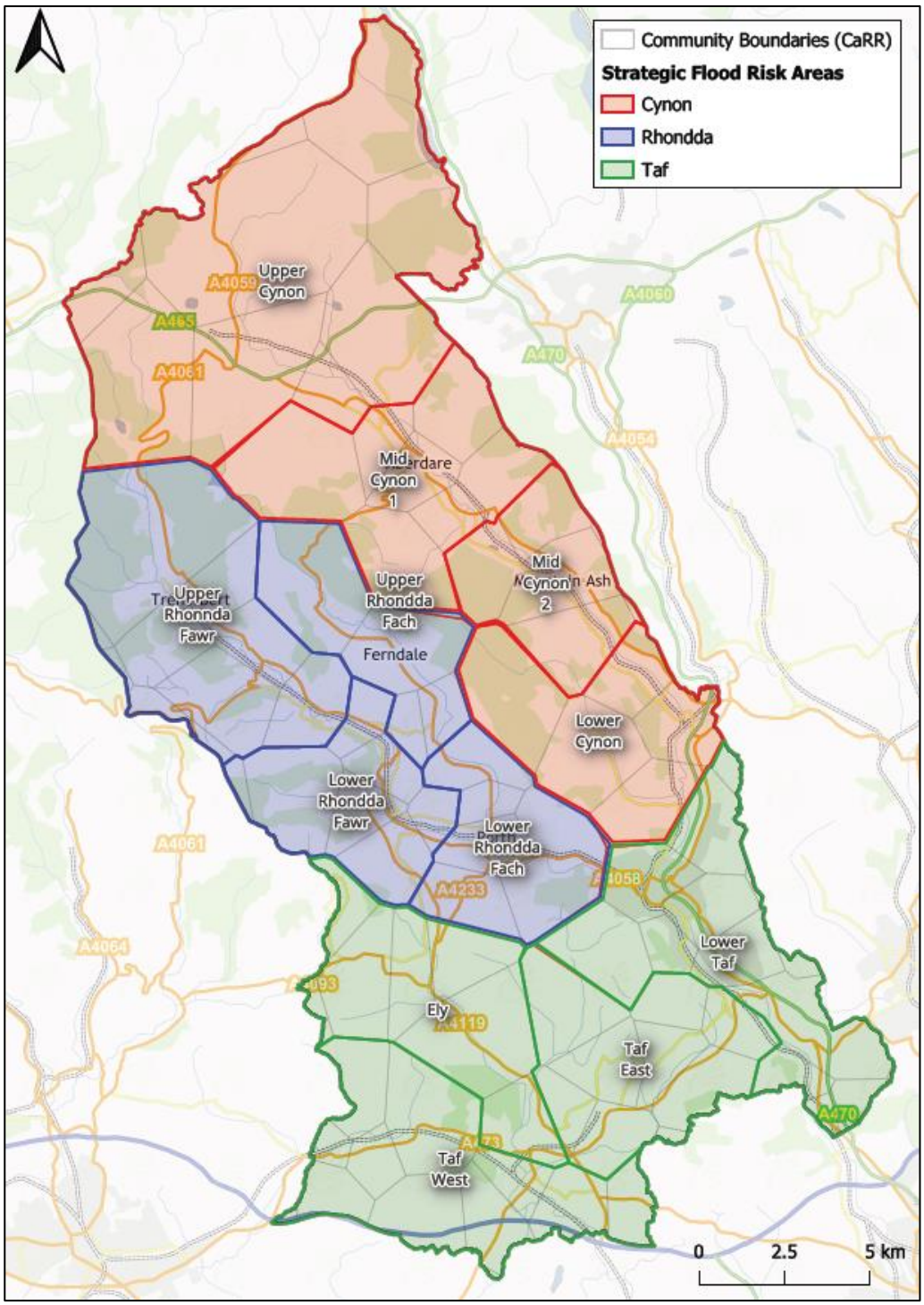


Figure 4: RCT's 12 Strategic Flood Risk Area (SFRA) Boundaries

Table 1: RCT's 12 Strategic Flood Risk Areas

No	Strategic Flood Risk Area	Communities (CaRR)	Area (Ha)
1	**Upper Rhondda Fawr**	Blaenrhondda Cwmparc Rhondda Treherbert Treorchy	4445.56
2	**Lower Rhondda Fawr**	Clydach Vale Llwynypia Penygraig Tonypany Trealaw Ystrad	2284.47
3	**Upper Rhondda Fach**	Ferndale Maerdy Penrhys Tylorstown	2110.33
4	**Lower Rhondda Fach**	Porth Trebanog Trehafod Wattstown Ynyshir	2245.70
5	**Upper Cynon**	Hirwaun Llwydcoed Penderyn Penywaun Rhigos	8845.37
6	**Mid Cynon 1**	Aberaman Aberdare Aber-nant Cwmaman Cwmbach Cwmdare Trecynon	3614.03
7	**Mid Cynon 2**	Abercwmboi Cefnpennar Mountain Ash Penrhiwceiber	2077.91
8	**Lower Cynon**	Abercynon Glyncoch Llanwonno Ynysboeth Ynysybwl	2896.44

No	Strategic Flood Risk Area	Communities (CaRR)	Area (Ha)
9	**Lower Taf**	Cilfynydd Glyntaff Nantgarw Rhydyfelin Pen-y-coedcae Pontypridd Taffs Well Treforest Ty Rhiw	3803.95
10	**Taf East**	Beddau Castellau Church Village Cross Inn Efail Isaf Llantrisant Llantwit Fadre Ton-teg	3014.77
11	**Ely**	Bryn Golau Coedely Gilfach Goch Hendreforgan Talbot Green Tonyrefail	3127.68
12	**Taf West**	Bryncae Brynna Brynnay Gwynion Brynsadler Groes-faen Miskin Llanharan Llanharry Llanilid Pontyclun	3637.18

The production of SFRAs in RCT utilise a catchment-based approach for assessing local flood risk in RCT which seeks to provide a more holistic and integrated approach to managing flood risk. The catchment-based approach aims to enhance our understanding of the sources and movement of flood water through catchments, or sub-catchments, to produce a comprehensive range of flood risk management measures, prioritising those areas identified at greatest risk.

The mapping, datasets and local knowledge used to produce the SFRA assessment boundaries have been discussed in further detail in Table 2 below.

Table 2: Datasets and tools used to produce RCT's SFRA assessment boundaries

Dataset / Tool	Description of Dataset / Tool	Application in the development of SFRAs
Flood Risk Assessment Wales (FRAW) Map	A flood map, developed and maintained by NRW, showing detailed information on flood risk from all sources.	The output of the FRAW provides the best estimation of flood risk from Rivers, Sea and surface water and ordinary watercourses. The FRAW displays risk at three levels: high, medium and low. High Risk: An area has a chance of flooding of greater than 1 in 30 (3.3%) each year. Medium Risk: An area has a chance of flooding of between 1 in 100 (1%) and 1 in 30 (3.3%) each year. Low Risk: An area has a chance of flooding between 1 in 1000 (0.1%) and 1 in 100 (1%) each year.
Communities at Risk Register (CaRR)	The CaRR provides a national assessment of flood risk and hazard from all sources of flooding. It was produced by NRW, on behalf of the Welsh Government, to provide an objective method for identifying risk and prioritising flood risk management activities at a Wales wide, community level.	The production of community boundaries allows flood risk and hazard to be quantified and ranked at a local level, enabling the identification of communities at highest risk in RCT. Investment in flood risk management interventions will be prioritised to those high risk communities.
Catchment Drainage Basins	A catchment is an area of land with several, often interconnected water bodies (watercourses, lakes, groundwater) which drain into a single major river system. The catchments of RCT are characterised by steep and narrow valleys whereby water drains from	The identification of catchments, and sub-catchments, in RCT allow us to consider the sources and movement of flood water within a whole river or watercourse drainage basin and is not constrained by administrative boundaries.

Dataset / Tool	Description of Dataset / Tool	Application in the development of SFRAs
	and finds its way into watercourses and into the soil, eventually discharging into the Rivers Cynon, Ely, Rhondda and Taf.	
Section 19 Investigations & Historic Flooding	The LLFA has a duty to investigate all incidents of flooding, insofar as it considers necessary or appropriate. This is a requirement under Section 19 of the FWMA. The purpose of these investigations is to identify the causes and mechanisms of flooding and assess the impact from an event. Records of historical flood events are maintained by RCTCBC.	Flood investigation reports of historic flooding, inclusive of Section 19 reports, provide local nuance and context to supplement data derived from the FRAW and the CaRR. This can aid in the identification of further areas at risk of flooding that have not been identified by the mapping and datasets.

The identification of SFRAs allows local flood risk to be assessed holistically and provides the LLFA with a greater understanding as to how a catchment floods which is not based on administrative or political boundaries.

The utilisation of the CaRR has also allowed the Authority to develop a greater understanding of its local flood risk, at both the national and local scale, enabling the comparison of risk between communities. This has been further described below.

3.3. Overview of Flood Risk in RCT

Flooding is determined by factors in the surrounding landscape, such as steepness of the land, geology, and land use.

The catchments of the South East Wales Valleys within RCT are the Rhondda, Cynon, Taf and Ely. Each catchment is characterised by steep sided hillsides which are susceptible to intense rainfall and associated flash flooding. An extensive network of watercourses drain these hillsides, while urban development is confined to the narrow valley floors of each catchment.

The combination of topographic, geological and geographical factors causes the catchment within RCT to react almost immediately to rainfall, with events often subsiding in hours, rather than days. RCT is therefore extremely vulnerable to flooding from a range of sources but particularly from local sources.

Further details relating to land use type, geology, hydrology and ecology of each of the catchments in RCT have been described in detail within RCT's pervious FRMP, published in 2015.

Recent storm events have highlighted how many parts of RCT are susceptible to flooding, and the impacts can be wide ranging and severe.

Between April 2018 and January 2023, the authority received 85 weather warnings from the Met Office and over 2,202 properties suffering internal flooding during that period. Storm Dennis in February 2020 was the most significant storm event during that period, accounting for over 72% of the total properties impacted.

3.3.1. Local Flood Risk in RCT

Local flood risk is defined as the risk from ordinary watercourse, surface water and groundwater sources. This is also referred to as 'Pluvial Risk' in datasets such as the CaRR.

Based on national assessments of present-day risk, RCTCBC is in fact ranked as the highest risk authority for surface water and ordinary watercourse flood risk in Wales.

Figure 5 depicts the number of communities per Unitary Authority in Wales within the top 5% of communities at risk of pluvial flooding, according to the CaRR. The results

identified 25 communities within the top 5% of communities in Wales at risk of pluvial flooding. This accounts for 22.5% of the national pluvial risk.

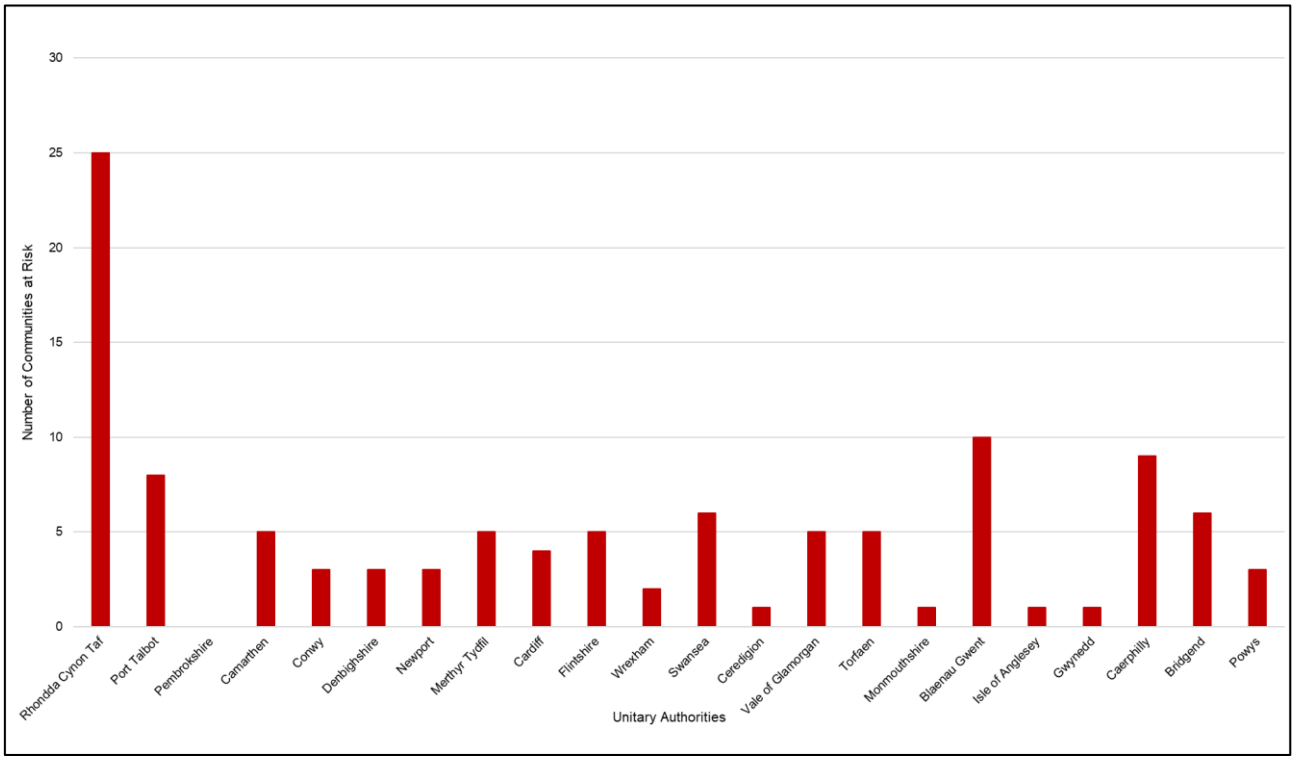


Figure 5: Number of communities per Unitary Authority within the top 5% (top 111) of communities in Wales at highest risk of pluvial flooding (Communities at Risk Register, 2019)

The assessment of the CaRR data identified large parts of the Rhondda valley as being at significant risk of surface water and ordinary watercourse flooding, with the 'Rhondda' community ranking highest in Wales for pluvial flood risk, closely followed by 'Trerochy' 3rd, and 'Treherbert' 6th.

The steep topography of RCT makes is extremely susceptible to flash floods, with the steep sided valleys causing rapid runoff of surface water towards lower reaches. As a result of the areas topography, climate and concentrated urban development, flooding from surface water and ordinary watercourses is the most common source of flooding in RCT and is particularly prominent following a prolonged period of rainfall when a catchment is saturated, or after an intense storm and drainage systems become overwhelmed. This also leads to an increased risk of flooding to the highway as highway drainage infrastructure will often become overwhelmed with the volume of rainfall and surface water run-off flowing towards lower reaches of RCT.

Groundwater flooding is much more difficult to predict and assess however in RCT, historic mining activities have disrupted the 'natural' groundwater regime within the coal measures, and it is likely that the interconnection between many of the collieries has resulted in cross catchment 'groundwater flow' in certain parts of RCT, making our ability to quantify groundwater flood risk particularly challenging.

3.3.2. Main River Flood Risk in RCT

The main rivers in the area include the River Taf, River Rhondda, River Cynon and River Ely, which are all prone to flooding during periods of heavy rainfall. Main river flooding is often caused by river levels 'overtopping' their 'banks' and/or 'breaching' of defence structures.

The risk of main river flooding (also referred to as 'Fluvial' flooding in the CaRR) is primarily owed to the urban extent of the communities within RCT located in and around the river flood plains.

Based on national assessments of present-day risk, RCTCBC is ranked as having significant fluvial flood risk.

Figure 6 depicts the addresses at risk (residential, non-residential and key services) during the medium risk event per Unitary Authority in Wales. The results show RCTCBC have the third highest number of addresses at risk of fluvial flooding in Wales, with Cardiff identified as having the greatest number of addresses at risk, followed by Port Talbot.

Events such as the flooding experienced during Storm Dennis in February 2020 have highlighted the dangers of main river flooding, particularly to those communities residing on the River Taf, Cynon, Rhondda and Ely flood plains. Anecdotal evidence collated during Storm Dennis also suggests that flooding from local sources is exacerbated in some areas when gravity drains and outfalls are restricted due to high river levels.

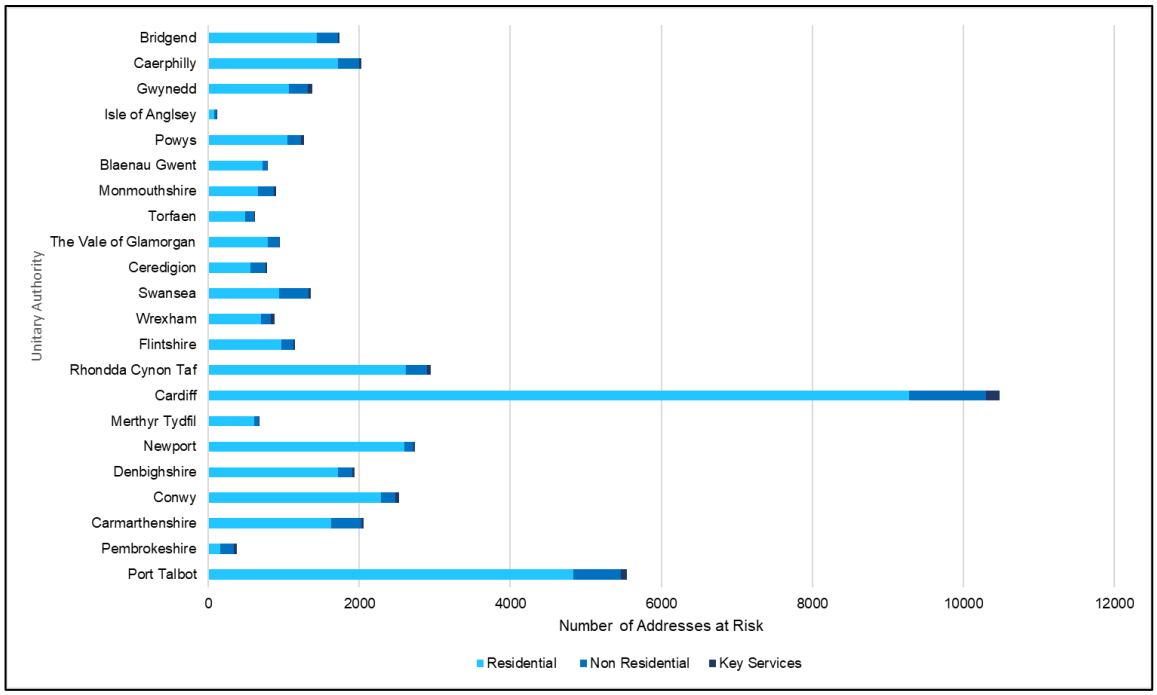


Figure 6: Addresses at Risk of fluvial flooding per Unitary Authority in Wales during the Medium risk event (Communities at Risk Register, 2019)

3.3.3. Sewer Flood Risk in RCT

Sewer flooding is often caused by excess surface water entering the drainage network and exceeding the capacity of the network. When this occurs, sewage can overflow from manholes and gullies and cause flooding to land and properties.

Due to RCT's significant surface water flood risk, particularly within the catchments lower reaches where water will naturally pond, the sewer network can become overwhelmed during periods of heavy or sustained rainfall. Sewer flooding is therefore acknowledged by both the LLFA and the water and sewerage undertaker (DCWW) as a significant risk in RCT.

3.4. RESULTS OF RCT'S FLOOD RISK ASSESSMENT

Establishing SFRA assessment boundaries through the methodology described in Section 3.2 has enabled the LLFA to strategically assess and compare local flood risk across communities and catchments in RCT. The results of these assessments have been described below.

Table 3 provides an overview of total risk receptors at high, medium and low risk of flooding from local sources in RCT.

Table 3: Receptors at high, medium and low risk of flooding from local sources in RCT

Risk Receptor	High Risk (Chance of flooding greater than 1 in 30 each year)	Medium Risk (Chance of flooding between 1 in 30 and 1 in 100 each year)	Low Risk (Chance of flooding between 1 in 100 and 1 in 1000 each year)
Residential Properties (n)	9136	2452	7266
Commercial Properties (n)	852	180	393
Essential Services (n)	118	18	60
Primary/Trunk Roads (km)	40.05	12.63	39.22
Main Line Railways (km)	6.80	1.74	4.93
Agricultural Land - Grades 1, 2 and 3 (ha)	83.95	22.50	76.44
Special Areas of Conservation (SAC) (ha)	9.77	2.04	6.41
Special Protection Areas (SPA) (ha)	0	0	0
Ramsar Sites (ha)	0	0	0
Sites of Special Scientific Interest (SSSI) (ha)	41.31	8.95	30.53
Sites of Interest for Nature Conservation (SINC) (Ha)	383.62	95.19	347.19
National Nature Reserves (NNR) (ha)	0.41	0.10	0.28
Local Nature Reserves (LNR) (ha)	1.06	0.14	0.53
Ancient Woodland (ha)	73.69	14.34	49.24

Risk Receptor	High Risk (Chance of flooding greater than 1 in 30 each year)	Medium Risk (Chance of flooding between 1 in 30 and 1 in 100 each year)	Low Risk (Chance of flooding between 1 in 100 and 1 in 1000 each year)
Registered Parks and Gardens (ha)	2.45	0.83	2.25
Country Parks (ha)	8.33	1.92	6.87
Scheduled Ancient Monuments (SAM) (ha)	0.86	0.28	2.07
Listed Buildings (n)	53	11	29

Further analysis has been undertaken to determine the total risk receptors at high, medium and low risk of flooding from local sources within each SFRA. The results of which are shown in Tables 4-6.

Table 4: Total number of risk receptors at High risk of flooding from local sources within each 12 SFRA in RCT

Risk Receptor	Strategic Flood Risk Areas											
	Upper Rhondda Fawr	Lower Rhondda Fawr	Upper Rhondda Fach	Lower Rhondda Fach	Upper Cynon	Mid Cynon 1	Mid Cynon 2	Lower Cynon	Lower Taf	Ely	Taf West	Taf East
Residential Properties (n)	3202	1345	564	638	337	820	182	337	964	380	118	462
Commercial Properties (n)	202	164	55	73	38	69	9	5	156	33	21	27
Essential Services (n)	31	19	8	4	8	15	3	3	17	5	0	5
Primary/Trunk Roads (km)	4.17	5.87	0.9	2.83	8.39	1.54	0.84	1.39	6.49	3.66	1.98	2
Main Line Railways (km)	1.55	2.67	0	1.2	0	0	0.32	0.13	0.39	0.03	0.70	0.2
Agricultural Land - Grades 1, 2 and 3 (ha)	0	0.70	0	2.11	0.26	24.23	3.85	2.92	9.62	5.48	18.83	15.96
SAC (ha)	0	0	0	0	9.77	0	0	0	0	0	0	0
SPA (ha)	0	0	0	0	0	0	0	0	0	0	0	0
Ramsar Sites (ha)	0	0	0	0	0	0	0	0	0	0	0	0
SSSI (ha)	6.55	0.21	0	1.39	6.55	0	0.21	1.39	0.73	4.58	0.55	4.33

Risk Receptor	Strategic Flood Risk Areas											
	Upper Rhondda Fawr	Lower Rhondda Fawr	Upper Rhondda Fach	Lower Rhondda Fach	Upper Cynon	Mid Cynon 1	Mid Cynon 2	Lower Cynon	Lower Taf	Ely	Taf West	Taf East
SINC (Ha)	98.62	21.28	16.84	7.32	57.04	57.61	15.95	25.01	18.31	15.27	26.03	24.34
NNR (ha)	0	0	0	0	0	0	0	0	0	0	0	0
LNR (ha)	0	0.99	0	0	0	0	0.99	0	0.05	0	0	0
Ancient Woodland (ha)	4.33	3.75	0.57	2.62	4.33	0.57	3.75	2.62	9.72	5.74	6.95	7.67
Registered Parks and Gardens (ha)	0	0	0	0	0	0	0	0	0.63	0	0.75	0
Country Parks (ha)	0	0	0	0	0	0	0	0	0	0	0	0
Scheduled Ancient Monuments (ha)	0	0	0	0	0	0	0	0	0.06	0	0.03	0.12
Listed Buildings (n)	8	2	2	5	8	2	2	5	18	0	2	4

Table 5: Total number of risk receptors at Medium risk of flooding from local sources within each 12 SFRA in RCT

Risk Receptor	Strategic Flood Risk Areas											
	Upper Rhondda Fawr	Lower Rhondda Fawr	Upper Rhondda Fach	Lower Rhondda Fach	Upper Cynon	Mid Cynon 1	Mid Cynon 2	Lower Cynon	Lower Taf	Ely	Taf West	Taf East
Residential Properties (n)	461	407	152	171	91	302	94	53	328	162	59	172
Commercial Properties (n)	11	26	25	13	6	32	5	1	29	7	17	8
Essential Services (n)	2	1	2	2	1	2	0	2	3	0	0	3
Primary/Trunk Roads (km)	1.14	1.66	0.38	1.02	1.96	1.14	0.33	0.28	2.28	1.32	0.38	0.74
Main Line Railways (km)	0.19	0.42	0	0.23	0	0	0.19	0.3	0.25	0.01	0.08	0.08
Agricultural Land - Grades 1, 2 and 3 (ha)	0	0.15	0	0.34	0.12	3.21	1.08	1.14	3.48	1.98	6.37	4.62
SAC (ha)	0	0	0	0	2.04	0	0	0	0	0	0	0
SPA (ha)	0	0	0	0	0	0	0	0	0	0	0	0
Ramsar Sites (ha)	0	0	0	0	0	0	0	0	0	0	0	0
SSSI (ha)	2.07	0.04	0	0.39	3.42	0	0	0	0.09	1.26	0.37	1.32

Risk Receptor	Strategic Flood Risk Areas											
	Upper Rhondda Fawr	Lower Rhondda Fawr	Upper Rhondda Fach	Lower Rhondda Fach	Upper Cynon	Mid Cynon 1	Mid Cynon 2	Lower Cynon	Lower Taf	Ely	Taf West	Taf East
SINC (Ha)	24.43	6.97	6.85	2.02	14.41	13.10	3.21	5.32	4.74	4.13	6.46	6.97
NNR (ha)	0	0	0	0	0.10	0	0	0	0	0	0	0
LNR (ha)	0	0.12	0	0	0	0	0	0.01	0.01	0	0	0
Ancient Woodland (ha)	0.74	0.68	0.10	0.46	2.86	0.76	0.84	1.31	2.07	0.91	1.60	2.01
Registered Parks and Gardens (ha)	0	0	0	0	0	0.11	0	0	0.27	0	0.45	0
Country Parks (ha)	0	0	0	0	1.92	0	0	0	0	0	0	0
SAM (Ha	0	0	0	0	0.21	0.01	0	0	0.01	0	0.05	0.01
Listed Buildings (n)	1	2	0	2	0	2	0	0	1	0	2	1

Table 6: Total number of risk receptors at Low risk of flooding from local sources within each 12 SFRA in RCT

Risk Receptor	Strategic Flood Risk Areas											
	Upper Rhondda Fawr	Lower Rhondda Fawr	Upper Rhondda Fach	Lower Rhondda Fach	Upper Cynon	Mid Cynon 1	Mid Cynon 2	Lower Cynon	Lower Taf	Ely	Taf West	Taf East
Residential Properties (n)	1099	917	372	541	341	663	448	235	1218	467	166	799
Commercial Properties (n)	41	38	17	20	26	47	31	1	81	33	25	33
Essential Services (n)	7	9	1	5	3	6	2	1	10	4	4	8
Primary/Trunk Roads (km)	2.85	4.58	1.63	2.97	5.67	2.62	1.64	1.44	7.43	3.58	1.56	3.25
Main Line Railways (km)	0.37	0.83	0	0.4	0	0.01	0.49	0.69	0.75	0.12	0.5	0.78
Agricultural Land - Grades 1, 2 and 3 (ha)	0	0.30	0	1.49	0.15	10.39	4.50	3.78	10.03	6.66	21.64	17.49
SAC (ha)	0	0	0	0	6.41	0	0	0	0	0	0	0
SPA (ha)	0	0	0	0	0	0	0	0	0	0	0	0
Ramsar Sites (ha)	0	0	0	0	0	0	0	0	0	0	0	0
SSSI (ha)	7.02	0.20	0	1.81	10.85	0	0.02	0	0.40	3.73	1.06	5.46

Risk Receptor	Strategic Flood Risk Areas											
	Upper Rhondda Fawr	Lower Rhondda Fawr	Upper Rhondda Fach	Lower Rhondda Fach	Upper Cynon	Mid Cynon 1	Mid Cynon 2	Lower Cynon	Lower Taf	Ely	Taf West	Taf East
SINC (Ha)	85.42	25.51	17.33	9.28	53.42	42.92	14.50	20.65	18.83	14.18	21.96	23.18
NNR (ha)	0	0	0	0	0.28	0	0	0	0	0	0	0
LNR (ha)	0	0.47	0	0	0	0	0	0.03	0.04	0	0	0
Ancient Woodland (ha)	2.66	2.22	0.71	1.71	8.91	3.36	3.53	4.44	8.69	2.52	4.97	5.52
Registered Parks and Gardens (ha)	0	0	0	0	0	0.31	0	0	0.73	0	1.21	0
Country Parks (ha)	0	0	0	0	6.87	0	0	0	0	0	0	0
Scheduled Ancient Monuments (ha)	0.16	0	0	0	1.60	0.07	0	0	0.15	0	0.05	0.04
Listed Buildings (n)	2	1	0	1	1	11	6	0	3	2	2	0

The results from Tables 4-6 indicate that the Upper Rhondda Fawr SFRA has a significantly higher number of receptors at high, medium and low flood risk compared with other SFRAs in RCT. The total number of residential properties at high risk of flooding in the Upper Rhondda Fawr SFRA accounts for approximately 35% of the total residential properties at high risk from local sources in RCT.

Figure 7 illustrates the number of residential and commercial properties, and essential services at risk of flooding from local sources in each SFRA during the high risk event. The Upper Rhondda Fawr SFRA accounts for the majority of receptors at risk, followed by the Lower Rhondda Fawr SFRA, the Lower Taf SFRA and the Mid Cynon 1 SFRA. Based on RCTCBC's assessment, the Taf West SFRA and Mid Cynon 2 SFRA are identified to have the lowest number of receptors at risk in RCT.

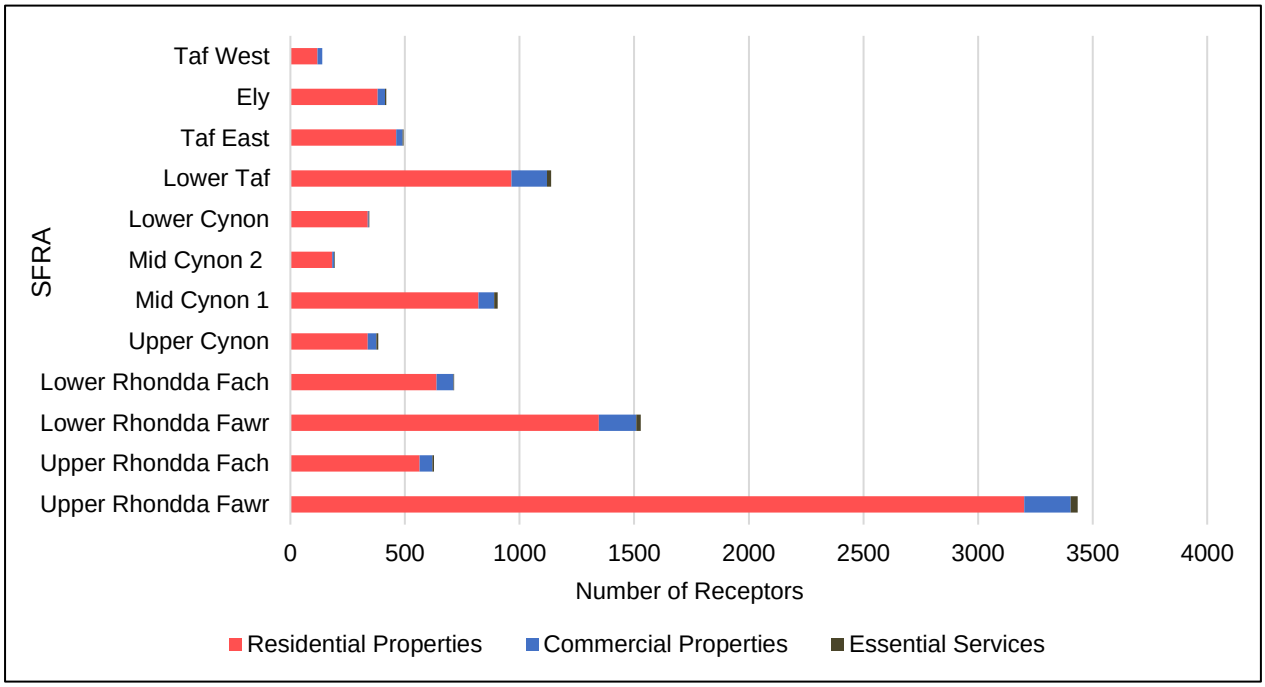


Figure 7: Number of receptors at risk (residential, commercial and essential services) in each SFRA in RCT during the high risk event

The Flood Risk Regulations (FRR) 2009 requires all LLFAs which have a Flood Risk Area, as identified by NRW's Preliminary Flood Risk Assessment**Error! Bookmark not defined.**, to produce and publish a Flood Risk Management Plan (FRMP) for that area. RCT's initial FRMP, published in 2015, developed the objectives and high-level measures outlined in our 2013 Local Strategy into a more detailed plan for managing the risk of flooding from local sources in our communities, over the lifetime of its cycle.

The second cycle of the FRR publications are underway. A Preliminary Flood Risk Assessment (SFRA) was prepared in 2017 by RCTCBC to meet its duties to manage local flood risk under the second cycle of the FRR publications. This fed into the identification of Flood Risk Areas within NRW's PFRA in 2018. The 2018 PFRA identified 3 Flood Risk Areas within RCT as having significant local flood risk; Treorchy, Treherbert and Rhondda. As required by the FRR, a FRMP is required for each of these 3 Flood Risk Areas.

The identification of Flood Risk Areas in RCT aligns with our assessment of the CaRR, which identifies the Rhondda catchment as having significant local flood risk. RCTCBC's analysis of the CaRR ranking data, shown in Section 3.3, however suggests a much higher number of communities are at significant local flood risk than the 3 Flood Risk Areas identified by the PFRA. This is supplemented by local knowledge of recent flood events. For this reason, RCT have produced Flood Action Plans within this Local Strategy, to replace the former FRMP, which cover the entire RCTCBC administrative area, in addition to 12 Flood Action Plans for each SFRA which are reflective of the risk assessment. The Flood Action Plans have been introduced in Section 8 and included in Appendix A.

4. Climate Change and Flood Risk

4.1. Climate Change Risk in RCT

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

Although every storm cannot be attributed to the effects of climate change, evidence suggests that extreme weather events will become more frequent in the future. Climate projections over UK land for the 21st century suggest that winters will become warmer and wetter, summers will be drier, and we will experience an increase in the frequency and intensity of extreme weather events.

According to the UKCIP 2018, winters in the UK, for the most recent decade (2009-2018), have been on average 5% wetter than 1981-1990 and 12% wetter than 1961-1990. Summers in the UK have also been wetter, by 11% and 13% respectively, and the number of extreme rainfall events has also increased by 17% when comparing 2008-2017 with the 1961-1990 period[9].

The increased frequency of extreme weather events can be observed in RCT. This is illustrated in Figure 8 which identifies a record total of 32 storm events occurring between April 2022 and March 2023, compared to only 10 storm events recorded between April 2018 and March 2019. These figures are based on the number of wet weather warnings received from the Met Office for RCT.

[9] MET Office, 2018, UK Climate Projections (UKCP) - Met Office

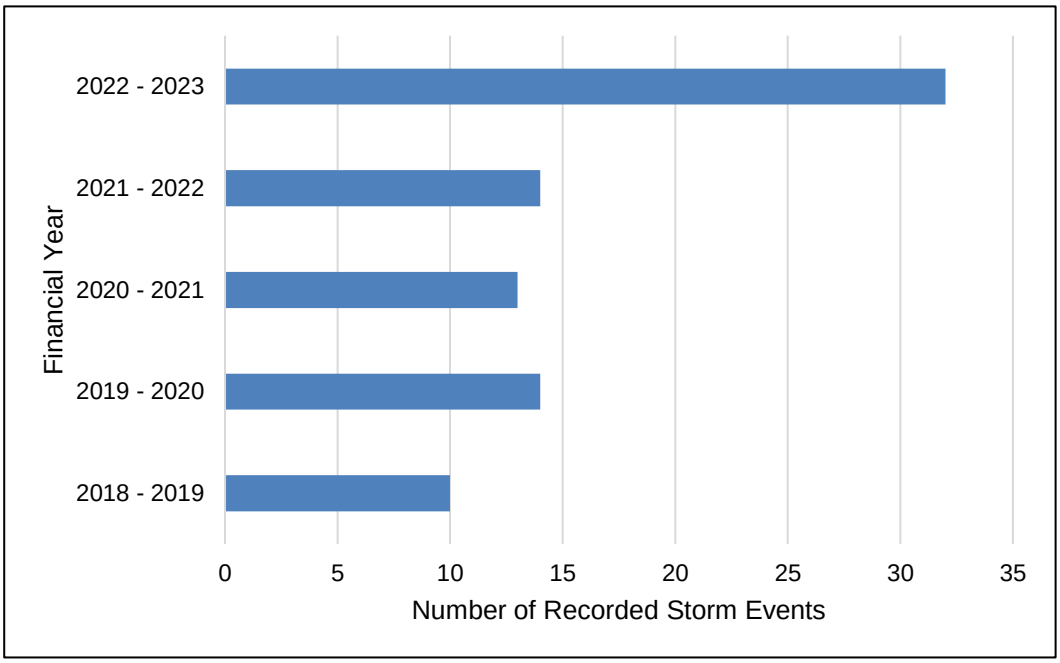


Figure 8: The number of storm events recorded in RCT over the last 5 years (2018 – 2023)

RCT has also experienced record-breaking rainfall intensities in recent years. On the 15th and 16th February 2020, RCT was impacted by an extreme weather event which was designated by the Met Office as 'Storm Dennis'. The storm was the second of three consecutive storm events that made landfall in February 2020 and has since been recorded as the wettest February on record in Wales and the UK. Communities within RCT were amongst the worst impacted by the storm with several hundred homes and businesses flooded. Rainfall in the catchment areas of RCT during Storm Dennis was of such intensity that rivers and watercourses reacted extremely quickly, reaching record levels and flows. A major incident was declared by the South Wales Police following the serious disruption caused by the flooding.

The observed increase in storm frequency and intensity is expected to continue, and is considered to be a factor of climate change which will result in local flood risk increasing across RCT. The projected increase in winter rainfall will increase groundwater recharge, leading to more frequent groundwater flooding. We can also expect greater flows within our ordinary watercourses, as well as main rivers, which will lead to more frequent overtopping and potential breaches of defence structures. Higher water levels within RCT's watercourses can also reduce the ability of drainage networks to discharge water which increases the risk of surface water flooding.

Additional pressures are also being placed upon the capacity of the drainage infrastructure within RCT as a result of more intense and frequent rainfall and paired with the demand for new development in our urban town centres to meet the demand of a growing population. The 2021 National Census recorded a population of 237,497 in RCT, seeing a population increase of 3,124 in the last decade[10]. Although this is below the Welsh Government estimated population growth for RCT[11], 1,987 new dwellings have been built on greenfield land since 2012 – 2013, using approximately 66.2 hectares of greenfield land for residential development. The growing development needs, paired with loss of greenfield areas, will only increase the flood risk challenges facing individuals, communities and RMAs now and in the future.

The British Red Cross (2023)[12] published a report exploring the impacts of climate change through comparing social flood risk across UK local authorities. Social Flood Risk is a measure of probability and exposure to flooding, in addition to area and population vulnerability to flooding impacts. The report identified RCT as having the greatest social flood risk in the UK for surface water flooding. RCT is also predicted to have the steepest increase in social flood risk across the UK for combined flooding by the 2050s and 2080s, under both a 2°C and 4°C warming scenario.

Climate change is a well-established phenomenon which will bring significant challenges to our communities, particularly in relation to flood risk. The evidence of the impact of climate change in RCT is overwhelming and this strategy will aim to manage these impacts. The objectives, measures and actions identified in this Local Strategy will help us to reduce the risk of flooding where we can, as well as adapt our communities and infrastructure both in terms of preparedness for such extreme events and becoming more resilient to flooding when it occurs.

[10] Home - Office for National Statistics (ons.gov.uk)
[11] Population estimates by local authority and year (gov.wales)
[12] UK Flooding report | Research | British Red Cross (2023)

4.2. How our Strategy addresses these risks

The strategy has been developed with a longer-term, strategic view, recognising the nature of flood risk with respect to the challenges of climate change.

In June 2022, RCT's Climate Change Strategy – 'Think Climate RCT'[13] was approved by Cabinet, providing a framework to meet corporate targets and commitments to reduce carbon emissions within the Council and the County Borough, and in doing so playing our part to tackle climate change through our Climate Commitments. Managing flood risk has been identified as one of RCTCBC's Climate Commitments to reducing carbon emissions within the Council.

The Council has also established a Climate Change Working Group (March 2021) and subsequent sub-groups, aiming to support the practical implementation of the policies and strategic direction determined by the Climate Change Cabinet Sub Committee (CCCSC) and other Council bodies in relation to targeting climate change impacts and delivering the Council's ambition of becoming a carbon-neutral organisation by 2030.

RCT's Climate Change Strategy outlines several aims and plans to deliver against the three main priorities of the Council's Corporate Plan 2020-24, all of which will contribute to and benefit from tackling climate change. Table 7 identifies the aims and plans relevant to flood risk management which will achieve the Climate Commitments and deliver against RCTCBC's three corporate priorities. These have been considered within the Local Strategy objectives, measures and actions to align with RCTCBC's Climate Change Strategy.

Table 7: Flood risk management related aims and plans to achieve the Council's Corporate priorities and Climate Change Strategy

Corporate Priority	Climate Change Strategy Aims	Climate Change Strategy Plans
Creating Places: where people are proud to live, work and play	Protecting and enhancing our wild spaces and working with nature to tackle both the Climate and Nature emergencies	Continuing to investigate and promote opportunities to use natural processes, green infrastructure, and management techniques in RCT's countryside to reduce environmental risks such as flooding.

[13] RCTCBC 2022-2025 Think Climate Change Strategy

Corporate Priority	Climate Change Strategy Aims	Climate Change Strategy Plans
	and benefit our communities.	Working with partners to expand green infrastructure and agroforestry to limit deforestation which in turn will significantly increase flood defences.
		Minimising flood risk by promoting nature-based solutions in appropriate locations as well as traditional engineering works, for example SuDS.
		Attracting private sector investment to increase areas of woodland regeneration and creation, ensuring that we protect and store carbon and reduce the risk of flooding.
Enabling Prosperity: creating the opportunity for people and businesses to be innovative; be entrepreneurial; and fulfil their potential and prosper	Setting out Zero carbon ambition for new homes and future developments in our Local Development Plan.	Minimising flood risk by promoting nature-based solutions in appropriate locations as well as traditional engineering works, for example Sustainable Drainage Systems (SuDS).
	Supporting local businesses to become more sustainable and capitalise on the new opportunities offered by the green and emerging economies.	Using natural planting in public areas of our town centres to improve air quality and well-being, reduce flood risk, provide cooling during heatwaves and other climate benefits for residents.
Ensuring People: are independent, healthy, and successful	Raising Climate Awareness	Working with young people, including through schools and their eco councils, youth groups and arts projects in ways they can help shape our plans for their future.
		Providing opportunities for communities to become involved in developing local solutions through Neighbourhood Networks.

In addition to RCT's Climate Change Strategy which provides the overarching framework for managing the impacts of climate change, there are several national and local strategies, plans and guidance the LLFA has considered when developing our

objectives, measures and actions to managing local flood risk and addressing climate change risks in RCT. Table 8 identifies these and how they have been considered in the development of this Local Strategy.

Table 8: National and local strategies, plans and guidance considered in the development of RCT's Local Strategy to manage flood risk and address climate change risks in RCT

Strategic, Plans & Guidance	How this Local Strategy aligns with and addresses the risk of climate change
RCT's Corporate Plan 2020 – 2024 'Making a Difference'	Aligns directly with RCT's Climate Change Strategy with the ambition to mainstream 'green' thinking across all our plans and processes.
RCT's Local Development Plan	Support future developers, the public, and the Local Planning Authority (LPA), by providing clarity about the type of development that will be permitted at a particular location and setting appropriate acceptability criteria for surface water flooding consequences, giving due consideration to the impact of climate change on flood risk.
RCT Local Nature Partnership - 'Action for Nature' Plan	The 'Action for Nature' plan, prepared by the RCT Local Nature Partnership, has been developed to benefit the wildlife and communities of RCT and to assist the Council in meeting its Biodiversity Duty obligations under Section 6 of the Environment (Wales) Act 2016. Several of the Local Strategy's objectives, measures and aims have considered how flood risk management can contribute to environmental and biodiversity enhancement, particularly in relation to the promotion of interventions that work with nature to reduce flood risk and deliver wider benefits, including NFM, green infrastructure and sustainable land management.
RCT's Air Quality Action Plan	The Council has produced Air Quality Action Plans for individual Air Quality Management Areas which set out actions to improve air quality. This Local Strategy will explore the wider benefits to improving air quality within our urban areas with the promotion of green infrastructure, SuDS and NFM options; all of which provide additional environmental benefits.
Welsh Government's Guidance on Adapting to Climate Change	Stipulates climate change allowances for the development of Flood Alleviation Schemes (FAS), thereby providing consideration to the impact of

Strategic, Plans & Guidance	How this Local Strategy aligns with and addresses the risk of climate change
	climate change early in the business case development process.
Future Wales: The National Plan 2040	Future Wales: The National Plan 2040 sits alongside Planning Policy Wales at the highest tier of Welsh Government planning in Wales and sets the direction for development in Wales to 2040. Policy 8 of the Plan sets out the national strategic approach to flood risk management which aims to enable and support sustainable strategic growth and regeneration in National and Regional Growth Areas. The Plan outlines the Welsh Government's intentions to work with LLFAs and developers to plan and invest in new and improved infrastructure, promoting nature-based solutions as a priority whilst also contributing to the achievement of sustainable development, both of which align with the objectives of this Local Strategy.
Technical Advice Note 15: Development, Flooding and Coastal Erosion (TAN15)	The new TAN outlines ways in which the planning system can support communities to avoid being affected by flooding, and to develop more resilience where it cannot be avoided. It also recognises that changes in rainfall intensity over the next century will impact local flood risk.
NRW's Flood Map for Planning	Provides information on the predicted future flood risk to enable LPAs to develop locally-appropriate approaches for area at risk, or in close proximity to risk, giving due consideration to the impacts of climate change.
Welsh Government's Guidance on Climate Change Allowances and Flood Consequence Assessments	To consider the potential impact of climate change over the lifetime of development in RCT.
British Red Cross (2022) Every time it rains: British Red Cross research on flooding in the UK	The Social Flood Risk Index (SFRI) highlights RCT's vulnerability to the impacts of climate change and flooding. This will feed into RCTCBC's risk-based approach for prioritising investment to those areas of greatest vulnerability.
Well-being of Future Generations (Wales) Act 2015	This Act places a duty on public bodies to carry out sustainable development and to maximise their contribution to the achievement of the well-being goals.

Alignment of our Local Strategy and its objectives with other relevant Local Authority strategies and plans will be critical to delivering RCTCBC's ambition of becoming Carbon Neutral by 2030, alongside managing the risk of local flooding.

5. Roles and Responsibilities for Managing Flood Risk in RCT

5.1. Risk Management Authorities and their Functions

The term 'Risk Management Authority' refers to the organization(s) that have legislative powers concerning flood risk management. Risk Management Authorities (RMA) across Wales include NRW, the 22 Local Authorities as LLFA and highway authority, water companies, and the Welsh Government as highway authority for trunk roads. Each RMA is required to fulfil a number of statutory duties, as defined under the FWMA. In addition to these statutory duties, the Act sets out a range of permissive powers for RMAs, enabling them to undertake defined activities if they so wish.

Table 9 summarises which RMAs are primarily responsible for managing flood risk dependent on the sources of flooding outlined in Figure 3. The roles and responsibilities for each of individual RMA to manage flood risk is further described within the sections below.

Table 9: Risk Management Authorities responsible for managing different sources of flooding in RCT

Source of Flooding	Lead Local Flood Authority	Natural Resources Wales	Water Company	Highway Authority	South Wales Trunk Road Agency (Trunk Roads & Motorway)
Main River		✓			
Surface Water	✓			✓ (on or coming from the Highway)	✓ (on or coming from the Highway (Trunk Roads & Motorway)
Ordinary Watercourse	✓				
Groundwater	✓				
Sewer Flooding			✓		
Reservoirs		✓			

5.1.1. Lead Local Flood Authority

Within the FWMA, RCTCBC has been established as the Lead Local Flood Authority (LLFA) for its administrative area.

As defined in the FWMA, RCTCBC is responsible for managing what is termed, its 'local flood risk'. This includes the risk of flooding from ordinary watercourses, surface water and groundwater.

The FWMA places a number of statutory duties on Local Authorities in their role as LLFAs including:

1. A duty to develop, maintain, apply and monitor a strategy for local flood risk management in its area
2. A duty to comply with the National Strategy
3. A duty to co-operate with other authorities, including sharing data
4. A duty to investigate all flooding within its area, insofar as a LLFA consider it necessary or appropriate
5. A duty to maintain a register of structures and features likely to affect flood risk
6. A duty to contribute to sustainable development
7. Consenting powers on ordinary watercourses

Under the Flood Risk Regulations 2009 the LLFA also have duties to contribute to the production of Flood Risk Management Plans.

In addition to these, each LLFA has a number of permissive powers under the FWMA. These are powers that allow them to do something, but do not compel them to and include:

1. Powers to request information in connection with the authority's flood and coastal erosion risk management functions;
2. Powers to designate certain structures or features that affect flood or coastal erosion risk;
3. The expansion of powers to undertake works to include broader risk management actions; and
4. The ability to cause flooding or coastal erosion under certain conditions

RCTCBC also manage flood risk via the permissive powers bestowed upon all Lead Local Flood Authorities under the Land Drainage Act 1991, which allow them to regulate ordinary watercourses (outside of internal drainage districts) to maintain proper flow by;

- Issuing consents for altering, removing or replacing certain structures or features on ordinary watercourse; and
- Enforcing obligations to maintain flow in a watercourse.

These powers are for the purpose of preventing flooding or remedying or mitigating any damage caused by flooding. Enforcement powers under the Act assist the Council in carrying out its duties under the Flood and Water Management Act 2010 and the Land Drainage Act 1991 to help with their land drainage and flood risk management functions across RCT through better regulation of activities on, near or adjacent to an ordinary watercourse, which may increase the risk of flooding. The responsibility for maintenance of watercourses ultimately rests with the landowner. Riparian landowners' rights and responsibilities are discussed in Section 5.2.

LLFA's in Wales also take on the role of the SuDS Adopting and Approving Body (SAB) in relation to sustainable drainage systems as of the 7th January 2019. In this role they have a duty to ensure surface water drainage for new developments with drainage implications is built and functions in accordance with mandatory National Standards for Sustainable Drainage Systems (SuDS) prior to construction work taking place[14].

[14] https://gov.wales/sites/default/files/publications/2019-06/statutory-national-standards-for-sustainable-drainage-systems.pdf

5.1.2. Natural Resources Wales

Under the FWMA 2010, Natural Resources Wales is responsible for managing the risks of flooding from main rivers and the sea, and for regulating the safety of reservoirs. In addition, NRW also have operational responsibilities in relation to coastal erosion and a wider oversight role for all flood and coastal erosion risk management in Wales.

The oversight role is integral to the delivery of national policy on flooding and coastal erosion risk management and has been taken forward to ensure that Natural Resources Wales has the remit to support the Welsh Government across the full range of flood and coastal erosion risks affecting Wales.

As part of their oversight role, Natural Resources Wales will lead on the provision of technical advice and support to other Risk Management Authorities. They will also lead on national initiatives such as Flood Awareness Wales, the national raising awareness program, and be the single point of contact for enquiries and information on flood risk, via their Flood Line warning service[15].

The FWMA 2010 places a number of statutory duties on Natural Resources Wales including:

1. Co-operating with other authorities, including sharing data;
2. Reporting to the Minister on flood and coastal erosion risk in Wales including the application of the National Strategy; and
3. The establishment of Regional Flood and Coastal Committees.

[15] NRW Flood line Warning - https://naturalresources.wales/flooding/sign-up-to-receive-flood-warnings/?lang=en

In addition to their statutory duties, Natural Resources Wales has a number of permissive powers. These are powers that allow them to do something, but do not compel them to and include:

1. Powers to request information
2. The ability to raise levies for local flood risk management works, via the Regional Flood and Coastal Committees
3. Powers to designate certain structures or features that affect flood or coastal erosion risk
4. The expansion of powers to undertake works to include broader risk management actions; and
5. The ability to cause flooding or coastal erosion under certain conditions.

This new allocation of responsibilities is also consistent with Natural Resources Wales' role; in relation to the Flood Risk Regulations 2009, which allocates specific responsibility for conducting assessments in relation to mapping and planning the risks of flooding from main rivers, the sea and reservoirs to Natural Resources Wales, as well as providing guidance to Local Authorities on these matters for flooding from other sources.

5.1.3. WATER COMPANY

Dŵr Cymru Welsh Water (DCWW) is the regional water and sewerage treatment company serving RCTCBC. Water and sewerage companies are responsible not only for the provision of water, but also for making appropriate arrangements for the drainage of foul water, the treatment of waste, surface water sewers and combined sewers. They have primary responsibility for floods from water and sewerage systems, which can include sewer flooding, burst pipes or water mains or floods caused by system failures.

No changes have been made to the operational arrangements for water and sewerage companies in respect of flood risk.

Water companies, when exercising their flood or coastal erosion risk management functions in relation to an area within Wales, must have regard to the relevant Local Strategies and any associated guidance.

The FWMA 2010 places a number of statutory duties on Water and Sewerage Companies including:

1. A duty to act consistently with the National Strategy;
2. A duty to have regard to the content of the relevant Local Strategy; and
3. Co-operation with other Authorities, including sharing data.

Water and sewerage companies often hold valuable information, which could greatly aid the understanding of flood risks faced by communities across Wales.

5.1.4. Highway Authority

Highway authorities have the lead responsibility for providing and managing highway drainage and roadside ditches under the Highways Act 1980. The owners of land adjoining a highway also have a common-law duty to maintain ditches to prevent them causing a nuisance to road users.

RCTCBC, as the highway authority, is the relevant RMA with responsibility for ensuring the roads and highways within its area (except for motorways and major trunk roads) is clear of obstructions and to manage and maintain the surface water drainage infrastructure to an appropriate design standard to drain surface water from the highway. As part of their duty, they are responsible for carrying out routine and reactive works to these systems to ensure they are working to maximum capacity.

Highway drainage is not designed to manage overland flows from private areas, parks or open space. In these instances, the capacity of the highway drainage may become exceeded by a combination of highway and private surface water, resulting in surface water flooding.

5.1.5. South Wales Trunk Road Agency (SWTRA)

The Welsh Government has a responsibility for managing flood risk on motorways and major trunk road drainage under the Highways Act, section 100. The Trunk Road Agency must ensure that road projects do not increase flood risk and road discharges do not pollute receiving waterbodies.

5.2. Role of Other Stakeholders

Whilst not designated flood risk management authorities, stakeholders such as infrastructure providers, riparian landowners and residents have responsibilities to maintain their assets for the purposes of managing flood risk. These have been discussed in detail below, along with a list of other internal and external authorities and stakeholders which have a responsibility for flood risk management in their own area of discipline (Table 10).

5.2.1. Network Rail & Transport for Wales

Whilst legislation does not impose an official role on Network Rail/Transport for Wales, they have an operational responsibility for flooding as a land and asset owner and are required to undertake regular maintenance of all drainage infrastructure and assets that pose a risk to flooding.

5.2.2. Riparian landowners

If you own land or property located adjacent to or abutting a waterway (watercourse, stream, ditch) then in legal terms you are a Riparian Owner and have certain common law rights and responsibilities.

Riparian Landowners are legally responsible under common law for the maintenance of the land generally up to the centreline of any watercourse adjacent to their property[16]. This includes the maintenance of the bed, banks and any boundary features, e.g., vegetated strips such as hedging, with routine clearance of debris and/or blockages.

This does not mean that the owner must remove all debris from the watercourse, but it does require the owner to maintain as far as it does not pose a risk or 'nuisance' to a neighbour. Any works to modify the watercourse by the landowner must first be passed through the relevant Risk Management Authority, Lead Local Flood Authority (LLFA) or Natural Resources Wales (NRW).

[16] Natural Resources Wales – Riverside Property Owners - https://naturalresources.wales/flooding/managing-flood-risk/riverside-property-owners-know-your-rights-and-responsibilities/?lang=en

Under common law, Riparian Owners have rights and responsibilities relating to any watercourse that passes through or adjacent to the boundaries of their land. The means that the landowner must:

- Pass on flow without obstruction, pollution or diversion affecting the rights of others;
- Accept natural flood flows through their land, even if caused by inadequate capacity downstream, as there is no common law duty to improve a watercourse;
- Maintain the bed and banks of the watercourse (including trees and shrubs growing on the banks) and clear any debris, natural or otherwise;
- Not cause any obstruction to the free passage of fish;
- Keep the bed and banks clear from any matter that could cause an obstruction either on their land, or by being washed away by high flow to obstruct a structure downstream;
- Take responsibility for protecting their property from seepage through natural or constructed banks, and;
- Keep clear any structure that they own such as culvert, trash screen, weirs and mill gates.

Under the FWMA 2010, a landowner needs consent from the Land Drainage Authority if they want to construct a culvert or flood relief control structure on any ordinary watercourse.

5.2.3. Residents, Property & Business Owners

Residents, property and business owners are responsible for the protection of their own properties against flooding as well as maintaining private surface water drainage infrastructure such as guttering and soakaways. Residents have the right to defend their property as long as they do not subsequently increase the risk of flooding to other properties.

Residents are advised to review their personal flood resilience to ensure that they are as prepared as possible for any future flooding events. For more information on property flood products and services to help reduce the risk of flooding to homes and/or businesses, see The Blue Pages webpage[17].

[17] Blue Pages, Flood Directory - http://bluepages.org.uk/

5.2.4. Additional Stakeholders

Table 10: Additional internal and external stakeholders with responsibility for flood risk management in RCT

Internal	External
Highways and Streetcare	South East Wales Flood Risk Management Group (SEWFRMG)
Strategic Planning Policy	Natural Resources Wales (Forestry Commission Wales)
Development Control	Emergency Services
Emergency Planning	National Farmers Union
Environmental Health	Utility providers
Countryside	Local partnerships, forums and community groups
Parks Services	Association of British Insurers
Public Health & Protection	Housing Associations
Building Control	Country, Land and Business Association
Corporate Estates	Bannau Brycheiniog National Park Authority
Customer Services	CADW
ICT	National Flood Forum
	Local Resilience Forum
	SuDS Working Group for Wales
	Professional Institutions

6. STRATEGIC OBJECTIVES

6.1. NATIONAL STRATEGY OBJECTIVES

The National Strategy for Flood and Coastal Erosion Risk Management in Wales sets out an overarching aim to reduce the risks to people and communities from flooding and coastal erosion. It identifies 5 objectives for delivering this aim. These are summarised below in Figure 9.

Figure 9: National Strategy Aim and Objectives

For this Local Strategy, RCTCBC have developed a series of strategic objectives which outline, at a high-level, how the Authority intends to manage flood risk within the lifecycle of this strategy. The strategic objectives align with the National Strategy objectives and reflect RCT local context and priorities.

6.2. LOCAL STRATEGIC OBJECTIVES

Table 11 presents RCTCBC's local strategic objectives and provides a detailed description of each objective and their inter-relationship against the National Strategy objectives.

Table 11: RCTCBC's Local Strategic Objectives and delivery against the National Strategy objectives

No	Local Strategy Objectives	Description of Objective	National Strategy Objectives				
			A	B	C	D	E
1	Reduce distress by decreasing the number of people exposed to the risk of flooding	To reduce social vulnerability of communities exposed to flood risk	X	X	X	X	X
2	Reduce community disruption by reducing the number of residential and commercial properties exposed to the risk of flooding	To reduce the impact of flooding on physical receptors to improve individual and community well-being	X	X	X	X	X
3	Reduce risk to life by reducing the number of people exposed to risk of flooding of significant depth and velocity	To reduce the consequences of flooding to those individuals and communities at highest risk of flooding	X	X	X	X	X
4	Reduce disruption caused by severe weather to critical infrastructure and essential services	To reduce disruption and to maintain the operation of critical infrastructure and essential services (for example, critical road and railway networks, electricity sub-stations and hospitals) during flooding events	X	X	X	X	X
5	Improve or not detrimentally affect water quality	To align with the requirements of the Water Framework Directive and consider the Severn River Basin Management Plan					
6	Identify opportunities that work with natural processes to reduce the risk of flooding	To investigate opportunities that help to protect, restore, and emulate the natural functions of catchments, including implementing Natural Flood Management, promoting green infrastructure, sustainable land management techniques and adopting a catchment-based approach to flood risk management		X		X	
7	Maintain, or where possible, improve the status of Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSIs), Sites of Importance for Nature and Conservation (SINC) sites and contribute to the RCT Local Nature Partnership 'Action for Nature' Plan.	To minimise damage to environmentally sensitive areas, and where possible, aim to protect and enhance areas of environmental and cultural significance through managing flood risk		X			

No	Local Strategy Objectives	Description of Objective	National Strategy Objectives				
			A	B	C	D	E
8	Improving our understanding of local flood risk in RCT and how this risk may be impacted by climate change in the future	Continue to develop and improve our knowledge and understanding of local flood risk across RCT, considering the impacts of climate change. This will offer multiple benefits such as enabling the Council to identify those areas at greatest risk, prioritising measures to address known risks, validating the accuracy of modelled flood mapping, raising awareness of risks to communities, and informing emergency response plans	X	X	X	X	X
9	Develop effective communication tools to share information and improve individual and community awareness of local flood risks and how they can be managed proactively	The LLFA to take a leadership role in ensuring individuals understand their roles and responsibilities in relation to local flood risk management by improving the communication and sharing of information to raise awareness of local flood risk and seek to support individuals in managing their risk proactively	X	X		X	
10	Improve individual and communities' ability to prepare, respond and recover to the impacts of flooding	Raise awareness and building preparedness within the community through the promotion of resilience themes, including property resilience measures, flood warning and informing, regularly updating emergency response plans, and promoting community engagement activities	X	X			X
11	Ensure that RCT work in partnership with Risk Management Authorities and other stakeholders to holistically manage the risk of flooding	RCT as the LLFA to work together with Risk Management Authorities, stakeholders, and the public to manage the risk of local flooding by sharing data and resources efficiently and effectively to the greatest benefit.	X	X		X	X

No	Local Strategy Objectives	Description of Objective	National Strategy Objectives				
			A	B	C	D	E
12	Ensure flood risk management functions are considered and delivered in a sustainable way	To ensure the LLFA takes a sustainable and holistic approach to flood risk management functions, aiming to make a contribution towards the achievement of sustainable development (in accordance with Section 27 of the FWMA 2010) and seeking to deliver wider environmental, social, and economic benefits.			X	X	
13	Ensure that investment decisions for flood risk management schemes are prioritised utilising a risk-based approach	RCT as the LLFA to prioritise investment in the most at risk communities utilising a risk-based, transparent and consistent approach, and with due regard to the Welsh Government FCERM Business Case Guidance.	X		X	X	

7. FLOOD MEASURES

7.1. INTRODUCTION TO FLOOD MEASURES

The detailed strategic objectives outlined in Section 6.1 will be delivered through the implementation of a wide range of measures.

Measures have been categorised under the following six high level themes;

- Development, planning and adaptation (encompassing both new and adaptations to existing developments/landscapes)
- Flood awareness, preparedness, and response
- Studies, assessments, and plans
- Land, cultural and environmental management
- Asset management and maintenance
- Monitoring (of the local flood risk issue)

The following sections outline the proposed measures, categorising them according to the high level theme under which they reside. Each measure has also been provided with an indicative timescale and cost for delivery. The timescales and costs proposed are a factor of relative priority and the likely complexity of what might be required; they are also subject to funding and capacity. The indicative timescales and costs are shown below.

Timescales:

- **Short Term**: Planned to be delivered in the short term (years 1 – 2)
- **Medium Term**: Planned to be delivered in the medium term (years 2 – 5)
- **Long Term**: Planned to be delivered in the long term (years 5+)
- **Recurring**: Continuing elements of work that will remain as ongoing activities throughout the lifetime of this Local Strategy.

Costs:

- **Existing Resources (ER)**: No cost implication. Within current budgets
- **Low Cost**: Additional cost of £1k- £10k
- **Medium Cost**: Additional cost of £11k - £200k
- **High Cost**: Additional cost of £201k - £999k
- **Very High Cost**: Additional cost of £1m and above

7.2. Development Planning and Adaptation

Development Planning plays a crucial role in managing development to avoid inappropriate siting, reduce flood risk where possible and not increase risk elsewhere. The Welsh Government's policy of directing development away from areas at high risk of flooding and managing water is set out in Future Wales: The National Plan 2040, Planning Policy Wales and TAN 15 which compliments the National Strategy and this Local Strategy. These principles are also set out in the RCTCBC's Local Development Plan.

Flood risk must be considered at the earliest opportunity not only to avoid inappropriate development but also to enable the sustainable management of water into new housing development.

In January 2019, SuDS became a mandatory requirement for the management of surface water on new development. This reflects the need to protect and enhance the environment, in a controlled way similar to natural processes, which also forms a vital part of the response in adapting to climate change and helping to achieve sustainable development.

Measure 1	Consultee to the Local Planning Authority
Description	RCTCBC as the LLFA will work with the Local Planning Authority (LPA) to produce robust local planning policies and supplementary planning guidance to manage the risk of flooding from local sources for existing communities and in respect of new development. This measure will support the delivery of Future Wales: The National Plan 2040, Planning Policy Wales (PPW), Technical Advice Note 15 (TAN 15) and RCTCBC's Local Development Plan and Strategic Flood Consequences Assessment (SFCA). This measure will also support the LLFA's role as a consultee to the LPA on local flood risk for all planning applications. Aligning our Local Strategy with planning policy is essential to informing better development and infrastructure decisions, not locating people into high risk areas and avoiding the build up of future problems which will require difficult and expensive solutions to resolve. This measure will also support future developers, the public, and the LPA, by providing clarity about the type of development that will be permitted at a particular location, setting appropriate acceptability

	criteria for surface water flooding consequences and encouraging transparency and consistency for development management across RCT.
Benefits	• Assist the LPA to make clear decisions based upon the best available evidence. • Reducing the number of people living in high and medium flood risk areas. • Ensure new development does not increase local flood risk elsewhere. • Provide effective planning advice and guidance on local flood risk and consequences to reduce inappropriate development in areas at risk of flooding. • Identify opportunities to reduce the causes and impacts of flooding. • Ensure development is appropriately flood resilient and resistant.
Status	Statutory Requirement
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective B and D Measure 17
Related Local Strategy Objectives	Objective 1, 2, 3, 4, 9 and 12
Funding Option(s)	Revenue
Delivery Partners	Local Planning Authority
Link to Other Council Plans	RCT's Climate Change Strategy RCT's Local Development Plan

Measure 2	**SuDS Approval Body**
Description	Schedule 3 of the FWMA 2010 assigns RCTCBC the role of Sustainable Drainage Systems (SuDS) Approval Body (SAB). The legislation gives statutory responsibility to the SAB for: • Assessing and approving the drainage design for all construction work which has drainage implications; • Regulating the design and construction of works that have drainage implications via enforcement powers; and • Adoption and maintenance of SuDS schemes which meets the requirements for approval. The SAB may voluntarily adopt a SuDS system where it is not under a statutory duty to do so. For example, this may include existing SuDS which may not have been built to the statutory SuDS Standards,

	schemes serving developments which are exempt from adoption under the transitional arrangements or SuDS serving a single property. In addition to these statutory functions, the SAB also provides discretionary services to provide pre-application advice to developers in advance of formal applications being made. The purpose of the above functions and services provided by the SAB is to ensure construction work with drainage implications will adhere to the statutory SuDS Standards which will promote appropriate FRM principles in terms of reducing surface water flood risk from new development, promote the use of green infrastructure, improve water quality, and provide wider amenity and biodiversity benefits. RCTCBC as the SAB will continue to carry out its statutory functions and enhance its discretionary services to support the promotion of good quality SuDS and the associated wider benefits in RCT.
Benefits	• SuDS are designed to manage rainfall at source, thereby reducing runoff rates and the risk of flooding on site and downstream. • Ensure new development does not increase local flood risk elsewhere. • Encourage water re-use and treat rainfall as a valuable natural resource. • Encourage natural groundwater recharge. • Minimise potential pollution risk posed by the surface water runoff emanating from a development site. • Enhancement of amenity, environmental and aesthetic value of open spaces. • SuDS promote an innovative low carbon society which takes into account the likely future pressures of flood risk the environment and water resources such as climate change and urban creep. • Voluntary adoption provides the opportunity for SuDS to be brought into public maintenance which supports the promotion of ensuring good quality and well-maintained SuDS. • Pre-application services help ensure the applicant is fully aware of requirements at the outset, thereby limiting delays to approval and reducing cost in the long term.
Status	Statutory Requirement
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective B and C Measure 16

Related Local Strategy Objectives	Objective 1, 2, 3, 4, 5, 6, 7, 9 and 12
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	RCTCBC's Climate Change Strategy RCTCBC's Local Development Plan

7.3. Flood Awareness, Preparedness and Response

A greater number of people are increasingly aware of flood risk in their local area as a result of more frequent and extreme flood impacts occurring at a community level in RCT over the past few years. With increasing threats of flooding linked with climate change and increased development it is important that communities are well informed and prepared.

Improved communication of flood risk can foster understanding, raise awareness and build preparedness within communities so that they are resilient to the impacts of flooding.

Measure 3	Communications
Description	Improving our understanding and communication of risk is identified as 1 of 5 objectives of the National Strategy and has been embedded in RCTCBC's Local Strategy as a key objective with associated deliverable measures and actions. RCTCBC will establish and deliver a set of planned actions and methods aimed at effectively communicating key information about flood risk to raise awareness, foster understanding, promote engagement, and build preparedness within communities to prepare for and manage the impacts of flooding. Effective flood risk communication requires collaboration and coordination among stakeholders, effective risk assessment and planning, and the development and dissemination of clear and concise messages to the public. RCTCBC will strengthen its role in supporting the communities of RCT through improving access to information via awareness-raising activities and digital improvements. This will ensure the sharing of key information, best practice and available support to foster greater understanding of flood risk and build resilience to the impacts of flooding.
Benefits	• Helps raise awareness of flood risk amongst communities in RCT. • Build resilience within the community through the sharing of information and best practice will improve their ability to prepare, respond and recover from the impacts of future flood events.

	• Improve the public's understanding of the roles and responsibilities of RMAs and non RMAs to manage flood risk, together with the support capabilities and resources available. • Individuals and communities will be provided with the knowledge, resources and capabilities to make informed decisions and take proactive action to prepare for and respond to the impacts of flooding. • Providing support and information that is easily accessible fosters behavioural change in individuals and communities around accepting and managing their flood risk.
Status	Best Practice
Indicative Timescale	Short - Medium Term
Indicative Cost	Existing Resources
Link to National Strategy	Objective A, B, D and E
Related Local Strategy Objectives	Objectives 1, 2, 3, 4, 9, 10, 11 and 12
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	RCTCBC's Corporate Plan RCTCBC's Climate Change Strategy

Measure 4	**Warning and Informing**
Description	The Council has a duty under the Civil Contingencies Act (2004), as a Category 1 responder, to warn and inform its residents of the risks and implications of those risks before, during and after any incidents. Warning and informing aims to provide timely and accurate information to the public and relevant stakeholders regarding flood risk, impending flood events, and the appropriate actions to take. Responders have developed several different tools for their own use and for the public in preparing for and dealing with flood events. These include Flood Guidance Statements produced by the Flood Forecasting Centre, National Severe Weather Warnings and Hazard Manager, provided by the Met Office and flood mapping, warning and informing services provided by NRW. NRW are responsible for providing early warning information for main river flooding and helping inform RMAs and the public through their forecasting, warning and mapping activities.

	RCTCBC support NRW's programmed work to improve and maintain their flood forecasting, warning and informing services, and the LLFA will ensure available warning and informing services are communicated and well understood amongst the public. This will enable both RCTCBC and the public to take more effective action in response to flooding. RCTCBC's network of telemetry sensors have also been introduced to provide early warnings of potential blockages to drainage infrastructure such as culvert inlets. This has provided RCTCBC with the ability to mobilise resources rapidly and effectively to reduce the risk of flooding caused by blockages. Warning and informing is not a standalone function, and it will be included within several measures relating to emergency response planning, raising awareness and improving communication of flood risk.
Benefits	• Ensure that individuals are promptly informed about potential flooding, allowing them to take appropriate actions to protect themselves, their families, and their property. • Providing clear and accessible information to the public of the available early warning services will contribute to reducing the potential impacts of flooding and enhancing community resilience. • Enhancing RCTCBC's early warning notification system via its telemetry network will improve the Council's response functions in managing the risk of asset blockages.
Status	Statutory Requirement
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective A, B, D and E Measure 12
Related Objectives	Objective 1, 2, 3, 4, 8, 9, 10, 11 and 12
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	N/A

Measure 5	**Emergency Response Plans**
Description	Under the Civil Contingencies Act 2004, RCTCBC has a lead role in emergency planning and recovery after a flood event and must establish and maintain plans to respond to emergencies, and control or reduce the impact of an emergency.

	RCTCBC will continue to enhance its emergency response plan and procedures to extreme weather events to provide a comprehensive response to meet the communities' needs. Events such as the flooding caused by Storm Dennis in February 2020 have enabled RCTCBC to feed in lessons learnt into the evolution of our emergency response plan and procedures, for example, strengthening community awareness and support by providing practical information on what to do before, during and after a flood. Funding was given by Welsh Government to the lead local authority (Merthyr Tydfil) for development of an offsite multi-agency response plan for the 4 high risk reservoirs based in Powys and Merthyr Tydfil (Ponsticill, Llwyn Onn, Beacons, Cantref) that have the potential to impact on South Wales LRF Local Authority Areas. Emergency response plans can help communities become better prepared and more resilient to future flood events. This involves effective communication from RCTCBC to promote actions such as personal flood plans, developing evacuation plans, and implementing resilience measures to minimise the impacts of flooding to properties. RCTCBC will also work alongside the South Wales Local Resilience Forum (LRF) in multi-agency planning for severe weather emergencies to share information and co-operate with other local responders, including NRW, DCWW and the emergency services, to enhance co-ordination and ensure all are best prepared to respond to flooding. This measure also concerns the development of an offsite multi-agency flood plan for the 4 high risk reservoirs based in Powys and Merthyr Tydfil (Pontsticill, Llwyn Onn, Beacons, Cartref) that have the potential to impact on South Wales LRF Local Authority areas.
Benefits	• Help communities become better prepared and more resilient to future flood events. • Sets clear actions and defines responsibilities of local responding agencies. • Well-designed emergency response plans can reduce the impact of flooding by making the response and recovery to a flood event more effective and efficient. • Enable a coordinated response effort, ensuring the safety and well-being of individuals.
Status	Statutory Requirement

Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective A, B and E
Related Local Strategy Objectives	Objectives 1, 2, 3, 9, 10, 11 and 12
Funding Option(s)	Revenue
Delivery Partners	Category 1 & 2 Responders under the Civil Contingencies Act 2004
Link to Other Council Plans	N/A

Measure 6	**Community Adaptation & Resilience**
Description	We cannot remove all risk, therefore ensuring our communities are well-prepared and adaptable will increase its resilience to the impacts of flooding. Community adaptation and resilience are complimentary functions. Community adaptation is about adjusting to the reality of flooding and taking action to manage the risks. A resilient community is well prepared for a flood and knows what action to take to reduce the potential impacts and damages caused. There can be physical and psychological impacts from a flood event, therefore RCTCBC support action to improve the resilience of communities so they are prepared to respond more effectively and recover quickly. This includes but is not limited to the preparation of community flood plans and outreach work with residents, businesses, and schools to raise awareness and preparedness. The use of property-level flood resistance and resilience (PFR) techniques will also be promoted by the Authority to improve a communities' ability to adapt and become resilient to the impacts of flooding. PFR measures can help to prevent flood water ingress into properties and aid the recovery response following a flood. Information on PFR will be made available on RCT's flood risk webpage and initial awareness campaigns will be targeted at areas identified as being at high risk of surface water flooding to encourage property owners to install/deploy PFR measures.

	Improving community adaptability and resilience to flooding across RCT will be achieved and supported by the actions relating to emergency response planning, raising awareness and improving communication.
Benefits	• The installation of PFR measures can reduce the risk of surface water ingress into properties and minimise potential damages caused. • Actions to improve community adaptation and resilience can improve the social and mental well-being of those at risk. • Aim to generate a culture of personal and community responsibility for their own management of risk. • Awareness raising campaigns and ensuring accessible support and information enables behavioural change within a community to accept and manage risk.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective A and B
Related Local Strategy Objectives	Objective 1, 2, 3, 9, 10, 11 and 12
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	RCTCBC's Climate Change Strategy

Measure 7	**Partnership Working**
Description	Partnership working aims to foster collaboration and co-operation among relevant stakeholders to help manage the risk of flooding. RCTCBC will endeavour to co-operate with other risk management authorities and stakeholders on new functions and potential future projects that are products of the Local Strategy. RCTCBC will also ensure that risk is engaged in a co-ordinated way beyond authority boundaries, for example across catchments, with LLFAs and other RMAs and organisations working together collectively to deliver the greatest benefit(s). The South East Wales Flood Risk Management Group (SEWFRMG) has been established to facilitate best practice, consistency in

	interpretation and collaborative working. RCTCBC will continue to actively participate and share best practice in the SEWFRMG. Partnership funding will also be explored and encouraged to attract and secure further investment in FAS for RCT, aiming to reduce local flood risk while also delivering wider benefits to communities.
Benefits	• Partnership working avoids duplication of effort and investment amongst RMAs. • Enables a better understanding of regional and local risks and the actions required to manage them. • Improving collaboration and co-operation will strengthen relationship between RMAs and organisations. • Increased opportunities to deliver innovative solutions and multiple benefits for communities.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective C and D Measure 24
Related Local Strategy Objectives	Objective 11 and 12
Funding Option(s)	Revenue
Delivery Partners	Other RMAs
Link to Other Council Plans	N/A

Measure 8	**Public Engagement & Consultation**
Description	Raising community awareness and engaging with local communities will enable RCTCBC to set realistic expectations and achievable outcomes for local flood risk management. RCTCBC will explore opportunities to raise awareness and involve residents, schools, landowners and local businesses in decisions which will affect their community. Raising awareness and community engagement can improve the mental health of those at risk and ultimately aims to prevent loss of life. RCTCBC will proactively inform those that are at risk of local flooding and advise them on what steps to take.

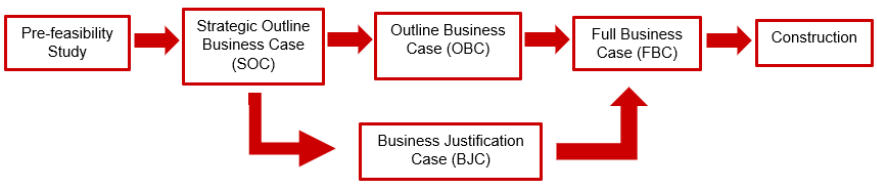
	This measure will be supported and achieved by the actions relating to raising awareness, improving communication, and enhancing community adaptation and resilience.
Benefits	• Public engagement of the risk of flooding will encourage people to be more pro-active at community level. • By engaging with communities, they will achieve a clearer understanding of flooding, as well as the work RCTCBC to help manage the risk of flooding and be best placed to take action to manage their personal risk. • Raising awareness of the work RCTCBC do to help manage the risk of flooding will ensure communities are kept informed of the decisions that affect them.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective A, B, D and E
Related Local Strategy Objectives	Objective 1, 2, 3, 9, 10, 11 and 12
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	RCTCBC's Climate Change Strategy

7.4. STUDIES, PLANS AND ASSESSMENTS

The production and development of flood risk related studies, assessments and plans is key to managing flood risk strategically. They foster good practice which can help to provide much better outcomes for communities.

Measure 9	Investigation of Flooding Incidents
Description	RCTCBC as the LLFA has a duty to investigate all flooding within its area, in so far as it is considered necessary or appropriate. RCTCBC will record and investigate all flooding incidents and subsequently produce a flood investigation report identifying the causes and mechanisms of flooding. A flood investigation report will be progressed into Section 19 reporting following the thresholds set out by the Welsh Government within the National Strategy. Current guidance stipulate that Section 19 reports should be produced for flooding incidents where twenty or more receptors (residential and commercial) in one area experience internal flooding following a storm event. The Section 19 report is a statutory requirement of the FWMA 2010. The investigation must identify which risk management authorities have relevant flood risk management functions and whether they have exercised those functions appropriately in response to the incident. The results of the investigation must subsequently be published, and any relevant risk management authorities notified.
Benefits	• Enable a greater understanding of flood risk in RCT. • A higher standard of available flood event data can be utilised in subsequent studies and assessments. • Utilise Section 19 reports as part of local evidence in support of business cases for future investment, where appropriate.
Status	Statutory Requirement
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective A, C and E Measure 21
Related Local Strategy Objective	Objective 8, 9, 11 and 13
Funding Option(s)	Revenue

Delivery Partners	Other RMAs
Link to Other Council Plans	N/A

Measure 10	Flood Alleviation Scheme Business Case Development
Description	There is a need for a compelling and longer-term programme of investment across RCT to ensure our assets/defences remain fit for purpose and to accelerate the delivery of new Flood Alleviation Schemes (FAS) where required. Welsh Government's National Strategy provides direction on how FCERM investment is prioritised, which is supported by new FCERM Business Case Guidance. The new FCERM Business Case Guidance encourage inclusion of wider wellbeing benefits in business cases for FAS, in addition to promoting the use of Natural Flood Management (NFM) in developing options for FAS. RCTCBC will establish, maintain and deliver a long-term capital pipeline of FAS schemes in accordance with Welsh Government's FCERM Business Case Guidance. This includes the development of the following processes: - Pre-Feasibility Studies - Strategic Outline Business Case (SOC) - Business Justification Case (BJC) / Outline Business Case (OBC) - Full Business Case (FBC) The Business Case development processes, from pre-feasibility study towards construction, is illustrated in Figure 10 below. Further definitions of each stage process can be found in Appendix D: Glossary/Definitions.  **Figure 10**: Business Case Development processes as per the Welsh Government FCERM Business Case Guidance

	Effective forward planning and programme delivery of FAS in RCT is key to address increasing local flood risk. Not only does it represent a renewed strategic approach to delivering FAS in RCT, but it also accelerates delivery of FAS, and building RCT's resilience to climate change with a stronger pipeline of future projects.
Benefits	• The delivery of FAS and asset improvements in RCT will be accelerated. • The investment in potential FAS can be effectively prioritised utilising a risk-based approach to the most at risk communities. • A longer investment programme will help to evidence future FCERM funding requirements. • The appraisal of FAS will consider wider wellbeing benefits, which is inclusive of economic, social and environmental improvements.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Low - Medium
Link to National Strategy	Objective A, B, C and D Measure 15 and 22
Related Local Strategy Objective	Objective 1, 2, 3, 4, 5, 6, 7, 10, 11, 12 and 13
Funding Option(s)	Revenue (WG funding) Capital (WG funding) Potential External funding
Delivery Partners	Other RMAs, private landowners
Link to Other Council Plans	N/A

Measure 11	**Strategic Flood Risk Area Management**
Description	A priority of the National Strategy is to promote wider catchment approaches to managing flood risk. The development of Strategic Flood Risk Areas (SFRAs) in RCT (previously described in Section 2) utilises a catchment based approach for assessing local flood risk in RCT which seeks to provide a more holistic and integrated approach to managing flood risk. The catchment approach:

	• Aims to look at a whole river catchment, or sub-catchment and identify areas that are at risk of local flooding and that have experienced flooding in recent events; • Provides an understanding of the sources and movement of flood waters through catchments, which has not been based on administrative boundaries.; • Will consider a range of flood risk management measures and options of varying size, scale and complexity that may be appropriate; and • Acknowledges that a number of authorities, agencies and communities need to come together to mitigate local flood risk. The catchment based approach can include activities such as: restoring or implementing natural features and processes, improving land management techniques, promotion of SuDS, enhancing drainage and sewer systems, and strengthening the resilience of our infrastructure and communities. RCTCBC as the LLFA will adopt a catchment based approach to assessing and managing the risk of flooding from local sources.
Benefits	• Increase our understanding of the probability and impact of flooding from local sources, gaining an understanding of those catchments and communities at greatest risk. • Adopting a catchment-based approach will encourage collaborative working between RMAs and other organisations in the sharing of ideas and liaising with communities. • Increase opportunities to achieve wider environmental and wellbeing benefits through better integrated water and flood management. • Catchment-based approached to managing flood risk may be more cost-effective than relying solely on structural defences. • Increase the opportunity for developing new sources of funding as well as pooling resources and expertise.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective A, B and C Measure 15 and 24
Related Local Strategy Objectives	Objective 1, 2, 3, 4, 5, 6, 7, 8, 11, 12 and 13

Funding Option(s)	Revenue
Delivery Partners	Other RMAs, private landowners
Link to Other Council Plans	RCT's Climate Change Strategy

Measure 12	Flood Risk & Hazard Methodology
Description	RCTCBC as the LLFA will develop a standardised methodology for assessing and mapping the flood risk and hazard to people and property which will be applied to all ordinary watercourse assets across RCT. The methodology will consider the risk (probability and consequences of a flood incident) and hazard (danger) from an asset, together will the vulnerability of the community at risk. The production of the Flood Risk Assessment Wales (FRAW) map and the Communities at Risk Register (CaRR), paired with local knowledge, will be utilised by RCTCBC to produce the flood risk and hazard methodology. The overarching aims of producing a flood risk and hazard methodology for assets is to improve our understanding of local flood risk across RCT and to promote strategic decision-making for prioritising flood risk management functions and schemes to those areas at greatest risk.
Benefits	• Improve RCTCBC's understanding of local flood risk and helps to identify areas at greatest risk. • Provides a methodology to identify significant assets which will assist RCTCBC in delivering its statutory function under Section 21 of the FWMA. • Flood mapping of significant assets will identify risk 'hot spots' and steer the development of risk management measures to those areas at greatest risk. • Enables tactical decision-making of resource allocation during extreme weather events.
Status	Best Practice
Indicative Timescale	Short Term
Indicative Cost	Existing resources
Link to National Strategy	Objective A, B, C, D and E Measure 5, 6 and 7

Related Local Strategy Objectives	Objective 1, 2, 3, 4, 8 and 13
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	N/A

Measure 13	**Flood Action Plan**
Description	The Flood Risk Regulations (2009) requires LLFAs to prepare and publish Flood Risk Management Plans (FRMPs) where the risk of flooding from local flood risk is identified as significant in the Preliminary Flood Risk Assessment (PFRA). FRMPs attempt to assess, map and develop action plans to manage flood risk. As previously stipulated in Section 1, whilst we previously published our Local Strategy and FRMP separately, this new Local Strategy integrates the two documents into one. As such, RCTCBC have prepared a Flood Action Plan (Appendix A: Flood Action Plan), replacing the former FRMP published in 2015, which set out RCTCBC's actions for managing flood risk within its administrative area in the short, medium and long term, ensuring delivery against the objectives and measures within this Local Strategy. The Flood Action Plan will consider a holistic approach to flood risk management and will not be solely reliant on traditional structural flood risk solutions but also include nature-based solutions and awareness raising activities. RCTCBC will update its Flood Action Plan every 2 years to reflect continued delivery against the objectives and measures in this Local Strategy.
Benefits	• By incorporating the Flood Action Plan into the Local Strategy, a holistic appreciation of wider, catchment scale, flooding issues will be embedded into the Local Strategy. • Synergies between the Local Strategy objectives and measures and those actions contained within the Flood Action Plan could be used to realise multiple benefits. • The biennial update to the Flood Action Plan allows the Council to reflect and be transparent with the public and other Risk Management Authorities of its continued delivery against the objectives and measures of the Local Strategy.

Status	Statutory Requirement
Indicative Timescale	Short term, to be updated every 2 years
Indicative Cost	Existing Resources
Link to National Strategy	Objective A, B, C and D Measure 5 and 22
Related Local Strategy Objectives	Objective 1, 2, 3, 4, 6, 12 and 13
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	N/A

7.5. LAND, CULTURAL AND ENVIRONMENTAL MANAGEMENT

As well as reducing the risks to people and property, flood risk management can bring significant economic, environmental and social benefits. It can enhance and protect the built, rural and natural environments, cultural heritage and biodiversity by preventing loss and damage to habitats and heritage assets, reducing the impact on water quality.

Working with other stakeholders and RMAs in the development of strategic, plans and schemes can also provide opportunities to deliver multiple benefits, including wider wellbeing and environmental outcomes.

Measure 14	Natural Flood Management
Description	A key priority of the National Strategy and our Local Strategy is to deliver more natural interventions and catchment approaches to help improve environmental, social and economic resilience, all while helping to reduce the risk of flooding. This includes working with natural processes and green infrastructure, collectively defined as Natural Flood Management (NFM). NFM is described as "reducing flood and coastal erosion risk by implementing measures that help to protect, restore and emulate the natural functions of catchments, floodplains, rivers and the coast". NFM can reduce water flows through the catchment and is most effective in larger catchment scale projects or when used in conjunction with more traditional interventions, acting to reduce and delay peak flows, also known as 'hybrid schemes'. Examples of NFM include interventions such as tree planting, offline storage areas, in-stream obstructions, soil and land management and using Sustainable Drainage Systems (SuDS). Promoting the delivery and retrofitting of green infrastructure also forms part of the Authority's contribution to working with natural processes to reduce flood risk. RCTCBC proposed to undertake further assessments of the viability of implementing NFM as a means of reducing flood risk in RCT. Where feasible, RCTCBC proposes to use NFM ahead of structural measures when undertaking business case development for FAS. By working with natural processes and identifying opportunities for Natural Flood Management to reduce flood risk, the LLFA are

	contributing to the well-being goals through the Sustainable Management of Natural Resources, maintaining and enhancing biodiversity including wetland and other habitats and delivering our Natural Resources Policy.
Benefits	• Greater understanding of the benefits of NFM and where NFM can be used within RCT • Implementation of NFM would offer a 'sustainable' flood risk management solution, particularly when compared to structural measures. • NFM can provide wider benefits such as carbon storage, recreation, biodiversity improvements and social wellbeing. • The use of NFM demonstrate delivery against the Well-being for Future Generations (Wales) Act, and duties under the Environment Wales Act. • Potential for greater engagement of land use owners and other stakeholders in local flood risk management and the ability to work collaboratively with other RMAs.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Low - Medium
Link to National Strategy	Objective A, B and C Measure 13, 14 and 15
Related Local Strategy Objectives	Objective 1, 2, 3, 4, 5, 6, 7, 8 and 12
Funding Option(s)	Revenue (WG funding) Capital (WG funding) Potential External funding
Delivery Partners	Other RMAs, private landowners
Link to Other Council Plans	RCT's Climate Change Strategy RCT's Local Development Plan RCT Local Nature Partnership - 'Action for Nature' Plan RCT's Tree Strategy RCT's Air Quality Plans

Measure 15	**Environmental Enhancement & Habitat Creation**
Description	Implementing the measures contained in the Strategy affords significant opportunity to enhance the wider environment of RCT such as enhancing biodiversity and habitats in accordance with the RCT Local

	Nature Partnership - 'Action for Nature' Plan, improving water quality and mitigating the impacts of climate change.
Benefits	• Maintain, or where possible, enhance biodiversity and habitat creation in accordance with RCT's 'Action for Nature' Plan. • Protect and enhance the water environment. • Provide opportunities to improve human health. • Protect and enhance land quality. • Mitigate the impacts of climate change.
Status	Best Practice
Indicative Timescale	Medium – Long Term
Indicative Cost	Existing Resource
Link to National Strategy	Objective B
Related Local Strategy Objective	Objective 5, 6, 7 and 12
Funding Option(s)	Revenue Capital (WG funding) Potential External funding
Delivery Partners	Other RMAs, private landowners
Link to Other Council Plans	RCT's Climate Change Strategy RCT Local Nature Partnership - 'Action for Nature' Plan RCT's Tree Strategy

Measure 16	**Risk Management Authority Coordination**
Description	Other RMAs including NRW and DCWW are required under the relevant legislation and best practice to produce strategic management plans. These include NRW's production of River Basin Management Plans (RBMPs) under the Water Framework Directive (WFD), DCWW's Water Resource Management Plan (WRMP) under the Water Industry Act 1991 and DCWW's Drainage and Wastewater Management Plan as the water and sewerage treatment company serving RCT. NRW's production of Forest Resource Plans also forms part of RMA best practice that has the potential to incur wider flood risk and environmental benefits. RCTCBC will develop and deliver its Local Strategy and Action Plan in a way that aligns with the relevant plans produced by other RMAs with responsibilities for managing flood risk, so they are well co-ordinated

	during engagement and consultation activities, and the Flood Action Plan supports the delivery of wider environmental outcomes. Where applicable, RCTCBC will also contribute to the development of updated RMA strategies and plans through consultation and engagement opportunities.
Benefits	• Alignment of RCTCBC's Local Strategy and Action Plan with other plans and policies being developed by Welsh RMAs. • Promotes partnership working to jointly establish and deliver actions that aim to improve the flood and water environment in RCT. • The RMBP aims to deliver wider benefits to the environment and people which includes the delivery of flood risk management benefits. • Welsh Government guidance for developing WRMPs encourages the use of nature-based solutions to combat water resource risks. The delivery of nature-based solutions also aligns with the objectives and measures in our Local Strategy.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Existing Resource
Link to National Strategy	Objective A, B and C
Related Local Strategy Objectives	Objective 5, 11 and 12
Funding Option(s)	Revenue
Delivery Partners	Other RMAs
Link to Other Council Plans	RCTCBC's Climate Change Strategy RCT Local Nature Partnership - 'Action for Nature' Plan RCT's Tree Strategy

7.6. Asset Management and Maintenance

The management and maintenance of assets including culverts and road gullies is key to maintaining the existing standard of protection against flooding.

This Local Strategy recognises the need take a more strategic approach to managing our assets through the development of asset registers and asset management plans, in addition to encouraging and regulating the maintenance of private and public assets to sustain resilience.

Measure 17	Spatially Mapping Drainage Assets
Description	There is an estimated 708.7km of culverted watercourse and 1,442 km of highway drainage infrastructure within RCT. RCTCBC as the Highway Authority have enhanced their Drainage Maintenance teams, a Cynon, Rhondda and Taf team, to identify and maintain highway, surface water and ordinary watercourse drainage assets (under remit of the Highway Authority) and assess their structural and operational condition via surveying operations. RCTCBC as the LLFA may also assess the structural and operational condition of drainage networks via their permissive powers bestowed upon them via the Land Drainage Act 1991 and as part of their duty to investigate flooding under the FWMA 2010. This has enabled RCTCBC to enhance our asset information whilst also improving the way we record and store asset information. RCTCBC will digitise all surveyed asset information to spatially map the network of drainage assets within catchments and sub-catchments. This will enable the LLFA and the Highway Authority to enhance our understanding of how drainage systems within the catchment operate, whilst also enabling the identification of asset ownership which will inform the development of catchment management plans and maintenance operations, and where feasible, advise on carrying out repairs. Spatially mapping drainage assets will facilitate the successful delivery of catchment asset management plans and the LLFA's duty under Section 21 of the FWMA.
Benefits	• Improve the LLFA's understanding and awareness of asset location and condition which will facilitate the assessment of risk associated to an asset.

	• Assist the Highway Authority in developing a targeted cleansing regime of highway drainage assets. • Spatially mapping assets will enable asset ownership to be identified which will assist in the production of asset management plans.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Existing Resource
Link to National Strategy	Objective A, B, C, D and E Measure 5, 6 and 7
Related Local Strategy Objectives	Objective 1, 2, 3, 4 and 8
Funding Option(s)	Revenue (WG funding)
Delivery Partners	RCT Highway Authority
Link to Other Council Plans	N/A

Measure 18	**Catchment Asset Management Plans**
Description	RCTCBC, in its role as the LLFA, now operates a single flood risk asset management system where data on a variety of assets, including highway drainage assets and culverts, is stored. By maintaining and enhancing the Authority's asset management system, the LLFA will develop asset management plans utilising a catchment-based approach which looks at drainage systems as a whole and considers asset ownership. An asset management plan is a tactical plan for managing RCTCBC's infrastructure, as well as other assets, to deliver an agreed standard of service. Its purpose is to inform the Authority's commitment to best practice asset management and enable strategic investment for asset repair works. The effective functioning of existing assets, particularly those of importance to flood risk, can be critical to community resilience from the impacts of flooding. RCTCBC will review asset ownership and establish catchment asset management plans appropriate to its flood risk. Where these assets are RCTCBC's, asset management plans for inspection and maintenance will be produced.

	Further asset management plans will also be implemented for third party structures where there is a requirement to inspect. RCTCBC do not routinely maintain any private assets as we have no legal duty to do so however RCTCBC will look to enhance its communication of riparian rights and responsibilities and provide advice on the duties of private landowners.
Benefits	• Maintenance regimes will be able to take into account assets important for managing flood risk, particularly in high risk areas. • Greater awareness of critical flood risk infrastructure within RCT and the implementation of a co-ordinated regime of inspection and maintenance. • Improving the management of data surrounding assets and structures can allow RCTCBC to react to flood warnings more effectively and direct resource to where they are needed most. • Improving the awareness of riparian owners' roles and responsibilities to maintain their assets to reduce the risk of flooding. • Facilitate the development of a long-term programme of repair and restoration works to our existing assets and drainage networks.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Existing Resource
Link to National Strategy	Objective A, B, C, D and E Measure 5, 6 and 7
Related Local Strategy Objectives	Objective 1, 2, 3, 4 and 8
Funding Option(s)	Revenue
Delivery Partners	RCT's Highway Authority
Link to Other Council Plans	N/A

Measure 19	**Asset Register and Records**
Description	RCTCBC is required to keep both asset registers (for public use) and asset records (for use by RMAs) for structures and features which are considered to have a significant effect on flood risk, as required under Section 21 of the FWMA 2010.

	Assets can be public or private assets however inclusion on the Asset Register and Record alone does not afford an asset any increased maintenance provision. Private assets, even those on the Council's Asset Register and Record, will remain the maintenance responsibility of the private landowner. There is no formal definition of when an asset has a 'significant effect' but will largely be determined on the flood history of the site and the vulnerability of any infrastructure likely to be affected by a failure of an asset. The flood risk and hazard methodology described in Measure 12 will produce thresholds for RCTCBC to determine whether an asset is 'Significant'. RCTCBC proposes to be pro-active in the recording of flood risk assets, using the mechanisms of OWC, investigation of flooding incidents, the Planning Application process, enforcement activities and its role as the SAB to expand its asset record. The flood risk asset register will continue to be developed on the asset management system and populated as assets are identified.
Benefits	• Confusion over ownership of flood risk assets is reduced. • Develop informed maintenance regimes which will be able to take into account assets important for managing flood risk, particularly in high risk area. • RCTCBC will be able to establish where all assets are, allowing for quicker identification of the responsible authority in flooding incidences. • RCTCBC would be able to produce/refine their own asset maintenance schedule in addition to providing guidance to riparian owners as to how they should maintain their assets.
Status	Statutory Requirement
Indicative Timescale	Recurring
Indicative Cost	Existing Resource
Link to National Strategy	Objective A, B, C, D and E Measure 5, 6 and 7
Related Local Strategy Objectives	Objective 1, 2, 3, 4 and 8
Funding Option(s)	Revenue
Delivery Partners	N/A

Link to Other Council Plans	N/A

Measure 20	Designation of Structures
Description	The FWMA 2010 makes RCTCBC the 'Designating Authority' with the power to designate a structure (either man-made or a natural feature of the environment in private ownership) if RCTCBC believes the structure or features affects flood risk. A person may then not alter, remove or replace the designated structure or features without the permission of RCTCBC. Walls, earth embankments, attenuation ponds and isolated pieces of naturally high ground can all be designated features. The LLFA is able to take enforcement action against a person who does alter, remove or replace a designated feature without prior consent. The powers to designate are permissive which means that there is not a mandatory duty to use them however the LLFA will look to identify opportunities to designate structures where there are flood risk concerns.
Benefits	• Overcomes the risk of a person damaging or removing a structure or features on private land which is relied upon for flood risk management. • Ensures that records of significant flood risk structures/features are formally recorded and monitored. • Designated structures or features will be registered in the Local Land Charged Register.
Status	Permissive Power
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective D
Related Local Strategy Objectives	Objective 1, 2, 3 and 4
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	N/A

Measure 21	Land Drainage Consenting & Byelaws
Description	Under Section 23 of the Land Drainage Act 1991, consent is required from RCTCBC as LLFA to build a culvert or structure or carry out works within the banks of any ordinary watercourse which may alter or impede the flow of water, regardless of whether the watercourse is culverted or not. RCTCBC as LLFA has responsibilities to maintain ordinary watercourses and land drainage system where it is the riparian owner. RCTCBC intend, in general, to oppose any culverting/obstruction of watercourses because of adverse ecological, flood risk and other effects that are likely to arise. Wherever practical, RCTCBC will also seek to have culverted watercourses restored to open channels. Also contained within the Land Drainage Act are the various permissive legal powers that permit the Land Drainage Authority to undertake the operation, maintenance and improvement of any watercourse in its area. To assist the Land Drainage Authority in undertaking these roles, RCTCBC have called upon their ability, under Section 66 of the LDA, to create and enact the Land Drainage Byelaws that control all activities within 8 metres of a watercourses (Byelaws distance) for the purpose of reducing the risk of flooding, or mitigating any damage caused by flooding. The LLFA may permit certain works or structures to be erected or undertaken within the Byelaws distance, however a formal consenting system must be followed. Riparian owners, utility companies and developers must obtain Land Drainage Consent from RCTCBC before any work commences. A policy approach will be developed to support the application of ordinary watercourse consenting powers, in addition to Byelaw consenting powers.
Benefits	• Prohibiting the culverting of watercourses will mitigate against the detrimental environmental impact caused by culverting, e.g., removal of species and watercourse features such as pools, riffles, graven, cobble, sand, silt, marginal/aquatic vegetation, earth banks with associated vegetation, invertebrate communities and fish. • Decrease the likelihood of blockages - compared with an open watercourse, there is an increased risk of blockage once a culvert is installed. If the blockage is within the culvert, there is much greater difficulty in removing it.

	• Decrease the impact of flooding – having a non-culvert policy will reduce the effect of overland flooding that will occur when a culvert cannot cope with all the flow reaching it. • Increase floodwater storage – open watercourses generally provide more storage capacity than a culvert. • Increase the ease of providing drainage connections – drainage can be provided more easily within open watercourses into which drain connections can readily be made and the performance of the drainage system visually monitored. • Reduction of health and safety hazards – culverts are perceived to be more dangerous than open watercourses. • Improve/maintain recharge to groundwater – culverting created an impermeable bed to a watercourse and increases the speed of flow, so reducing recharge of groundwater. • The powers provided by the Byelaws provide a general level of protection for members of the public from watercourses not in RCTCBC ownership.
Status	Statutory Requirement
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective B and D
Related Local Strategy Objectives	Objective 1, 2, 3, 4, 5, 6, 7, 9 and 11
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	RCTCBC's Climate Change Strategy RCT Local Nature Partnership - 'Action for Nature' Plan

Measure 22	**Land Drainage Enforcement**
Description	Land drainage and ordinary watercourse enforcement can be used to ensure the proper flow of water in a watercourse and over the floodplain, the control of water levels and the security of existing assets. To achieve these aims, enforcement action can be used to rectify unlawful and damaging work, using a risk-based approach.

	RCTCBC has powers under sections 24 and 25 of the LDA to enforce riparian owners to maintain the proper flow of ordinary watercourses in RCT. The Land Drainage Byelaws also create criminal offences that can be prosecuted if contravened or failure to comply. RCTCBC may serve notice under Section 66 (6) of the LDA, requiring any contravention or non-compliance of the proposed byelaws to be remedied within a period not exceeding 28 days. If the breach was not remedied within the specified time scale, the Council could use Section 66 (7) of the Land Drainage Act 1991 to undertake the necessary works and recharge the costs of such works to the offender. There is a statutory right to appeal an enforcement decision made by the Lead Local Flood Authority to an independent arbitrator. Despite the formal legal enforcement powers available, RCTCBC prefers in the first instance to work with landowners and developers to resolve issues on an informal basis. Formal enforcement action will only be considered as a last resort. When completing enforcement, RCTCBC's key objectives are to manage flood risk and bring unauthorised activity under control. Consideration will also be given to protecting the local environment and amenity.
Benefits	• The powers help RCTCBC to better manage and control activities which otherwise would increase the risk of flooding. • Allows for the implementation of specific measures and constraints which will assist RCTCBC in implementing elements of the Flood Action Plan. • The Authority's enforcement powers act as a deterrent, reducing pressure on RCTCBC linked with enforcement.
Status	Permissive Power
Indicative Timescale	Recurring
Indicative Cost	Existing Resources Legal Advice – Low - Medium
Link to National Strategy	Objective B and D
Related Local Strategy Objectives	Objective 1, 2, 3, 4, 5, 6, 7, 9 and 11
Funding Option(s)	Revenue

Delivery Partners	N/A
Link to Other Council Plans	N/A

Measure 23	SuDS Approval Body Enforcement
Description	Schedule 3 of the FWMA 2010 relate to provisions for sustainable drainage (SuDS). These include the establishment of a SuDS Approving Body (SAB). As part of the Schedule 3 provisions, a SAB enforcement and appeals regime has been established. One of the main functions of the SAB is to regulate the design and construction of works that have drainage implications. Where construction work takes place without Sustainable Drainage Approval being granted or in a way that is not in accordance with SAB approval, the SAB can utilise its regulatory enforcement powers to rectify the breaches of approval. Through the commencement of the Sustainable Drainage (Enforcement) (Wales) Order 2018, the SAB is provided a range of enforcement powers which include: • Enforcement notice • Stop notices • Temporary stop notices • Powers of entry • Powers to undertake and charge for remedial work In the event that the notice is not complied with, the SAB may launch legal proceedings.
Benefits	• The regulatory enforcement powers help the SAB to rectify breaches of approval and better control activities which otherwise would increase the risk of flooding.
Status	Permissive Powers
Indicative Timescale	Recurring
Indicative Cost	Existing Resources Legal Advice – Low - Medium
Link to National Strategy	Objective B and D
Related Local Strategy Objectives	Objective 1, 2, 3, 4, 5, 6, 7, 9 and 11
Funding Option(s)	Revenue

Delivery Partners	N/A
Link to Other Council Plans	RCT's Climate Change Strategy

Measure 24	Construction of Flood Alleviation Schemes
Description	The requirements for capital flood alleviation works will be identified initially through the Flood Action Plan and range from the outputs of Measure 11. The technical and economic feasibility of such projects will subsequently be assessed via the business case development process and current Welsh Government guidance. The construction of FAS will compliment other, less tangible schemes such as community engagement projects and awareness raising activities.
Benefits	• The identification of potential capital FAS via the business case development process will place constructing capital works within the context of RCTCBC's wider flood risk management measures.
Status	Best Practice
Indicative Timescale	Short - Long
Indicative Cost	Medium – Very High
Link to National Strategy	Objective B, C and D
Related Local Strategy Objectives	Objective 1, 2, 3, 4, 6, 10, 11, 12 and 13
Funding Option(s)	Revenue Capital (WG funding) Potential External funding
Delivery Partners	Other RMAs, private landowners
Link to Other Council Plans	N/A

Measure 25	Powers of entry upon land
Description	Officers of RCTCBC have the legal power to enter any land for the purposes of carrying out their function under the LDA and to survey any land and inspect the condition of drainage work on it, as per Section 14 and 64 of the LDA.

	Officers may only enter land at reasonable times and must first produce, if so required, a document showing their authority. Except in the case of emergency, admission to land should not be demanded as of right unless notice of the intended entry has been given to the occupier. Any person who intentionally obstructs or impedes an authorised Officer is guilty of an offence and could be liable to a fine.
Benefits	• Enables routine inspection and maintenance of, and improvements to, ordinary watercourses and flood risk management structures
Status	Permissive Power
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective D
Related Local Strategy Objectives	Objective 1, 2, 3 and 4
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	N/A

Measure 26	**Powers to request information and civil sanctions**
Description	Section 13 and 14 of the FWMA 2010 provides RCTCBC with the power to request information from third parties to provide information in connection with RCTCBC's flood risk management functions. Failure to provide such information to the Authority may result in a financial penalty.
Benefits	• RCTCBC has the ability to ensure that it has all relevant information from third parties such that it can build and maintain its register of structures/features which are likely to have a significant effect on flood risk. • RCTCBC has the ability to request relevant information for the purpose of producing formal flood investigations as per Section 19 of the FWMA.
Status	Permissive Power
Indicative Timescale	Recurring
Indicative Cost	Existing Resources

Link to National Strategy	Objective A, B, C, D and E Measure 5 and 6
Related Local Strategy Objectives	Objective 1, 2, 3, 4, 8 and 11
Funding Option(s)	Revenue
Delivery Partners	Other RMAs
Link to Other Council Plans	N/A

Measure 27	**Cause incidental flooding for purpose of flood risk management**
Description	RCTCBC has powers to manage flooding and water levels in the interests of wider flood risk management, nature conservation, the preservation of cultural heritage or people's enjoyment of the environment or of cultural heritage. The use of this option will be explored in more detail via the Flood Action Plan.
Benefits	• Measure provides a potential additional flood risk management option and method of co-ordinating a flood risk management measure with potential environmental enhancements.
Status	Permissive Power
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective B and D
Related Local Strategy Objectives	Objective 1, 2, 3, 4 and 6
Funding Option(s)	Revenue Potential External Funding
Delivery Partners	N/A
Link to Other Council Plans	N/A

Measure 28	**Enforcement on Private Surface Water Sewers**
Description	RCTCBC has power under the Public Health Act to undertake enforcement duties on private surface water sewers.
Benefits	• The powers, as required, provide a general level of protection for members of the public from assets not in the ownership of RCTCBC.
Status	Permissive Power

Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective D
Related Local Strategy Objectives	Objective 1, 2, 3 and 4
Funding Option(s)	Revenue
Delivery Partners	Public Health
Link to Other Council Plans	N/A

7.7. MONITORING

Monitoring of the local flood risk issue, the delivery of wider environmental benefits and the reduction in flood risk to people and properties that may derive from flood risk management functions can enhance RCTCBC's understanding of local flood risk.

Measure 29	Monitoring the Reduction of Risk to People and Property
Description	Quantifying the reduction in local flood risk as a result of FAS development will assist the LLFA's ability to measure progress of its delivery against the Local Strategy objectives, measures and actions, particularly the benefits to people and property. Assessing the reduction in local flood risk to people and properties will also provide RCTCBC with a greater understanding of how its delivery of FAS is reducing the risk of local flooding to its communities. This will enable the LLFA to refine its understanding of where in RCT the LLFA should prioritise investment, i.e., the highest risk communities.
Benefits	• Able to quantify the areas benefitting from the design and construction of FAS, i.e., quantify the reduction in risk to people and properties. • Greater understanding and awareness of the benefits of local flood risk management, both as the LLFA and also for the public.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective A, B, C and D
Related Local Strategy Objectives	Objective 1, 2, 3, 4 and 8
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	N/A

Measure 30	Hydrological Monitoring & Assessment
Description	The monitoring of hydrological parameters, including rainfall and water levels, will assist in the calibration and effective development of

	surface water modelling. The assessment of hydrological data will also provide RCTCBC with a greater understanding of how its catchments react to storm events. Additional information will also assist in the study of catchment level flood risk management measures, for example, the effectiveness of FAS and NFM interventions in terms of flow reductions downstream.
Benefits	• Monitor the operation of key flood risk management structures, such as culvert inlets, to reduce the risk of blockage which can result in flooding. • Greater understanding and awareness of the frequency and impacts of storm events in RCT.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Existing Resources
Link to National Strategy	Objective A, B, D and E
Related Local Strategy Objectives	Objective 1, 2, 3, 4 and 8
Funding Option(s)	Revenue
Delivery Partners	N/A
Link to Other Council Plans	N/A

Measure 31	**Monitoring the Delivery of Wider Benefits**
Description	SACs and SSSIs are monitored by NRW to understand change in the extent and condition of habitats. Wider benefits, such as habitat and biodiversity enhancement, will be identified in the development of FAS and the monitoring of its success will be included as an outcome of RCTCBC's FAS development. Measures to support the monitoring of FAS, particularly the delivery of wider benefits as a result of NFM schemes, can enhance our own evidence-base of potential outcomes and benefits, as well as sharing these with other RMAs so that we can learn lessons on NFM delivery.
Benefits	• Quantifying the benefits associated with the delivery of NFM schemes will develop RCTCBC and other RMAs learning around the use of NFM and further encourage its use.

	• Deliver against the wider Climate Commitments outlined in RCT's Climate Change Strategy.
Status	Best Practice
Indicative Timescale	Recurring
Indicative Cost	Low - Medium
Link to National Strategy	Objective A and B
Related Local Strategy Objectives	Objective 1, 2, 3, 4, 5, 6, 7 and 8
Funding Option(s)	Revenue Capital (WG NFM Accelerator Grant)
Delivery Partners	N/A
Link to Other Council Plans	RCT's Local Development Plan RCT Local Nature Partnership - 'Action for Nature' Plan RCT's Climate Change Strategy

8. Flood Actions

8.1. Introduction to Flood Actions

The detailed objectives and measures outlined in Section 6 and 7 will be delivered through the implementation of a wide range of actions which will be referred to as the Flood Action Plan. Each action which will be considered in the short (1 – 2 years), medium (2 – 5 years) and long term (5+ years).

The Flood Action Plan delivers on the requirement of the Flood Risk Regulations (2009) (FRR) for LLFA's to produce a Flood Risk Management Plan.

The Flood Risk Regulations (2009) set out a framework for effective management of flood risk in England and Wales. The FRR requires LLFAs to prepare and publish Flood Risk Management Plans (FRMPs) where the risk of flooding from local flood risk is identified as significant in the Preliminary Flood Risk Assessment (PFRA). FRMPs attempt to assess, map and develop action plans to manage flood risk. The legislative requirements of the FRR are described further in Appendix B.

Whilst we previously published our Local Strategy and FRMP separately, this new Local Strategy integrates the two documents into one. As such, RCTCBC have prepared a Flood Action Plan, replacing the former FRMP published in 2015, which set out RCTCBC's actions for managing local flood risk within its administrative area in the short, medium and long term, ensuring delivery against the objectives and measures within this Local Strategy.

8.2. RCT's Approach to the Flood Action Plan

RCTCBC has adopted a catchment-based approach for assessing flood risk (previously described in Section 3). This allows the natural movement of water to be assessed according to geographic river catchment or sub-catchment boundaries, enabling a more holistic and integrated approach to managing flood risk.

The catchment-based approach has informed the identification of 12 assessment boundaries in RCT, known as Strategic Flood Risk Areas (SFRAs).

The Flood Action Plan provides information at two scales. The RCT Flood Action Plan sets out the flood actions to be delivered across RCT. A further 12 Flood Action Plans

have been produced for each of the 12 SFRAs, where more detailed information and actions have been presented at the local catchment scale.

The 12 SFRAs and the communities that fall within each SFRA are shown in Figure 4 and listed in Table 1, Section 3.

The RCT and SFRA Flood Action Plans are presented in Appendix A: Flood Action Plan in this Local Strategy.

9. FUNDING AND PRIORITISATION

9.1. FUNDING OPTIONS

Measures to manage local flood risk are funded from a range of sources. The majority of funding for flood and coastal erosion risk management (FCERM) in Wales come from the Welsh Government via capital and revenue grants.

It is acknowledged by the Welsh Government that effective forward planning and programme delivery is key to address growing flood risk. The Welsh Government has proposed to work with RMAs to develop a 5 to 10 year investment programme of future FCERM capital schemes, justified in accordance with the FCERM Business Case Guidance[18]. This is in fact detailed as a measure within the National Strategy and it represents a renewed strategic approach to accelerate delivery and build resilience to climate change with a stronger pipeline of future projects.

The continued improvement through mapping of risk and understanding the effect of our FCERM assets will also help both the LLFA and Welsh Government direct funding to those who need it most, i.e., the communities identified at greatest risk.

To address increasing flood risk, funding will need to be sought from a variety of sources in order to deliver projects. The following sections outline the current and future potential funding streams which could be utilised to fund the measures and actions contained within the Local Strategy.

- **RCT Capital Core Funding:** Income from Capital receipts and Welsh Government capital grant allocation as part of the annual Welsh Government settlement.

- **RCT Investment Funding**: Capital investment priority funding which is presented to Council and sets out the source and destination of such funding.

- **Welsh Government FCERM Capital Grant Funding**: Intended to support the development, design and construction of new flood alleviation schemes as well as major maintenance works.

[18] The Welsh Government, June 2019, Flood and coastal erosion risk management (FCERM): business case guidance

- **Welsh Government Small Scale Work Grant**: Introduced in 2016, the small scale work grant is intended to support Local Authorities carry out smaller works, NFM and essential maintenance through a simplified process. This funding is available annually for works up to £150,000 and has proved successful in driving delivery and risk reduction.

- **Welsh Government NFM Accelerator Grant**: Introduced in 2023, this new programme aims to accelerate RMAs delivery of natural flood management interventions by providing 100& funding for the delivery of NFM schemes, including appraisal, design, construction and monitoring equipment. The funding does not include ongoing maintenance or monitoring costs however.

- **Welsh Government Revenue Funding**: Revenue funding remains a vital part of FCERM funding intended to support the duties and functions of LLFAs under the FWMA, in addition to work such as awareness raising and maintenance of assets. Revenue funding is not intended for capital works.

- **Welsh Government Resilient Road Fund:** The Resilient Road Fund is intended to address disruptions caused by severe weather to the highway network, especially to the public transport network. It is intended to improve the resilience of the Authority's transport network against the impacts of flooding. All schemes must comply with the Active Travel (Wales) Act 2013.

- **Community Infrastructure Levy (CIL)**: The CIL allows Local Planning Authorities to raise funds from certain types of development to pay for the strategic infrastructure required to support the delivery of the Local Development Plan. CIL could support infrastructure including transport, schools, libraries and flood alleviation structures (amongst others).

- **Section 106 Funding – Developer Contributions**: Local Authorities can potentially require developers to carry out works on sites (including FCERM works) under Section 106 of the Town and Country Planning Act 1990.

- **Local Fundraising**: Partnership funding between public and private sectors and local communities could be adopted as a means of funding projects which are mutually beneficial to groups.

- **Other Possible Sources of Funding**: Partnership working/funding between RMAs will also be considered as a way of achieving flood risk management

objectives which are of mutual interest to parties. This type of funding will become more important as we look to integrate flood schemes with other infrastructure and environmental projects to bring multiple benefits, seek sustainable and better value interventions.

- **Emergency Funding**: Whilst FCERM funding should focus on alleviative action rather than reactive work, there will be times when flooding occurs and additional support is required urgently to repair damaged assets and support response and recovery efforts. There is no guarantee of emergency funding and applications will be considered on a case-by-case basis.

9.2. Prioritisation of Flood Measures and Actions

The Welsh Government has indicated that in future years investment in flood risk management will need to be rigorously prioritised. A methodology for prioritising FCERM funding was approved by the Welsh Government in 2018 after consultation with RMAs, which includes:

- **Communities at Risk Register ranking**: The CaRR provides a consistent way of considering and ranking flood risk from all sources. RCTCBC is committed to using the CaRR to help prioritise investment to those areas at highest risk, however we acknowledge this is just one tool in this process.
- **Details of previous flood events**: To supplement the assessment of flood risk supplied by the CaRR, RCTCBC also acknowledge the important of recording and using locally available information on past flood events to enhance its knowledge of risk.
- **Properties benefitting**: The Welsh Government priorities FCERM schemes which primarily reduce risk to homes. Business and public buildings can also benefit from schemes, in particular those which reduce risk to a mix of development types such as homes and shops along a high street or local district centre.
- **Benefit to cost ratio:** Analysis of the costs and benefits of a project or proposal which quantifies in monetary terms as many of the costs of proposal as feasible, including items for which the market does not provide a satisfactory measure of economic value. The benefit to cost ratio takes into account the whole life costs and benefits of a project.

- **Opportunities for wider benefits**: In line with the Wellbeing of Future Generations Act 2015 and the FCERM Business Case Guidance, RCTCBC will promote the identification of wider benefits such as regeneration opportunities, improvements to habitats/biodiversity, mental health or recreational benefits when developing FAS.
- **Opportunities for partnership funding**: Where significant benefits are identified to third parties, RCTCBC will work both internally and externally (for example with infrastructure providers, utilities, industry and commerce) to identify and secure appropriate partnership funding contributions from those benefitting from a scheme. Partnership funding can also deliver innovative approaches to managing flood risk which in turn can deliver wider benefits.

The LLFA has adopted this methodology for prioritisation of flood measures and actions as it aligns with the Welsh Government's National Strategy.

10. ENVIRONMENTAL ASSESSMENTS

The implementation of the Local Strategy will, in addition to reducing local flood risk in RCT, also provide an opportunity to improve the natural, rural and built environment within RCT by enhancing the environment for both residents and businesses along with improving biodiversity and habitats.

Assessments have been undertaken alongside the development of this Local Strategy to ensure the Objectives, Measures and Actions presented take into account the environment within the local authority area, including important designations. The environmental assessments consider and record how the Local Strategy contributes to the achievement of wider environmental objectives.

10.1. STRATEGIC ENVIRONMENTAL ASSESSMENT (SEA)

RCTCBC has undertaken a Strategic Environmental Assessment (SEA) in parallel with the development of this Local Strategy. The SEA is a way of assessing and monitoring the likely effects (positive and negative) of the Local Strategy Objectives, Measures and Actions on the environment.

An SEA is a legal requirement to accompany the Local Strategy. Such assessments help to enable informed and transparent decision-making for the benefit of plan makers and the wider community in Wales.

The SEA was developed alongside this Local Strategy and is contained within a separate report. Table 12 provides an appraisal of the key environmental issues identified during the SEA process and how these provide opportunities/constraints with regard to the Local Strategy.

Table 12: Key Environmental Issues in RCT

Key Environmental Issue	Opportunities and constrains for the Local Strategy
Sites Designated for Nature Conservation (SINCs), Sites of Special Scientific Interest (SSSI) & Special Areas of Conservation (SAC)	A Habitats Regulations Assessment was conducted on the LFRMS to ensure no adverse effect on European Designated Sites (this is defined as any SAC, SPA, cSAC, pSPA or Ramsar Site). The screening exercise identified six objectives and measures that could affect the integrity of eight European Designated Sites.

Key Environmental Issue	Opportunities and constrains for the Local Strategy
The study area contains numerous locally, nationally and internationally important sites designated for their importance to wildlife conservation.	The Appropriate Assessment concluded that at Strategy level, these objectives and measures provide no indication which, if any, sites will be affected or if the effects will be significant with regard to the conservation objectives of the European Designated Sites. Significant effects are also unlikely, as the LFRMS aims to improve or not detrimentally affect European Designated Sites. Due to this conclusion, there was no requirement to progress to the next stage of the HRA, the Assessment of Alternative Solutions. The Assessment concluded that subsequent HRAs are required for any plans, programmes or polices related to, or that arise from the LFRMS that have the potential to affect any European Designated Site.
Protected, BAP or Notable Species Several rare and protected species and habitats (including those identified in BAPs) are found within the study area. Climate change will have implications for the habitats and species for which sites are designated. eg. evidence shows that British birds are extending their breeding range northwards.	The LFRMS has considered the potential effects of policy options and strategic measures on designated sites. The potential impacts of the LFRMS on features for which sites are designated will need to be considered within the context of a changing baseline. The effect of the LFRMS on species designated under the EU Habitats Directive and the EU Birds Directive have been considered via the Habitats Regulations Assessment.
Population Growth Population growth, principally in urban areas, placing pressure on greenfield sites, water quality and resources, transport infrastructure and natural flood plains.	The LFRMS has attempted to take into consideration predicted population growth within RCT. This is reflected in RCT's flood measures to work with the Local Planning Authority to ensure local flood risk is appropriately managed for existing communities and in respect of new development to accommodate RCT's population growth.

Key Environmental Issue	Opportunities and constrains for the Local Strategy
Deprivation and Regeneration Areas within the study area experience high levels of deprivation and economic inactivity.	Decisions made as part of the LFRMS have considered wider economic development and regeneration strategies.
Human Health The perceived risk of flooding can cause anxiety for local residents and businesses. Property owners in flood risk areas have to consider additional insurance liability and the effects on property values. Flood events can additionally result in human injury and illness.	The LFRMS has taken into consideration the wider implications for human health in terms of both stress and anxiety, as well as injury, illness and resulting potential hospital admissions.
Accessible Natural Greenspace The study area has generally low levels of accessible natural greenspace, particularly with regard to access within local communities.	The LFRMS will seek to maintain and where possible enhance the potential accessibility of natural greenspace.
Soil Quality Rhondda Cynon Taf has generally low grades of agricultural land. Poor land management techniques can also exacerbate flooding, both at catchment and local scale.	The LFRMS will seek to maintain and where possible enhance soils whilst simultaneously considering complimentary measures to reduce flooding.
Water Quality There are a number of surface water bodies within the study area that are monitored for water quality.	The LFRMS has considered the impact of policy options and strategic measures on water quality, maintaining and where possible contributing to the enhancement of water quality.
Water Resources	The LFRMS will aim to maintain and where possible enhance water resource availability.

Key Environmental Issue	Opportunities and constrains for the Local Strategy
The sandstone and limestone aquifers underlying a substantial area of RCT are designated as principal aquifers. However these groundwater resources are under-used. There is a single source protection zone in the north of the County Borough. The resource availability of the main rivers show that they are mainly *over licensed*.	
Flood Risk Surface water flood risk in RCT is relatively high in comparison to neighbouring local authorities. The are estimated to be approximately 21,200 properties at risk of flooding from a 1 in 200 year rainfall event within RCT	The LFRMS will have a positive impact upon reducing flood risk in RCT by utilising a broad range of risk management techniques, including working with natural processes and building resilience into communities. The LFRMS compliments higher level plans and strategies, namely the National Strategy, RCT's previous Local Strategy and FRMP as well as RCT's Climate Change Strategy.
Necessity for increase in housing stock to meet requirements of growing population The number of households required in RCT is likely to increase by approximately 16% in the period to 2023.	The LFRMS has been developed with the development needs of RCT taken fully into consideration.
Transport Infrastructure The economy of RCT is heavily reliant upon the primary transport infrastructure network. Given the topological characteristics of the County Borough, key elements of this network are particularly vulnerable to disruption from flooding.	The LFRMS has taken into account the importance of the principal transport routes within RCT.

Key Environmental Issue	Opportunities and constrains for the Local Strategy
Cultural Heritage Numerous listed buildings, conservation areas and scheduled monuments within RCT.	The LFRMS will endeavour to maintain, protect and/or where possible enhance the status of RCTs cultural heritage.
Landscape Pressure on urban fringes from the requirement to develop land could affect the landscape character of RCT	The LFRMS will endeavour to maintain, protect and/or where possible enhance the status of RCTs landscape

As part of the SEA process each of RCTCBC's thirteen strategic objectives was assessed against a suite of SEA Objectives to assess the likely wider environmental effects of the LFRMS. A summary of this assessment is presented in Table 13.

Table 13: Summary assessment of the likely environmental effects of LFRMS objectives

No	Local Strategy Objective	Summary of Environmental Effects
1	Reduce distress by decreasing the number of people exposed to the risk of flooding	This objective has a particularly strong, positive effect on the *protection and enhancement of human health and well being*. Due to the direct effect on reducing the risk of flooding, there is a positive influence on a wide range of environmental issues.
2	Reduce community disruption by reducing the number of residential and commercial properties exposed to the risk of flooding	As an objective which results in a direct reduction if flood risk, it has multiple positive effects across multiple SEA objectives. This positive impact is likely to increase over time as the predicted effects of climate change materialise.
3	Reduce risk to life by reducing the number of people exposed to risk of flooding of significant depth and velocity	This objective has significant positive impacts upon the health and well being of the population of RCT in addition to minimising the potential impact of flooding on infrastructure. Secondary positive impacts on biodiversity water resources, cultural heritage and landscape are also likely to materialise.
4	Reduce disruption caused by severe weather to critical infrastructure and essential services	Significant, positive impacts on managing disruption to infrastructure, minimising the risk of flooding and protecting and enhancing human health and well being will likely result as a consequence of this LFRMS objective.

No	Local Strategy Objective	Summary of Environmental Effects
5	Improve or not detrimentally affect water quality	This objective will likely result in strong, positive impacts on the protection and enhancements of human health, the maintenance and enhancement of water resources and the protection and enhancement of landscape within RCT. Additional positive impacts upon biodiversity may also result.
6	Identify opportunities that work with natural processes to reduce the risk of flooding	Positive impacts across a wide range of environmental topics are likely to result as a consequence of implementing opportunities that work with natural processes to reduce the risk of flooding. Strong, positive impacts relating to the *protection and enhancement of biodiversity* and *enhancement of landscape* will result from this LFRMS objective.
7	Maintain, or where possible, improve the status of Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSIs), Sites of Importance for Nature and Conservation (SINC) sites and contribute to the RCT Local Nature Partnership - 'Action for Nature' Plan	The most prominent positive impacts are on *biodiversity* and *landscape* features. There will likely be secondary positive impacts on *human health* and the *maintenance and enhancement of water resources and quality*.
8	Improving our understanding of local flood risk in RCT and how this risk may be impacted by climate change in the future	Increasing understanding of the risks from local flood risk will assist in reducing the impacts of flooding by enabling more informed decision making to be undertaken with regard to flood risk management.
9	Develop effective communication tools to share information and improve individual and community awareness of local flood risks and how they can be managed proactively	Ensuring that everyone is aware of their roles on flood risk management will assist in the minimisation of flood risk. Hence, the primary positive impact is on *minimising the risk of flooding*.
10	Improve individual and communities' ability to prepare, respond and recover to the impacts of flooding	The principle positive impacts results to the *protection and enhancement of human health and well being* and the *minimisation of the impact of flooding on infrastructure.*
11	Ensure that RCT work in partnership with Risk	The majority of positive environmental impacts are secondary in nature due to the indirect impact that this

No	Local Strategy Objective	Summary of Environmental Effects
	Management Authorities and other stakeholders to holistically manage the risk of flooding	measure is likely to have. But it should be anticipated that by working collaboratively with neighbouring local authorities will, to a certain extent, extend the scope possible when undertaking flood risk management projects on catchment/regional scales.
12	Ensure flood risk management functions are considered and delivered in a sustainable way	Likely positive impacts on *landscape features* within RCT. Likely secondary positive impacts on *the protection and enhancement of biodiversity*, *the protection of land quality and the minimisation of risk to flooding*.
13	Ensure that investment decisions for flood risk management schemes are prioritised utilising a risk-based approach	It is assumed that if current best practice cost-benefit guidelines are used to assess and prioritise potential flood risk management schemes that appropriate consideration will be given to the benefits arising from social and environmental enhancements arising. It is therefore likely that properly valuing the benefits of various environmental enhancements will bring about positive benefits across a wide range of environmental themes.

The full SEA is contained within a separate report.

10.2. HABITATS REGULATIONS ASSESSMENT (HRA)

A Habitats Regulations Assessment (HRA) considers the possible harm a project or plan could cause to certain specially protected sites, with the aim of ensuring damage to these sites is avoided.

Due to the potential of this Local Strategy to impact the Natura 2000 network of protected sites, namely Special Areas of Conservation (SAC), Special Protection Areas (SPA) and Ramsar sites, a HRA needs to be undertaken in parallel with the SEA as soon as possible in the process.

The full HRA is contained within a separate report.

10.3. WATER FRAMEWORK DIRECTIVE (WFD) ASSESSMENT

The Water Framework Directive (WFD) imposes legal requirements to protect and improve the water environment (including our rivers, coasts, estuaries, lakes, ground waters and canals). Under the WFD a management plan is required for each River Basin District, for which the responsibility for producing these lie with NRW.

River Basin Management Plans (RBMPs) describe the challenges that threaten the water environment and how these challenges can be managed and funded. RCT falls within the Severn RMBP.

Table 14 demonstrates how the relevant Local Strategy objectives have considered the environmental objectives within the Severn RBMP.

Table 14: Local Strategy objectives that consider the Severn RBMP

No	Local Strategy Objectives	How it Considers the River Basin Management Plan
5	Improve or not detrimentally affect water quality	Directly aligns with the requirements of the Water Framework Directive and considers the Severn River Basin Management Plan.
6	Identify opportunities that work with natural processes to reduce the risk of flooding	Investigates opportunities that help to protect, restore, and emulate the natural functions of catchments, including implementing Natural Flood Management measures, promoting green infrastructure, sustainable land management techniques and adopting a catchment-based approach to flood risk management.
7	Maintain, or where possible, improve the status of Special Areas of Conservation (SACs), Sites of Special Scientific Interest (SSSIs), Sites of Importance for Nature and Conservation (SINC) sites and contribute to the RCT Local Nature Partnership - 'Action for Nature' Plan.	Minimises damage to environmentally sensitive areas, and where possible, aim to protect and enhance areas of environmental and cultural significance through managing flood risk.
8	Improving our understanding of local flood risk in RCT and how	Develops and improves our knowledge and understanding of local flood risk across RCT, considering the impacts of climate change. This will

No	Local Strategy Objectives	How it Considers the River Basin Management Plan
	this risk may be impacted by climate change in the future.	offer multiple benefits such as enabling the Council to identify ecological areas at greatest risk and prioritising measures to address known risks.
9	Develop effective communication tools to share information and improve individual and community awareness of local flood risks and how they can be managed proactively.	Encouraging and working with others (including residents, community groups, voluntary sector organisations, businesses, landowners, Local Enterprise Partnerships, Local Nature Partnerships and public partners) to protect and enhance the water environment.
12	Ensure flood risk management functions are considered and delivered in a sustainable way	Ensuring the LLFA takes a sustainable and holistic approach to flood risk management functions, seeking to deliver wider environmental and ecological benefits.
13	Ensure that investment decisions for flood risk management schemes are prioritised utilising a risk-based approach	Prioritising investment in the most at-risk communities utilising a risk-based, transparent, and consistent approach, whilst acknowledging that schemes are either going to affect a water body's ecology, either worsening it and causing deterioration, or improving it by undertaking environmental improvements.

11. MONITORING PROGRESS

11.1. MEASURING PROGRESS AGAINST THE OBJECTIVES, MEASURES & ACTIONS

Measuring progress of the delivery of the Local Strategy will focus upon the delivery of the flood actions, and the benefits derived from such actions. The flood actions have been developed to achieve the measures and objectives within the Local Strategy.

All flood measures that are recurring activities, i.e., the LLFA's core activities related to flood risk management as required under the FWMA 2010, FRR 2009 and as the Land Drainage Authority under the LDA 1991, will be monitored and measured on a quarterly basis via the Authority's Flood Risk Management and Strategic Projects Service Delivery Plan.

11.2. HOW REGULARLY WE MONITOR PROGRESS

As the LLFA, RCTCBC is responsible for monitoring the implementation of this Local Strategy. This includes monitoring its own activities and those completed by other RMAs as defined in Section 5.

Delivery of RCT's and the SFRA Flood Action Plans will be monitored on an annual basis. A progress report on the delivery of actions will be published each year to monitor progress against the Local Strategy's objectives and measures.

The RCT and SFRA Flood Action Plans included in Appendix A will be updated every 2 years to reflect the LLFA's continued delivery against the Local Strategy's objectives and measures.

The Service Delivery Plan will be monitored quarterly by the RCTCBC Performance Team. Delivery of the LLFA's core activities will be an integral function of the Authority's delivery against the strategic objectives.

The Local Strategy will be updated in accordance with future updates to the National Strategy.

APPENDIX A – FLOOD ACTION PLAN

See separate document titled 'Flood and Water Management Act 2010, Local Flood Risk Management Strategy and Action Plan, Appendix A: Flood Action Plan'.

APPENDIX B – LEGISLATIVE CONTEXT

See separate document titled 'Flood and Water Management Act 2010, Local Flood Risk Management Strategy and Action Plan, Appendices B-D'.

APPENDIX C – PUBLIC CONSULTATION OUTCOMES

See separate document titled 'Flood and Water Management Act 2010, Local Flood Risk Management Strategy and Action Plan, Appendices B-D'.

APPENDIX D – GLOSSARY OF TERMS

See separate document titled 'Flood and Water Management Act 2010, Local Flood Risk Management Strategy and Action Plan, Appendices B-D'.